



22-23 April, 2023 K.N. Udupa Auditorium Institute of Medical Sciences, BHU, Varanasi



**Jointly Organised by** 





Department of Dravyaguna, Faculty of Ayurveda Institute of Medical Sciences, BHU, Varanasi



Institute of Medical Sciences BHU, Varanasi



National Environmental Science Academy, New Delhi

# **Abstract cum Souvenir**

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BANARAS HINDU UNIVERSITY, VARANASI



Banaras Hindu University is an internationally reputed temple of learning, situated in the holy city of Varanasi. This creative and innovative university was founded by the great nationalist leader, Pandit Madan Mohan Malaviya, in 1916, through close cooperation with great personalities like Dr Annie Besant, who viewed it as the University of India. Banaras Hindu University was established by the Parliamentary legislation-B.H.U. Act 1915.







# National Conference

Scientific Advancement for
Sustainable Environment, Herbal Medicines and
Impact on Health: An Earth day Celebration (SASE)

22-23 April, 2023
K.N. Udupa Auditorium
Institute of Medical Sciences, BHU, Varanasi

**Jointly Organised by** 



Department of Dravyaguna, Faculty of Ayurveda Institute of Medical Sciences, BHU, Varanasi



&



National Environmental Science Academy, New Delhi

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प्रो.(वैद्य) रिबनारायण आचार्य महानिदेशक Prof.(Vaidya) Rabinarayan Acharya Director General

### केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद् आयुष मंत्रालय, भारत सरकार CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES

Ministry of Ayush, Govt. of India

March 28, 023

## Message



It gives me immense pleasure to extend my good wishes to the department of Dravyaguna, Faculty of Ayurveda, Institute of Medicical Science, BHU, Varanasi for organizing the National Conference on "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration" in association with National Environment Science Academy on 22-23 April, 2023.

As we all know, natural resources particularly medicinal plants are disappearing at an alarming rate. Urbanization, increased market demand and deforestation resulting steady extinction of certain potent medicial plants, that becomes a enormous yoke for our drug manufacturing industries. CCRAS under Ministry of Ayush is also putting its tremendous efforts for creating awareness on conservation and cultivation of medicinal plant species. In this milieu, the theme of the National Conference "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration" is the need of the hour.

I wish all success to this event and department of Dravyaguna, Faculty of Ayurvbeda, Institute of Medicical Science, BHU, Varanasi in all its future endeavours. I am sure this would be an excellent platform to engage with multiple stakeholders to embark upon the sustainable utilization of natural resources.

(Prof. Vaidya Rabinarayan Acharya)





निदेशक कार्यालय चिकित्सा विज्ञान संस्थान

Office of the DIRECTOR Institute of Medical Sciences

# Message



It is a matter of great pride that the Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi in collaboration with National Environmental Science Academy, New Delhi is organizing a National Conference on "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth day Celebration (SASE)" from April 22-23, 2023.

I am sure, the participants will be highly benefitted with the brainstorming sessions of eminent scientists and physicians in one platform, which is the need of the hour to nurture the young researchers and develop the next generation scientists.

On this occasion, I extend my greetings to the organizers and the participants and wish the Conference every success.

(S.K.SINGH) DIRECTOR









आयुर्वेद संकाय कार्यालय Office of The Dean FACULTY OF AYURVEDA विकत्सा विज्ञान संस्थान Institute of Medical Sciences

ESTABLISHED BY PARLIAMENT BY NOTIFICATION NO. 225 OF 1916

दिनांक: 11.04.2023

# Message



It is a matter of great pleasure to me to write this message for the event National Conference on Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth day Celebration (SASE) which is going to be organized during April 22-23, 2023 by the Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi and National Environmental Science Academy, New Delhi jointly at K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi. The gathering of distinguished delegates, great scientists and eminent Ayurvedic physicians and surgeons under a single umbrella will surely nourish the future scientists and encourage the budding researchers.

As we are facing the extinction of many important medicinal plants on our planet due to the changes in environment and the ecosystem, this event will play a crucial role in decision making for creating a new window for sustainable use of medicinal plants and preservation of the ecosystem. I am sure that this event would be the best platform for interaction of all the delegates from different fields to work and collaborate interdisciplinarily to improve the outcomes.

I wish all the success to this event and congratulate the organizing committee of the Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi and National Environmental Science Academy, New Delhi for their admirable endeavor.

(Prof. K.N. Dwivedi) Dean Faculty of Ayurveda

IMS, BHU





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# National Environmental Science Academy

(Registered Under Society Act XXI of 1860)

206, Raj Tower-I, Alaknanda Community Centre, New Delhi-110 019 Phone: 011-2602 3614 (O)

E-mail: infonesa88@gmail.com; nesapublications@gmail.com

10.04.2023

## Message



On behalf of NESA and the organizing committee, I would like to cordially welcome you to the National conference on "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration" to be held at Faculty of Ayurveda, Institute of Medical Science, BHU, Varanasi on the occasion of World Earth Day, the 22nd April, 2023.

Varanasi is one of the oldest continuously inhabited cities by humans in the world where ancient knowledge and culture has been flourishing. BHU in Varanasi has been disseminating various knowledge to the entire world, including arts and science. Varanasi and BHU both have been fountains of Ayurvedic knowledge. There is also requirement for massive awareness towards preserving herbal biodiversity and traditional Knowledge. In this regard, the importance of the present conference seems much higher.

Sustainable development is critical for creating safe and liveable cities, but many developed countries and cities are at present struggling with enormous environmental issues and its improper management.

What we most need to learn is that in the major scientific matters which now affect human destiny, one cannot safely take decisions for today unless we realize that those same decisions determine the future. This national conference will provide a premier interdisciplinary platform for researchers, practitioners, policy makers and educators to present, share, and exchange and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Sustainable Environment. The conference will feature renowned speakers representing both academia and industry who are renowned experts in sustainable development. Selected papers will be published in the conference proceeding.

The endeavour of the NESA and Department of Dravyaguna, Faculty of Ayurveda, is highly appreciated in this regard. I wish a grand success of the event!!

(Javed Ahmad)
President



# School of Life Sciences Jawaharlal Nehru University New Delhi – 110067, INDIA

Rana Pratap Singh, PhD Professor of Cancer Biology Special Centre for Systems Medicine Phone: +91-11-26704503 Fax: +91-11-26742558 E-mail: rana\_singh@mail.jnu.ac.in ranaps@hotmail.com

## Message



It is with great pleasure that I congratulate National Environmental Science Academy (NESA), New Delhi and Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi for organizing the National Conference on "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration" at Banaras Hindu University, Varanasi.

I am thankful to the organizers for this opportunity to take part in the conference and share with you some insights on the research on chemoprevention, and a major health issue that is cancer. Over the years, there has been extensive research on cancer prevention strategies, and chemoprevention has emerged as a promising approach. Chemoprevention involves the use of natural or synthetic substances to prevent, inhibit, or reverse the development of cancer. This approach aims to intervene in the early stages of cancer development and reduce the risk of cancer occurrence or recurrence. The knowledge about the cancer existed in Vedic age and several compounds have been identified as potential chemopreventive agents, including our medicinal plants used in ayurvedic formulations.

Research has shown that chemoprevention can be effective in reducing the risk of several types of cancer, however, it is important to note that chemoprevention should not be used as a substitute for regular cancer screening and other preventive measures. As we continue to advance our understanding of cancer prevention, it is my hope that chemoprevention will play a more significant role in reducing the burden of cancer worldwide.

I would like to take this moment to wish you all the best of luck. I believe that attendees will find the conference informative, engaging, and inspiring, and that they will leave with a renewed sense of enthusiasm and passion for their work.

With best regards,

(Rana P Singh)

# Message



On behalf of the organizing committee of National Conference on Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth day Celebration (SASE), I have great pleasure in welcoming all the delegates to the Conference during 22–23 April 2023 at K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi jointly organized by Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi and National Environmental Science Academy, New Delhi.

The Environmental Concern and Herbal Medicine has achieved new heights within the country and abroad since last decade. The advancement in basic sciences and their implication in environmental and herbal medicine has become the order of the day for every projects either taken by or sponsored by Ministry of Earth, Ministry of AYUSH, Ministry of Science and Technology, DRDO, Council of Scientific & Industrial Research, Academic Institutes, etc, and also Private Industries. Therefore, *interdisciplinary* approach for saving our mother planet, the Earth and harvesting the herbal drugs without disturbing biodiversity have become a mandatory requirement. The development of advanced miniature technologies in many spheres of life has created new difficulties in resolving relevant issues and identifying bad actors. The greatest way to preser ve a healthy environment and a civilization free from disease is to utilise natural resources without affecting the biological diversity found in various ecosystems. The value of natural resources has grown as a result of this judicious use, both physically and metaphysically.

The two days conference will cover the entire scope of Environmental Science and Herbal Medicine for Improvement of Human Health on 22-23 April 2023. At the end of the conference a comprehensive panel discussion has been organised to discuss "How to utilize the herbal resources for preparation of Ayurvedic drugs without altering the environment to maintain the joyful atmosphere on our mother land, The Earth". During the panel discussion, experts from the Government Agencies, Academic Institutes, Public Sector Undertakings and Private Sectors will directly interact with participants. An environment related model and chart exhibition has been organised during the conference by undergraduate and postgraduate students for awareness and sharing the budding mind innovations. Delegates can interact, guide and encourage the budding scientists for their development as competent scientist in future.

We sincerely appreciate the assistance that all government agencies, nonprofit organisations, for-profit businesses, academic institutions, and private citizens provided in order to make this event a success. I would like to personally thank the whole organising committee, as well as my coworkers and employees, for their devotion and hard work, without which this event could not have been put together in a respectable manner.

(Prof. Anil Kr. Singh)



# National Environmental Science Academy

(Registered Under Society Act XXI of 1860)

206, Raj Tower-I, Alaknanda Community Centre, New Delhi-110 019 Phone: 011-2602 3614 (O)

E-mail: infonesa88@gmail.com; nesapublications@gmail.com

12.04.2023

# Message



Dear delegates and friends Warm greetings!!!

On behalf of NESA and the organizing committee, I would like to cordially welcome you to the National conference on "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration" to be held at Faculty of Ayurveda, Institute of Medical Science, BHU, Varanasi on the occasion of World Earth Day, the 22<sup>nd</sup> April, 2023.

On April 22 every year, we celebrate the anniversary of the birth of the modern environmental movement with Earth Day. Earth Day is an annual celebration that honours the achievements of the environmental movement and raises awareness of the need to protect Earths natural resources for future generations. We could successfully associate ourselves with various technology institutions and academia in the last decades and successfully demonstrated that environmental management and sustainable development could be achievable by joining hands together. This conference with the theme "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration" is the right platform to bring various academician under one roof to discuss needs of current scenario to mitigate the global warming and pollution problem by interlink the herbal medicines and impact on health under the umbrella of sustainable development goals of UNEP.

We are trying our best to ensure that your time and stay at the holy city during the conference be one of the most memorable one and you go back with rich information. I welcome you, your family and friends again to this wonderful gathering and make the maximum out of it. I thank each and every one of you who are contributing to the success of the conference and looking forward to seeing you all soon.

JAI HIND

**Best wishes** 

**Prof. Shakeel Ahmad Khan** 

General Secretary NESA & Convenor SASE-BHU 2023

Principal Scientist, Division of Environmental Sciences, ICAR-Indian Agricultural Research Institute (DARE, Ministry of Agriculture & Farmers Welfare, Govt. of India), New Delhi -110012

Please visit our website: www.nesa-india.org

#### **Chairman & CEO**

Himalaya Food International Ltd. 118, 1st Floor, 12, Gagandeep Building, Rajendra Place, New Delhi, Delhi 110008



## Message



It's a matter of great national pride for Faculty of Ayurveda, Institute of Medical Sciences BHU to have taken this initiative to bring worldwide consciousness of the power of Ayurveda on the Earth Day.

After centuries of oblivion, the times have come that our world has the opportunity to understand & benefit from our ancient sciences like Yoga & Ayurveda. Yoga has already gained immense respect throughout the World as the ultimate practice to balance our Mind Body & Soul. It's time to share and propagate Ayurveda as formidable alternative to chemical medicines with little side effects besides immense benefit of enhancing the sustainability of life on our Mother Earth.

I wish the Ayurveda Institute of Medical Sciences BHU & all Faculty members and students great success in their endeavour to resurrect our Ancient science of Ayurveda!

Man Mohan Malik

Prof. Ajay Gupta

B.Sc., M.Sc. (BHU); M.Phil., Ph.D. (JNU); PDF(UofL, Louisville, KY, USA) Alternative Medicines & Tissue Culture Laboratory Maharishi Markandeshwar (Deemed to be University) Mullana, Ambala-133203, India akgupta.in@gmail.com / www.akgupt.webs.com

# Message



I welcome and congratulate National Environmental Science Academy (NESA), New Delhi and Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi for organizing a thoughtful and most relevant the National Conference on "SCIENTIFIC ADVANCEMENT FOR SUSTAINABLE ENVIRONMENT, HERBAL MEDICINES AND IMPACT ON HEALTH: AN EARTH DAY CELEBRATION (SASE)" at most prestigious Banaras Hindu University, Varanasi, the citadel of knowledge!!

Varanasi is one of the oldest continuously inhabited cities by humans in the world where ancient knowledge and culture has been flourishing. BHU in Varanasi has been disseminating various knowledge to the entire world, including arts and science. Varanasi and BHU both have been fountains of Ayurvedic knowledge. There are a formidable challenge in the field of herbal biodiversity, Ayurvedic science in the modern perspective and present day environment. While there is need to preserve Indian Traditional Knowledge (ITK) one one hand there is also urgency towards establishing modern scientific evidences of Ayurvedic efficacy with more clinical trials, on the other hand. There is also requirement for massive awareness towards preserving herbal biodiversity and traditional Knowledge. In this regard, the importance of the present conference seems much higher.

Being a proud alumnus of BHU, I am glad to know that the theme of this conference is highly suitable and believe that the deliberations of the conference would help to devise user friendly policies for the sustainablele environment, herbal medicine and Ayurveda. The endeavour of the NESA and Department of Dravyaguna, Faculty of Ayurveda, is highly appreciated in this regard. I wish a grand success of the event!!

Prof. Ajay Gupta

Organizing Secretary, NESA



Dr. Sanjeev Kumar

Ph.D, M.D. (AY), Dip in Yoga Assistant Professor Department of Dravyaguna Faculty of Ayurveda Institute of Medical Sciences Banaras Hindu University

VARANASI – 221 005 T: (0542) 2985752, 9451108691, 7905875859 E: kumarsanjeevdg@bhu.ac.in

## Message



Dear delegates

Warm greetings!!!

On behalf of Mobility India and the organizing committee, I would like to cordially welcome you all to the national conference on "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE)" at National Level, during April 22 – 23, 2023 is going to be jointly organized by the Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi and National Environmental Science Academy, New Delhi

This conference with the theme "Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE)" is the right platform to bring various stakeholders under one roof to discuss the needs of the Health of human being and their lives in totality with the surrounding Environment.

Nowadays, the focus is on investigating the efficacy of plants in traditional medicine because they are cheap and have few side effects. Synthetic preservatives, which have been used in foods for decades, can cause negative health consequences. Furthermore, the use of synthetic compounds has significant drawbacks, such as increased price, handling hazards, concerns about residues in food products, and hazards to the human environment. Through this conference, we will put all our effort to drive the national policy on Scientific Advancement for Sustainable Environment, Herbal Medicines, and Impact on Health and come out with a list of priority areas.

We are trying our best to ensure that your time and stay in the city of Varanasi during the conference be one of the most memorable ones and that you go back with rich information and as a proud stakeholder of the Healthy Science world.

I welcome you, your family, and your friends again to this wonderful gathering and make the maximum out of it.

I thank each one of you who is contributing to the success of the conference and look forward to seeing you all soon.

Dr. Sanjeev Kumar Organizing Secretary

Date: 11-04-2023

डॉ. राजेश कु0 सिंह / Dr. Rajesh Kr. Singh M.Sc. (Zoology), Ph.D. (BHU, Varanasi) युवा वैज्ञानिक / Young Scientist द्रव्यगुण विभाग Department of Dravyaguna चिकित्सा विज्ञानं संसथान Institute of Medical Sciences कशी हिन्दू विश्वविद्यालय, वाराणसी-२२१००५, Banaras Hindu University, Varanasi-221005

Ref. No.: DG/DHR/YS/2023-24/11 Date: 10.04.2023

# Message



I would like to personally welcome everyone to the National Conference on Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE), to be held 22–23 April 2023 at K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi jointly organized by Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi and National Environmental Science Academy, New Delhi.

It is an exciting time for scientists, academicians, clinicians, and researchers, as we are augmenting our technical, intellectual, and working capabilities using the advanced tools and techniques. The gathering of distinguished scientists, clinicians, scholars, budding scientist, and policymakers will definitely provide us an opportunity to interact with each other and share the knowledge.

I would like to thank everyone for attending the event, SASE-2023 and bringing your expertise to this awesome gathering. You, as researcher, have the vision, the knowledge, the resources, and the experiences to help us pave our way into the future research activities. Throughout this conference, I request you to stay engaged, keep us proactive and help us bringing out more such events in future. My personal admiration and gratitude go out to all of you.

I sincerely thank the administration of our university, dean, Prof. K.N. Dwivedi, convener, Prof. Anil Kumar Singh and entire team of the organizing committee, SASE-2023 including Ms. Preeti Yadav, Ms. Poonam Pal, Ms. Sneha Gupta, Mr. Sanjeet K. Pandit, Mr. Arun Meena and other colleagues for helping us in an impressive manner from initial time. I appeal to the research community to extend their continued support and cooperation to the future activities of the department, Department of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, India.

(Dr. Rajesh Kumar Singh)

Communication: Email Id: rkszoology@gmail.com, Mobile No.: +91-8565809532

### **About Organizers**

#### Department of Dravyaguna, Institute of Medical Sciences, BHU, Varanasi

Medical education in Varanasi, the oldest living city of the world, dates from the days of Sushruta 500 BC. Infact this is also the history of Medical education in India. The great treatise - 'Sushruta Samhita' is a living testimony of contributions to Medical education that originated in Varanasi. Sushruta was the first to perform cadaver dissections and described a number of operating instruments and surgical operations. Perhaps it is a continuation of this historical perspective that Medical education in Banaras Hindu University took roots in 1920 with the establishment of Department of Ayurveda under Faculty of Oriental Learning and Theology (1922-1927). Under the influence of Pandit Madan Mohan Malviyaji, Seth Mathuradas Vissanii Khimii of Bombay donated a large some of Rs. 1.5 Lacs for the Ayurvedic College. This was further augmented by donations from Shri Daya Shankar Dev Shankar Dave of Kathiawar and Bombay, Department of Dravyaguna is one of the oldest department of Ayurveda Faculty, Institute of Medical Sciences, Banaras Hindu University, established in 1927. Teaching and Research are the essential component of the Department. This Department deals with Medicinal plants of Ayurvedic Classics, their identification, properties, action and therapeutic uses in accordance with fundamental Principles of Ayurveda.

In Ayurveda more than 600 medicinal plants are included as drugs and they are used either alone or in combination with each other to alleviate the disorders. In fact, they are grown in various agro-climatic zones (Jangala, Anupa and Sadharana Desa) of our country. In recent years, Global awareness on use of medicinal plants as "Natural Medicine" has drawn the attention of State and National Institutions and Government also to look back into ancient heritage of India - Ayurveda. Use of herbs as medicine by the sizeable number of population has drawn the attention of Health planners of developed and developing countries around the World and also of World Health Organization (WHO) to address issues related to "safe, standard and quality" products based on medicinal plants.

### National Environmental Science Academy, New Delhi

National Environmental Science Academy (NESA) was founded by Late Prof. TRC Sinha, the then Head of Zoology Department, MJK PG College, Bihar University to create awareness, promote and protect the environment. Conceptualised and initiated in 1984, it was registered as a Society in 1988 under the Societies Act XXI of 1860 at Patna. The main objective of the Academy is to bring awareness about environmental issues among the masses by arranging lectures, workshops, training programmes, seminars, symposia, conferences, publishing journals, etc.

### Aims Objectives and Functions of the Academy

To enhance and promote the study of the environmental sciences by encouraging students, scientists, researchers, academicians and members of the Academy for pursuing research on environment and allied areas.

- To set up Regional/State Chapters for dissemination of information on environment.
- \*\* To motivate and prepare vouna minds on environmental management.
- To hold Annual Conference of the Academy.
- To organise national/international level conferences, symposia, seminars, meetings and workshops on themes of environmental concerns.
- To publish policy papers, synthesis volumes, proceedings, journals, newsletter, transactions and other publications for the promotion of **Environmental Sciences.**

Various eminent personalities have graced the Academy as President. The first President of the Academy was Dr. K.C. Bose, Vice-Chancellor of Ranchi University; then Dr. B.S. Attri, Advisor, Ministry of Environment and Forest. Most recently Padmabhushan Dr. S.Z. Qasim was the President of the Academy till June 2015, who is a renowned marine scientist known for his Antarctica mission in 1981-82, he also served as the Secretary at the Deptt. of Ocean Development (now Ministry of Earth Sciences); Member, Planning Commission and Vice-Chancellor, Jamia Millia Islamia, New Delhi. Currently Prof. Javed Ahmad, (Former Dean, Faculty of Science), Jamia Hamdard, New Delhi, is the President of the Academy.

#### **Annual Awards**

The Academy recognises the merit and achievements of individuals who have contributed to the field of environmental science, education and societal values by conferring (1) NESA FELLOWSHIP OF THE YEAR AWARD (2) NESA EMINENT SCIENTIST OF THE YEAR AWARD (3) NESA SCIENTIST OF THE YEAR AWARD (4) NESA ENVIRONMENTALIST OF THE YEAR AWARD (5) NESA GREEN TECHNOLOGY INNOVATIVE AWARD (6) NESA DISTINGUISHED SCIENTIST OF THE YEAR AWARD (7) WOMEN EXCELLENCE OF THE YEAR AWARD (8) NESA YOUNG SCIENTIST OF THE YEAR AWARD (9) NESA JUNIOR SCIENTIST OF THE YEAR AWARD (10) NESA BEST RESEARCHER AWARD (11) NESA BEST PHD THESIS AWARD. Any life member of the Academy can apply for the awards. Any life member of the Academy can apply for the awards. For more information please, log on to our website: http://nesaindia.org/award-form-submission/

In addition, the Best Oral Presentation and Best Poster Awards are given away during the Annual Conference of the Academy.

#### **Publications**

The Academy is publishing the following Journals (Biannual):

- INTERNATIONAL JOURNAL ON AGRICULTURAL SCIENCES 1)
- 2) INTERNATIONAL JOURNAL ON ENVIRONMENTAL SCIENCES
- 3) INTERNATIONAL JOURNAL ON BIOLOGICAL SCIENCES
- INDIAN JOURNAL OF UNANI MEDICINE 4) http://nesa-india.org/nesa-iournal/
- E-NESA Newsletter (Monthly) http://nesa-india.org/newsletter/ 5)

#### **Patrons**

Prof. Sudhir K. Jain, Vice-Chancellor, Banaras Hindu University, Varanasi

Prof. V.K. Shukla, Rector, Banaras Hindu University, Varanasi

Prof. Javed Ahmad, President, NESA

#### Co-Patrons

**Prof. S.K. Singh**, Director, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Prof. K. N. Dwivedi**, Dean, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

#### **Conveners**

**Prof. Anil Kumar Singh**, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Dr. Shakeel Ahmad Khan**, Professor/Principal Scientist, Division of Environmental Sciences, NRL Building, Pusa Campus ICAR- Indian Agricultural Research Institute, New Delhi, India

**Prof. B. Ram**, Head, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

#### **Co-conveners**

**Dr. Alka Rani**, Professor & DOSW, Department of Chemistry, Hindu College, Moradabad U.P.

**Dr. Sonika Saxena**, Vice Principal and Associate Professor, Dr. B. Lal Institute of Biotechnology, Jaipur, Rajasthan

**Dr. Syed Shabih Hassan**, Scientist Fisheries, Dept. of Fisheries Resource Management, College of Fisheries, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab

### **Organizing Secretaries**

**Dr. Sanjeev Kumar,** Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Prof. Ajay Gupta**, Research Laboratory on Alternative Medicines & Tissue Culture, Ground Floor, MM College of Pharmacy, Block 2, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala, Haryana

**Dr. Binay Sen**, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Dr. Jasmeet Singh**, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

### **Co-Organizing Secretaries**

**Dr. Pradeep Kumar**, Assistant Professor, Department of Zoology, S.G.N Government P.G. College Muhammadabad Gohana Mau, (U.P) India

**Dr. Gaurav Saxena**, School of Biotechnology, Shoolini University, Solan, Himachal Pradesh

**Dr. Rajesh Kumar Singh**, Young Scientist, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Ms. Preeti Yadav**, Asst. Prof., Dept. of Zoology, Udai Pratap College, Varanasi, Uttar Pradesh

**Ms. Rakhi**, Department of Biotechnology, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala

**Ms. Jessica**, Dept. of Biotechnology, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala, Haryana

**Dr. Rishikesh Singh,** Post-Doctoral Fellow (DST-SERB-NPDF), Department of Botany, Faculty of Science, Panjab University, Chandigarh, India

**Dr. Vikas Yadav,** School of Biological Sciences and Biotechnology, Goa University, Taleigao Plateau, Goa, India

#### **Local Organizing Committee**

**Dr. Poonam Sharma**, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Dr. Ringzin Lamo**, Dept. of Agad Tantra, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Dr. Nitu Shree**, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Dr. Uma Singh Sachan**, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

**Dr. Yashoda Rawa**t, Dept. of Dravyaguna, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University, Varanasi

### **Advisory Committee**

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on

# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth day Celebration (SASE) 22-23 April, 2023

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# oral presentations



# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### RENO PROTECTIVE EFFECT OF SODIUM-COPPER CHLOROPHYLLIN ON THE PROGRESSION OF CHRONIC KIDNEY DISEASE

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#### **ABSTRACT**

**Background:** Progression of chronic kidney disease (CKD) is a major problem in Nephrology which leads to end stage renal disease (ESRD), and later on require renal replacement therapy (RRT) or renal transplant. Primary causes of CKD include Diabetes mellitus, hypertension, obstructive nephropathy, cystic nephropathy, glomerulonephrities with renal fibrosis being a common histological finding. It has been estimated that approximately 10% of world population is affected with CKD. Transforming growth factor-\(\text{B1}\) (TGF-\(\text{B1}\)) acts as the prime mediator in fibrotic response along with the renal fibrosis. Sodium-copper chlorophyllins (SSC), due to inhibition of TGF-\(\text{B1}\)shows some anti-fibrotic property which in turn slow down the enhancement of kidney disease in a given population or a human model.

**Hypothesis:** The administration of sodium-copper chlorophyllin supplements will help in decelerating the progression of CKD in a given population.

**Methods:** A prospective study was performed on the selected population. In addition to the standard treatment for CKD, the individuals of the selected Population were also given sodium-copper chlorophyllin supplements. To accesses the changes in level of serum creatinine concentration, serum urea concentration, urine protein and eGFR in the sodium-copper chlorophyllin treatment group, Repeated Measure ANOVA test was opted.

**Results:** During the first, second and further follow ups taken, minor differences were observed in values of serum creatinine concentration, urine protein concentration and eGFR in the group undergoing treatment.

**Conclusion and clinical importance:** Sodium-copper chlorophyllin supplements are used as a traditional medication in various civilizations. Their efficacies were proven valid in the chosen population. But a further study is also needed to prove its potency in large population.

Keywords: Chronic kidney disease, end stage renal disease, renal replacement therapy, fibrosis, transforming growth factor-61, sodium-copper chlorophyllin.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### IDENTIFICATION OF CDK12 INHIBITORSFOR THE TREATMENT OF EWING SARCOMA: A IN-SILICO, IN-VITRO STUDY

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#### **ABSTRACT**

Ewing sarcoma is a kind of rare Cancer, where Cancer cells are developed in bone or soft tissue in the pelvis, the femur, the humerus, the ribs, and the clavicle. Since the inhibition of CDK12 has proven the death of Ewing sarcoma cells; we have tried to target CDK12 to identify potent CDK12 inhibitors by employing computer aided drug design. Structure based virtual screening has been employed to screen Natural Product Database against the target followed by filtering for various drug likeness rules, ADME, toxicity, Molecular docking, DFT and MD Simulation. The anticancer activity of all the Insilco screened molecules have been evaluated by MTT assay, western blotting and qPCR assay. Our research work resulted in two molecules that have shown strong binding affinity with effective ADME properties, low toxicity, and high stability. Inhibiting CDK12 with these identified molecules will promote cancer cell death.

Keywords: Ewing sarcoma, CDK12, CDK12Inhibitors, Cancer.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# INTERVENTION OF NEUTRACEUTICAL COMPOUNDS AS AN ALTERNATIVE OVER PHARMACEUTICALS USAGE IN PROMOTING OVERALL HEALTH AND TREATING LIFESTYLE DISORDERS: A LITERARY REVIEW

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#### **ABSTRACT**

#### **Background**

Due to Sedentary lifestyle and impact of Westernization humans have become more susceptible to diseases. Due to this the immunity of humans is decreasing day by day impacting the overall wellbeing and general health. Recently the world has witnessed a major outbreak in the form of Covid 19 which had impacted the millions of lives worldwide, the reason being lack of immunity. The world has seen the power of herbal Neutraceutics in the pandemic which ultimately gained the popularity and won the faith of millions of people across the world. Contrary to Neutraceuticals the conventional Pharmaceuticals are disease specific while Neutraceuticals promote the overall wellbeing by enhancing the immunity. Intervention of Neutraceuticals restores the normal physiology of body by making chemical or molecular changes at the cellular level which ultimately helps in enhancing immunity and makes body resistant to fight ailments.

#### Objective

To promote the usage of Neutraceuticals over contemporar y medicines as Recent Studies have proved that the former are more potent in treating lifestyle disorders and enhancing the overall immunity while having least or minimal side effects in the body as compared to the cotemperary Pharmaceutical drugs. Material And Method Reviewed from various databases, books, websites and various journals

#### Results

The mechanism of action of Neutraceuticals has been thoroughly researched and adequately stated as to how they are beneficial in treating lifestyle problems and increasing immunity.

#### Conclusion

As various studies have proved that Neutraceuticals are more effective as compared to contemporary Pharmaceuticals because these works on the holistic approach in treating and preventing the diseases contrary to modern medicines which are disease specific. Intervention of Neutraceuticals are gaining worldwide polularity as these are equally potent in treating and preventing the ailments. More extensive research is required in this area to explore the hidden facts which may prove to be a boon to the society.

**Keywords:** Neutraceuticals, Pharmaceuticals, immunity, lifestyle disorder.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### COMPARATIVE STUDY OF BREEDING PERFORMANCE OF CRYOPRESERVED MILT OF CYPRINUS CARPIO AND CYPRINUS CARPIO HAEMATOPTERUS

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#### **ABSTRACT**

The present study was conducted for comparing the performance of cryopreserved sperm of Common carp (Cyprinus carpio) with its Amur strain (Cyprinus carpio haematopterus) under tarai condition of Uttarakhand. The objective of present study is to develop an improved freezing protocol by determining the effects of three extenders and two cryoprotectants on Amur carp and Common carp. The parameters used for milt quality analysis are sperm motility percentage and motility duration. Fertilization rate, hatching rate and embryonic development were also recorded. Approximately hundred specimens of common carp and Amur carp were obtained from Instructional Fish Farm of College of Fisheries. Pantnagar, 40 specimens of mature common carp and amur carp (1-1.5 kg bw) in separate ponds were stocked. Carp were fed with conventional feed (rice bran; oil cake in 1:1 ratio) in wet form @ 1.5% body weight/day. Fishes were checked for milt availability by pressing the belly and those fishes oozed milt were taken for milt cryopreservation experiments. Water quality parameters (i.e. temperature, pH, dissolved oxygen, carbon di-oxide) had been recorded for the duration of the experimentation period in both ponds and were within the permissible limit. The experiment concludes that observations are indicative of a successful cryopreservation of Amur carp and Common carp sperm using either one of TRIS, RPMI1640 and PBS (Phosphate buffer saline) as extender with the addition of DMSO and Glucose collectively as cryoprotectants. The use of TRIS diluent with DMSO and Glucose is rated as the best combination for freezing common carp and amur carp sperm. The formation of sperm agglutination is probably affected by extender composition, type of cryoprotectant and cooling conditions. For this reason, the use of TRIS, RPMI1640 and PBS with DMSO and Glucose for freezing amur carp and common carp sperm in the liquid nitrogen vapour may additionally have paramount significance being a feasible protocol for captive breeding programme. Among the different diluents, maximum motility percentage, motility duration, fertilization and hatching rates were obtained in amur carp with RPMI+DMSO. In case of common carp, the higher percentage of viability and fertility rate were observed in PBS+DMSO. In case of embryonic development, TRIS+DMSO+Glucose and PBS+DMSO gave much satisfactory results.

**Keywords**: Cryopreserved milt, Cyprinus carpio, Cyprinus carpio haematopterus.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### PREVALENCE AND ANTIBIOTIC SUSCEPTIBILITY PATTERNS OF COLISTIN RESISTANT GRAM-NEGATIVE BACTERIA FROM DELHI STRETCH OF RIVER YAMUNA, INDIA

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#### **ABSTRACT**

The emergence and dissemination of polymyxins resistance in Gram-negative bacteria creates great health care problems throughout the world. Colistin, a drug of last resort has been used for a while for the treatment of infections caused by Gram-negative bacteria. But, increasing prevalence of colistin resistance among Gram-negative bacteria is the major concern because of the limitations in the choices of effective antibiotics. Additionally, plasmid-borne mobile colistin resistant (mcr) gene-mediated colistin resistance has been reported in the environment and clinical bacteria from various part of the world, is the major concern. The aim of the present study to determine the prevalence of colistin resistant Gram-negative bacteria fromhighly polluted Delhi stretch of river Yamuna andsusceptibility patteragainst a wide range of antibiotic. For this, water samples were collected from three different sites of Yamuna river, Delhi stretch, India and 63 Gram-negativebacterial isolates were obtained using different selective media. All the pure isolates were screened for collisting sistance by MIC assay as per CLSI guidelines and 19 ( $\sim$ 30%) were foundresistant. Antibiotic profiling results showed isolates were high resistance towards antibiotics cefepime, ampicillin and rifampicin. Analysis of antibiotic profiling data revealed that 24 isolates having multidrug resistance (MDR) property. Further, minimum inhibitory concentration (MIC) for ampicillin, tetracycline, ciprofloxacin and rifampicin were performed which ranged at 64 - > 256, 2 - > 256, 0.5 - > 128 and  $16 - 64 \mu g/mL$  respectively. The high prevalence of colistin resistance in the urban aquatic environment highlights the devastating conditions of water bodies that can easily reach up to the human food chain, is a major concern.

**Keywords:** Yamuna river, Gram-negative bacteria, colistin resistant, multidrug resistant.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ROLE OF MELATONIN IN AMELIORATION OF BPS INDUCED TESTICULAR DAMAGES

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#### **ABSTRACT**

Bisphenol S (BPS) is a chemical which is used to replace the potentially toxic Bisphenol A (BPA) in making plastics, thermal paper, resins etc. Recent studies documented the detrimental effects of BPS on human health. The aim of the present study was to investigate molecular mechanisms underlying BPS induced testicular dysfunctions and its possible amelioration by melatonin. Animals were divided into four groups. Group I: control (vehicle treated), group II: melatonin treated (5mg/kg BW/alternate day; i.p. injection), group III: BPS treated (150mg/kg B W/day) and group IV: BPS plus Melatonin treated. All the doses were given for 28 days. Our results documented that exposure to Bisphenol S (BPS) alters serum hormone profile (testosterone, estradiol, T3, T4 and insulin), leads to degenerative changes in testes as evident by reduced germinal epithelium height, seminiferous tubule diameter, exfoliation of germ cells and lumen devoid of sperm, alters sperm parameters (declined % sperm motility, viability and decreased sperm count). BPS exposure leads to testicular oxidative and nitrosative stress as evident by decreased SOD/catalase activity and enhanced reactive nitrogen species and lipid peroxidation levels. BPS downregulated expression of testicular thyroid hormone receptor (TR-±) and Dio-2 expression that further induces germ cell apoptosis (increased caspase-3 expression). BPS exposure also induces testicular metabolic alterations (reduced IR and GLUT-1 expression). Melatonin treatment protected testes from detrimental effect of BPS and restored normal testicular functions. Thus, we may suggest that melatonin can be a protective molecule against environmental contaminants (BPS) induced male infertility.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### IMPACT OF WELL-ORCHESTRATED PHARMACOKINETIC PROPERTIES OF CURCUMIN ON PYGB EXPRESSION IN CANCER CELLS

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#### **ABSTRACT**

Metabolic reprogramming provides energy and several factors in adaption of cancer cells in nutrient deprived condition. In this circumstance, the glycogen metabolism is stimulated by activity of glycogen phosphorylase (PYGB) to synthesis glucose for increasing the cell proliferation and resistance to anticancer regimens. Hence, this study focused on assessment of pharmacokinetic properties of curcumin to alter the PYGB expression. The pharmacokinetic properties of curcumin were done byadmetSAR database and SwissADME web tool. Further molecular docking showed that curcumin has efficiency to perturb structural PYGB protein with binding energy (-24.62 kcal/mol).The CABS-flex2.0 server calculated the RMFS (root mean square fluctuation) value of the docked PYGB to know the flexibility of the interacted residues (GLU124, SER651, GLN96, LYS655, GLU121, and LYS551).The STRING database was employed for PYGB protein-interaction network (PIN) assessment explaining that along with PYGB, function of other proteins like: PYGL, PYGM, NSRP1,C6orf221, and APOA1BPmay also be altered by using of curcumin. This study indicated that the curcumin can alter the process of metabolic reprogramming by targeting various factors related to carcinogenesis in stress condition.

**Keywords:** Curcumin, Cancer, Glycogen phosphorylase, Pharmacokinetic properties, STRING database.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### IMPACT OF A MASSIVE FLOOD ON THE HYDROBIOLOGY OF KOCHI COASTAL WATERS

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#### **ABSTRACT**

The state of Kerala experienced the worst flood in its history during August, 2018, ever since the "great flood of 99" occurred in 1924. Though the heavy rainfall events happened mainly in four districts in central K erala, the floodwater eventually accumulated in the Cochin backwaters through six of its major tributaries, before they flushed out into the Arabian Sea through either its Kochi or Munambam openings. In the current study, coastal hydrography off Kochi that was acquired just before and during the flood event in August 2018 was compared with normal SWM conditions that prevailed in August 2014 and 2015. The SWM hydrography of August 2014 and 2015 revealed upwelling waters in the subsurface and a low saline lens in the top layer with a high concentration of chlorophyll-a (>3 mg m-3). The impact of floodwater was found in August 2018, even at a distance of 7 km from the Kochi inlet, as a low saline plume that was 3 m thick before the flood that expanded to 8 m and occupied the upper part of the water column. It was evident that the flood water decreased the total chlorophyll-a concentration and microplankton abundance in the study zone. During the typical SWM in August 2014 and 2015, the nano-size fraction of phytoplankton dominated the chlorophyll-a (>70 %), but the micro-size fraction dominated (50 %) during the August 2018 flood time. All these suggest that the dilution effect of the flood could noticeably decline the phytoplankton biomass and abundance even at 7 km out to sea from the Kochi inlets, although it is unknown how this affects the higher trophic levels.

Keywords: Flood, freshwater influx, phytoplankton, microplankton, south-eastern Arabian Sea.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### CURRENT NEEDS OF MAKING CHANGES IN TRANSPORTATION AND ENERGY POLICIES TO MITIGATE THE BAD AND HARMFUL IMPACTS OF ENVIRONMENTAL POLLUTION: AN INDIAN PERSPECTIVE

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#### **ABSTRACT**

Background: Progression of chronic kidney disease (CKD) is a major problem in Nephrology which leads to end stage renal disease (ESRD), and later on require renal replacement therapy (RRT) or renal transplant. Primary causes of CKD include Diabetes mellitus, hypertension, obstructive nephropathy, cystic nephropathy, glomerulonephrities with renal fibrosis being a common histological finding. It has been estimated that approximately 10% of world population is affected with CKD. Transforming growth factor-\(\beta\)1 (TGF-\(\beta\)1) acts as the prime mediator in fibrotic response along with the renal fibrosis. Sodium-copper chlorophyllins (SSC), due to inhibition of TGF-\(\beta\)1shows some anti-fibrotic property which in turn slow down the enhancement of kidney disease in a given population or a human model.

**Hypothesis:** The administration of sodium-copper chlorophyllin supplements will help in decelerating the progression of CKD in a given population.

**Methods:** A prospective study was performed on the selected population. In addition to the standard treatment for CKD, the individuals of the selected Population were also given sodium-copper chlorophyllin supplements. To accesses the changes in level of serum creatinine concentration, serum urea concentration, urine protein and eGFR in the sodium-copper chlorophyllin treatment group, Repeated Measure ANOVA test was opted.

**Results:** During the first, second and further follow ups taken, minor differences were observed in values of serum creatinine concentration, urine protein concentration and eGFR in the group undergoing treatment.

**Conclusion and clinical importance:** Sodium-copper chlorophyllin supplements are used as a traditional medication in various civilizations. Their efficacies were proven valid in the chosen population. But a further study is also needed to prove its potency in large population.

**Keywords:** Chronic kidney disease, end stage renal disease, renal replacement therapy, fibrosis, transforming growth factor-ß1, sodium-copper chlorophyllin.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### BIO-EFFICACY OF ANTIFUNGAL ACTIVITY OF SFE OF AILANTHUS EXCELSA AGAINST ALTERNARIA LEAF BLIGHT OF SUNFLOWER

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#### **ABSTRACT**

Ailanthus excelsa which is usually called as tree of heaven is known to possess anti- fungal activity. The bio constituents such as flavonoids and phenols which are present in the leaves of Ailanthus excelsa is known to possess anti- bacterial, anti- fungal properties. This experiment was conducted to study the fungicidal activity of Ailanthus excelsa against Alternaria leaf blight of sunflower caused by Alter naria helianthi. For evaluating its activity against Alter naria helianthi spore germination technique was followed for different concentrations of leaf extract of Ailanthus excelsa. Results revealed that maximum inhibition of spore germination of 99.80 per cent was observed in 10 per cent concentration which was on par with 9 per cent concentration of leaf extract of Ailanthus excelsa (98.82%) and the minimum inhibition of spore germination was observed at 1 per cent (35.18%) concentration. Under field conditions, PDI of 10.15 per cent was observed after second spray of SFE of Ailanthus excelsa at 10 per cent concentration whereas, 9 per cent of SFE of Ailanthus excelsa showed 12.38 per cent of PDI. At 1 per cent concentration of SFE of Ailanthus excelsa showed 20.97 per cent of PDI after second spray. The yield was higher at 10 per cent concentration of SFE of Ailanthus excelsa i.e, 8.68 q ha<sup>-1</sup>.

**Keywords:** Allanthus excels. Alternaria leaf blight, sunflower, Alternaria helianthi.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### NEW INSIGHTS IN CLIMATE CHANGE MITIGATING TECHNOLOGIES BY MEAN OF SCCS: A RELIABLE ALTERNATIVE FOR SUSTAINABLE ENVIRONMENT

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#### **ABSTRACT**

Severe annual rise of 3.1% CO $_2$  emissions (mainly fossil fuels consumption) for the past three decades is alarming for countries like India. Thus, to limit CO $_2$  emissions is a major concern. Fall of global temperature below  $1.5\,^{\circ}$ C is possible by Carbon capture and storage (CCS) of nearly  $10\,$ Gt/year. CCS techniques by mineral sequestration needs to be greatly enhanced so that the global warming effect can diminish. CCS in geological formations is considered as one of the best options as the injected CO $_2$  get interlocked in the lattice structure of the newly formed carbonates. The Ca $^{2+}$ , Mg $^{2+}$ , and Fe $^{2+}$  enriched thick lava flows of continental flood basalt plays a considerable role in the global carbon cycle. These lava flows offer rapid mineralization to enable mineral sequestration of CO $_2$ . However, effective storage in subsurface require longer time and prevention from leakage of inject CO $_2$ . Thus, the cost of injecting CO $_2$  for CCS is much higher as compared to the outputs attained. Therefore, more effective techniques are required which provides safe and rapid CCS in much lesser time

Surface carbon capture and storage (SCCS) technique is introduced by us for the first time to overcome this issue. In this process, after capturing the gases from the industry (e.g., cement and steel industries) it has to be reacted for basalt rockwater-CO2 carbonation reaction in a closed system environment in the plant built next to it. For this purpose, numerical simulation and laboratory experiments were performed. Thermodynamic modelling results at  $100^{\circ}$ C show negative  $\Delta$ G,  $\Delta$ H and  $\Delta$ S, suggesting spontaneous, exothermic, and less disordered dissolution of plg., pyx, and mag., thus, the obtained values favour progression of the carbonation reaction. Log Q/K values for aragonite and calcite indicate that plg. and pyx.precipitation was initially slow, but later log Q/K gradually increases with the progression of run time and saturation is achieved. Precipitation of aragonite, calcite and siderite is moderately affected by surface density factor ( $\lambda$ ) and nucleation rate coefficient (k\_N). On nucleation rate equation, carbonate precipitation rate shows variation with  $\lambda$  and k\_N values and  $\lambda$  is  $10^{\circ}$  fold higher than the normal rate of reaction rate for 5 and 10 bar pCO $_2$ . Mineral sequestration are of 55.31% was achieved in 50 hours of laboratory experiment at  $100^{\circ}$ C under 5 bar CO2 and 8 pH. Obtained results indicate that Deccan basalt rocks possess more CCS potential in less time. Additionally, the neo-formed carbonates (crystallographically similar to the naturally formed) can used as by-productsand find application in cement, cosmetic, pharmaceuticals, paints, etc. industries.

**Keywords:** Carbon Capture and Storage (CCS), Carbonates, Climate change, Deccan basalt, Dissolution and Nucleation rate, Gibbs free energy and Numerical simulations.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### **HERBS - BOON THAT BEHOLDS MAGIC**

#### Amogha G Paladhi and Manjunath BT

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#### **ABSTRACT**

Plants that used for treating ailments or injuries are herbs, these herbs for m a liaison with humans especially human health. The health sector of India is known to use herbs since ages and that system of medicine is known as Ayurveda. The practice of Ayurveda is based on the knowledge obtained by Vedas. It is a scientific study that uses the biomolecules, metabolites of plants for treating various diseases and ailments. The Granthas that give the detailed description of the herbs and the methodology of its usage is necessary to understand to overcome the health problems which requires proper identification, cultivation and processing. The usage for herbs have very negligible to nil side-effects when used appropriately as it includes the ingestion or application of the entire plant part as such or after proper processing that can directly work on Saptha Dhatus that are the sub-doshas of Tridoshas which is the combination of Pancha Mahabhoota instead of isolating one biomolecule or few to treat the ailments. The main aim of A yurveda and usage of herbs is to bring upon a balance between the Tridoshas failing of which the elimination of Tri Malas will not be effective and the information regarding the healing proper ties of the herbs are composed in the form of Shlokas. The herbs used for the ailments that are common in the recent days are studied here like Diabetes, Liver, Kidney, Skin, Nervous system and Heart related issues.

**Keywords**: Herbs, Health, Ayurveda, Saptha dhatus, Tridoshas.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### CONSERVATION AND SUSTAINABLE USE OF ENDANGERED HIMALAYAN SPECIES: A CASE STUDY IN POLYGONATUM VERTICILLATUM LINN

#### **Anchal Rana and Ashok Kumar**

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#### **ABSTRACT**

Polygonatum verticillatum Linn, is a well-documented rejuvenating Himalayan herb, and presently reported as endangered. Under a scientific strategy for sustainable use to serve as exemplary, a gene bank of 150 accessions was established at Forest Research Institute High Altitude Herbal Garden, Chakarata, Uttarakhand at 2600 m amsl without causing genetic erosion. The accessions were analysed for morphological traits, growth parameters and phytochemical profiles to screen promising genotypes. The diversity studies based on morphological and chemical markers revealed a high level of diversity among the sampled populations. Phytochemical analysis discovered varying quantities of flavonoids, saponins, quinones, phenols, cardiac glycosides, terpenoids, steroids and fatty acids amongst the genotypes. The GC-MS profiling divulged  $\gamma$ -sitosterol (antidiabetic), diosgenin (progesterone precursor, neurological disorder), stigmasterol, B-sitosterol (Covid-19) and ethyl and methyl linoleate. Significant correlations were obtained among morphological parameters. However, none of the morphological traits could be significantly correlated with presence or amount of any biochemical obtained in the phytochemical analysis. The field expedition exposed serious illegal trading of this herb through local community in pretext of providing employment but with irrationally low wages leading to rampant exploitation. The psychotherapy depicted lack of proper knowledge in local communities as well as absence of proper value chains and policies for sustainable use of forest resources. Indian mountains and forests are treasure house to livelihood, yet unemployment forces migration of locals, which further enhanced under Covid-19 pandemic. A vailability of authentic source of bio-diverse and genetically promising stocks can play a complementary role in encouraging locals towards far ming of medicinal plants, thereby achieving greater sustainability.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ANIDRA - A COMPARATIVE STUDY BETWEEN AYURVEDA AND NUTRACEUTICAL

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#### **ABSTRACT**

Aahara (Diet), Nidra (Sleep) and Bramhacharya (Abstinence) are considered as Traya Upastamba means the three sub pillars on which the health of any individual lies. These three sub pillars can be compared with health behaviour of modern day and are major contributors of both mortality and morbidity of a number of disease and health issues and their consequences globally. In this review article we will explore the Nutraceutical used in Ayurveda for the Anidra (Insomnia). Various data bases where search along with the classical Ayurveda text, by using MeSH terminology like Anidra, Insomnia, Ayurveda, Nutraceutical etc. are available. The article published online in the reputed journal written in an English language are preferred for the reference of present study. The modern medical science is still not having a definite treatment for Insomnia. Most sedative hypnotic drugs generally used for Insomnia produce dose dependent depression of central nervous system function. The union of Nutraceuticals with Ayurvedic extracts brings the long-standing consumer acceptance for Insomnia. In Ayurvedic classical text, holistic approach has been applied while treating Insomnia like Sarpagandha, Jatamanshi, Ashwagandha etc. & Nutraceuticals shows a remarkable positive effect like Melatonin, L-Tryptophan, Chamomile etc. The findings of present study will be revealed at the time of presentation.

**Keywords:** Anidra, Ashwagandha, Ayurveda, Chamomile, Insomnia, Jatamanshi, L-Tryptophan, Melatonin, Nutraceuticals, Sarpagandha, Sleep.











### Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE)

22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### A SUSTAINABLE WAY TO REMOVE ARSENIC CONTAMINATION USING BIOCHAR

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#### **ABSTRACT**

Due to Industrial development and increasing population, various contaminants enter our environment, and this causes a threat to the indigenous microfauna and flora. Arsenic (As) is metalloid and geogenic in origin. Excess concentrations of As above 10 ppb in drinking water adversely affect human health as well as other living organism in the ecosystem. Above 20 ppm As in soil impinges plants' health as well as enzymatic activities, and eventually reduces productivity. Nowadays, biochar gained more attention due to its adsorption capacity. It has been used not only to remove contaminants from water and soil but also for the fixation of carbon and help in mitigating climate change. Biochar is carbonaceous material, primarily composed of amorphous, aromatic carbon, and possesses abundant 0 -containing surface functional groups (e.g., -C=0, -C00H, and -0H). Adsorption properties of biochar mainly depend on the type of feedstock and pyrolysis temperature. The functional groups present in biochar help in adsorbing the contaminants from wastewater. In this study, pristine and Fe-Modified biochars have been prepared at different temperatures 500, 600, 700°C in a muffle furnace from water hyacinth (Eichhornia sp.) which is listed in the 100 most destructive invasive species in the world. The highest As adsorption has been observed in the magnetic biochar EMBC 84% at pH 7.5 as compared with pristine EPBC 22 % at pH 7.5. Thus, it is concluded that the utilisation of water hyacinth for biochar is achieving the goal SDG-6 as well as waste management and its Fe-modification customizes the porous structure and surface (functional groups) to adsorb the As. Biochar has attracted much work to remove different natures of contaminants from wastewater as well as soil.

**Keywords:** Arsenic; biochar; water hyacinth; adsorption, oxygen containing functional groups.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### RETENTION OF ALLELOPATHIC PROPERTIES OF EXTRACT AND ESSENTIAL OIL OF OCIMUM FORMULATED WITH BIOCHAR FOR WEEDICIDAL PROPERTIES

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#### **ABSTRACT**

Increasing concerns about the negative effects of synthetic herbicides on the environment and the growing interest in organic agriculture demand for alternative weed control methods. The aim of this study is to identify the allelopathic properties of Ocimum extract and essential oil loaded on biochar, to introduce them as a tool for sustainable bioherbicide development. Prepared formulations were assayed against seven distinct weed species: *C. rotundus, A. arvensis, C. album, A. viridis, D. sanguinlis, G. subfalcata*, and *S. arvensis*. The interaction of Ocimum extract and its essential oil with biochar was evaluated using Fourier-transform infrared spectroscopy (FT-IR) and scanning electron microscope (SEM). The leaching experiment demonstrated the sustained release of phenolic by for mulations followed First-order kinetics and Ritger-peppar, Higuchi, and Parabolic diffusion models. The results indicate that formulations were most effective for the weeds are *C. rotundus*. *A. arvensis. and A. viridis*.

**Keywords:** Allelopathic, biochar, bioherbicide, phenolic content.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### TECHNOLOGICAL ADVANCEMENT FOR PREPARING NANO-CELLULOSE: A SHORT REVIEW

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#### **ABSTRACT**

The most commonly used fibre, cellulose, has been extensively used in a variety of applications. Its uses in numerous areas have been stimulated by its impressive nanofibril arrangement. The rapidly growing area of sustainable materials and nanocomposites is boosted by novel nanocellulose. The production of cellulose composites has changed in recent years, with the two most significant uses being in the fields of medicine and the environment. The material has its exceptional qualities, including abundance, high aspect ratio, superior mechanical properties, renewability and biocompatibility, nanocellulosic materials have attracted increasing interest. A large amount of hydroxyl groups helps in the functionalization of different groups through chemical processing, which results in the development of different materials with the adjustable property. Due to its abundance in nature, environmental kindness, reprocessibility, and high degradability nano cellulose has recently attracted a lot of interest as an excellent 1D material. This interest extends to nano cellulose in all of its forms like cellulose nanocrystals, cellulose nanofibers and bacterial cellulose. Although nano cellulose's hydrophilic character has limited its use in a variety of uses, the existence of a functional group on its surface offers a base for surface modification using a variety of methods. Researchers have looked into the possibility of using cutting-edge processing techniques to prepare nanocellulose, such as microwave irradiation, deep eutectic solution, enzymatic processing, cold plasma, electron beam irradiation and pulse electric field method. In this study, we will discuss the molecular composition of nano cellulose, its different types, normal production processes, surface alteration and general applications.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### ROLE OF CLASSICAL TRAINING IN MODIFYING AGE DEPENDENT STRESS – AN ONLINE SURVEY BASED ANALYSIS

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#### **ABSTRACT**

Classical training or dance, a physical activity accompanied with music of a certain tempo, rhythm and dynamics is performed across different cultures and can bring in significant contribution to the health of a person. Bharathanatyam (BN), a classical and comprehensive art flourishing in India comprises of various postures, rhythmic body movements, meaningful hand gestures(mudras) and vivid facial expressions. It reduces body fat, anxiety and depression and improves stamina, pulmonary efficiency and cardiovascular health. Further, studies also indicate that Dance Movement Therapy to be beneficial on overall health of an individual, however studies regarding a specific Indian classical dance form like BN with respect to stress effects and other factors is not yet studied. To understand this, we conducted an online survey to get a preliminary idea about the effect of BN on stress and general health in randomly participated women candidates (N = 243) from the age group of 18 to 37. From the survey, a higher level of stress was observed in the untrained group irrespective of age when compared to the trained group which in turn proves that BN can also be used as a therapeutic tool for reducing stress as well as improving the wellbeing of an individual and can be a useful alternate to prevent the onset of age related neurodegenerative disorders.

**Keywords** – Classical training, stress, health.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### ROLE OF HERBS IN WATER PURIFICATION: FROM ANCIENT TO MODERN ERA

#### Apurva Priyadarshi and Bhuwal Ram

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#### **ABSTRACT**

Among the basic requirements for human existence water attains high priority. This has been realized from very ancient time that the consumption of pure water ensures the healthy status. The concept of impure water as well as tools and methods for its purification has been indicated, discussed and explained in several ancient literature. Ayurveda had several texts which focus on this matter and provide various methods for making the toxic water drinkable. Sushr uta Samhita has elaborated many plants which play ver y important role in this context. In addition to the names of these plants their derivatives and methods of its application has also been elaborated. The classics of Ayurveda like Ashtanga sangraha and Ashtanga hridayam discuss its extension by adding some more herbs to it. The text of Kautilya Arthashastra keeps it extending to another level by adding method of entoxicating and detoxifying the same sample for different purposes. Varahamihir in Vrihatsamhita has added more techniques for purifying the water. Nowadays the several herbs are extensively and successfully experimented for this purpose but the techniques have gone to a level of making nanocomposite and magnatic bio-adsorbent for removing the heavy metals like As, Pb, Hg from impure as well as waste water. Details will be elaborated at the time of presentation.

**Keywords:** Avurveda. Sushruta Samhita. Vrihatsamhita. magnetic bio-adsorbent, nanocomposite.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### CLIMATE CHANGE AND ITS IMPACT ON DIFFERENT INDIAN REGIONS

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#### **ABSTRACT**

Climate change is one of the main environmental challenges facing the world today. That has become inevitable and tougher to deal with since the era of post industrialization and the process of technological revolution have begun. India is basically an agricultural nation and the challenges of climate change hold much more importance to get addressed at the first instance than any other issue. Climate change is associated with various adverse impacts on agricultural productivity, water resources, forest and biodiversity, increase in temperature, social, economic, political and most importantly moral and ethical issues. Various scientific assessments and special reports brought out by the Intergovernmental Panel on Climate Change (IPCC), which reveal that there is discernible human impact on the climate system, which shows at the national level, about 45% of the forest grids. These are changing vulnerability assessment showed that such vulnerable forested grids are spread across India. The geographical region of India has experienced notable changes in the pattern of major climatic variables such as rainfall and temperature. Average temperature are projected to increase in almost all the states of India, while annual rainfall is also reported to increase in almost 7 to 8 states. The climate-induced natural disasters like drought, flood and hailstorms are the major threats of climate change. The incidence of these natural disasters is increasing in the recent years over the region. Various studies reveals that the climate change impacts on regional level also need to be categorized based on various climatic elements like rainfall, temperature, CO2 concentration, including their cumulative responses.

**Keywords:** Climate change, Global warming, Greenhouse gas, Impacts of climate change, IPCC.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ROLE OF VYADHIKSHAMATVA IN THE PREVALENCE & MANAGEMENT OF RAJAYAKSHMA (PULMONARY TUBERCULOSIS)

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#### **ABSTRACT**

The global burden of tuberculosis is increasing, even though it is preventable and curable it hampers the quality of life of the individual. Rajayakshma is a syndrome consisting of diseases associated with dhatukshaya (depletion of tissue elements) which results in immunodeficiency state followed by opportunistic infections, most common being tuberculosis. Immune deficiency is the prime predisposing factor for the development of Rajayakshma. The modes of transmission of communicable diseases (Aupsargikaroga) described by Acharya Sushruta are relevant even in current scenario and avoiding these modes helps to interrupt transmission of communicable diseases like tuberculosis. Since the entry of infective agent favored by susceptible host (vyadhiasaha), the prevention and management modalities should be focused on enhancing the immunological status of the individual along with the classical treatment protocol. Rasayana (Rejuvinative) and Ojovardhanadravyas (immunomodulatory) are the group of medicines which boost the adaptive immune mechanisms and balance the immune homeostasis. It include single herbal medicines like Amalaki, Aswagandha, Pippali, Guduchi and Yastimadhu etc and also for mulations like Chyawanprash, Elakanadikashaya etc. which provides symptomatic relief and improves the vitality and bio-strength. Since the population is facing various global treats like pandemic spread of corona virus disease (COVID-19), a compromised immune system is always an open way for infectious diseases. So it is the need of the hour to develop a good immune status for prevention and limiting severity of the disease.











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### DOUBLE TAILED COMPARATOR IN CASCADED FAISHON EMPLOYED FOR EEG APPLICATION

#### Aryan Kannaujiya

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#### **ABSTRACT**

This brief shows the necessity of power consumption in a dynamic cross-coupled latch-based comparator. The proposed comparator is mainly designed using a cascading method that benefits in lowering power consumption as well as energy which is suitable to employ in EEG (Electroencephalogram) applications and other cardiac IMD (Implantable Medical Devices). The latched comparator as analog to digital converter serves a critical function in terms of the amount of power consumed. This work presents a cascaded comparator circuit simulated using CMOS technology at 180nm, Mentor Graphics Tool. The simulation result shows power dissipation 19.126 W at 0.8V supply voltage and 19.19 W at 0.6V supply voltage which is quite less than the existing comparator circuits. In addition, the power delay product of the proposed comparator is 0.383pJ when the supply voltage is 0.8V, and it is 0.0384 when the supply voltage is 0.6V. The proposed comparator compares the brain signal and reflects the output accordingly. Thus, it is easily implemented in EEG applications.

**Keywords:** Latched comparator, EEG, Double-tail, Power analysis, Cascaded comparator.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### A COMPREHENSIVE TECHNO ANALYSIS OF BIOMEDICAL & COVID WASTE-RELATED HANDLING AND MANAGEMENT SITUATION IN INDIA

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#### **ABSTRACT**

The introduction of the COVID-19 pandemic in the true sense has largely influenced the dynamics of biomedical waste (BMW) generation. With limited access to common biomedical waste treatment facilities (CBMWTFs), pertinent management of COVID-related BMW (CBMW) was indeed a protruding challenge for India. Irrespective of all shortcomings, India had successfully demonstrated the management of more than 700 tons of combined BMW management during the peak of the second wave. The most promising measures of comprehensive response against the battle with COVID-19 can be summarized as swift issuance of COVID waste management guidelines, the introduction of COVID19BMW mobile application, rolling out of the indigenously developed vaccines with one of the highest global vaccination rates, making alternate arrangements of CBMW disposal in industrial waste management facilities etc. The rigorous effort from the state and national level statutory bodies ensured attaining improved source segregation of BMW led to a noticeable decrement in waste generation. Existing review works related to CBMW management in India are mostly oriented across the on-field challenges and technical interventions to overcome them. While the present review offered a more wholesome approach with a unique analysis on the identification of actual shortcomings and catered tentative solutions related to biomedical and COVID waste management.

Keywords: Biomedical waste, Common biomedicalwaste treatment facilities, COVID waste, Disinfection, Reuse











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### PHARMACOLOGICAL AND PHARMACEUTICAL SIGNIFICANCE OF ROHITAKA LATA (TENDER BRANCHES OF TECOMELLA UNDULATA SM.) AND ROHITAKA TWAK (BARK)

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#### **ABSTRACT**

Natural products, either as pure compounds or as standardized plant extracts, provide extensive opportunities for new drug leads because of the unmatched availability of chemical diversity. In contrast to modern medicines, herbal drugs are more used now-a-days in different diseases. Standardization is essential tool for establishing quality control methods for Ayurvedic drugs. Acharya Charaka while on describing Rohitakadi yoga, has described Rohitaka lata (tender branches of Tecomella undulata (Sm.) should be kept in decoction of Haritaki or cow urine for a week and the extract is taken to alleviate jaundice (kamala), gulma, prameha, piles(arsha), pleeha (spleenomegaly), udara (enlargement of abdomen) and worms. Same process is done to prepare Rohitakarista (it should have Rohitaka lata according to Acharya Chaaraka) indicated in Sharangadhara samhita. On the other hand, in formulation Rohitakadi ghrita, he has taken Rohitaka twak (bark) indicated in plihabhivridhi (spleenomegaly),gulma, udara roga. This indicates their vast knowledge about active fractions of plants, because during Arista for mation (Rohitakarista), active fraction present in tender branches of Rohitaka (Tecomella undulata) is differ than active fraction present in Rohitaka twak (bark) in Rohitaka ghrita.

So, in this research paper our main emphasis will be on viewing characteristic feature and active fraction of two different parts of same plant (Rohitaka lata and Rohitaka twak). Traditionally Rohitaka twak is used till now everywhere in pharmaceutical industry but we have to keep in mind the instructions of Charakokta Rohitaka lata. This will surely provide innovative guidance to our Ayurvedic Pharmaceutical industry.

**Keywords:** Rohitaka lata, Rohitaka twak, Active fraction.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### CINNAMON INTAKE IN DAILY CONSUMABLE DOSAGE DECREASES FOOD INTAKE IN STREPTOZOTOCIN-TREATED DIABETIC CHARLES FOSTER RATS

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#### **ABSTRACT**

**Background:** Type 2 diabetes and its complications constitute a major worldwide public health threat. Lifestyle modification like dietary modification is the key component of diabetic management whichis cost-effective as well as free from side effects. Spices used in the Indian common diet have antidiabetic and antioxidant roles in consumable doses in diabetic rats. So, in this study, we have explored the effect of the oral feeding of cinnamon in daily consumable dosage on food intake, water consumption, body weight, and blood glucose levels in a rat model of diabetes.

Material and Methods:19 male rats of Charles-foster strain (7 weeks of age;150-160 g bodyweight) were divided into 4 groups as-G1: fed with normal chow diet (control), G2:fed withhigh-fat diet (HFD control), G3: fed with HFD and treated with streptozotocin (diabetic control), G4:diabetic rats fed with cinnamon in daily consumable dosages (14mg/day). The diabetic model was created by streptozotocin treatment (35 mg/kg BW; i.p.). Food intake, water consumption, and body weight were recorded on daily basis, while fasting blood glucose was performed weekly.

**Result:** Cinnamon treated group has lesser food intake as compared to other three groups (p = 0.00, 0.00, 0.00 respectively). Non-treated diabetic rats and cinnamon-treated diabetic rats have higher water intake than the control group (p = 0.00, 0.001 respectively). Bodyweight is comparable in all groups. Fasting blood glucose is higher in treated and non-treated groups in comparison to the control and HFD control group (p = 0.00, 0.00, 0.00, 0.00 respectively), but in between the non-treated diabetic group and cinnamon-treated diabetic group has no significant difference in fasting glucose level.

**Conclusion:** Cinnamon intake in consumable dosages decreases food consumption in STZ-induced type 2 diabetic rats, while there is no change in body weight and fasting blood glucose level and water consumption.

**Keywords:** Type 2 diabetes, High Fat Diet (HFD), Streptozotocin treatment, Cinnamon intake, Fasting Blood Glucose (FBG) level.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### RELEVANCE OF VRKSHAYURVEDA IN SUSTAINABLE FARMING AND TRADITIONAL HEALTH CARE: A REVIEW

#### Ayush Kumar Garg and Binay Sen

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#### **ABSTRACT**

To fulfil the increasing demands of the phar maceutical industry, it is now essential to conserve and produce valuable medicinal plants due to rising deforestation, over consumption of natural resources, and plant extinction. Vrkshayurveda is the branch of science that deals with traditional health care and plant science, especially regarding the numerous species of trees and their healthy growth and culture, including soil conservation, water management, germination and sprouting, watering plans, control of diseases and pests, seed collection and storage, employment of organic fertilizers, and the treatment of various ailments affecting them. The traditional agricultural techniques described in the Vrkshayurveda have proven to be more successful in this regard. This essay emphasizes the significance of organic farming and research studies that have been done on these traditional methods that can be successfully used for the conservation and cultivation of medicinal plants in the current environment.

**Keywords:** Agriculture, Ayurveda, Deforestation, Nursery Techniques, Vrkshayurveda.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### MONITORING OF LAND USE LAND COVER DYNAMICS FOR SUSTAINABLE PLANNING: A STUDY OF GAUTAM BUDDHA NAGAR DISTRICT, INDIA

#### Bhavna Singh and V. Venkatramanan

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#### **ABSTRACT**

Land use land cover (LULC) changes occurred in the study area due to the introduction of new economic policy and creation of Special Economic Zone that resulted in inflow of people and infrastructure development. Therefore, spatiotemporal analysis is essential for monitoring and understanding the human-induced landscape changes using satellite-based earth observation. The purpose of the present study is to analyse the changing pattern of LULC, identify its driving factors and policy gaps in Gautam Buddha Nagar district. The study used Landsat satellite data for the years 1989, 2000, 2010 and 2020 to determine changes using supervised classification. The result illustrates that urban area and barren land increased by 12.51% and 6.01% respectively, with a considerable decrease in agricultural area (-17.31%). It is also observed that waterbody and green cover areas have declined. The urban expansion has caused the conversion of natural surfaces and impacted vegetation cover, which leads to environmental problems. Moreover, the northern part of the district has undergone drastic changes in LULC, while the southern part has experienced the least change. The study area consists of two large urban agglomerations, namely Noida and Greater Noida, that are showing continuous rapid urban development. Thus, knowledge of changes will help decision makers and planners to overcome challenges and formulate new policies for building sustainable cities and providing a sustainable environment to the people.

Keywords- Land use land cover, urban expansion, Special Economic Zone, Sustainable, Gautam Buddha Nagar.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# ORGANIC AMENDMENTS WITH BIODYNAMIC PREPARATION FOUND EFFECTIVE IN IMPROVING SOIL PHOSPHORUS DYNAMICS AND P UPTAKE IN MEDICINAL CROPS

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#### **ABSTRACT**

Low phosphorus (P) use efficiency necessitates high rate of P fertilizer application in most of the agricultural soils. The high rate of P fertilizer application is unaffordable for resource poor smallholder farmers who constitute the majority in the developing countries including India. So, attempt has been made to evaluate effect of locally available organic sources (FYM, Vermicompost and Castor cake), biodynamic preparation (jivamrut) on soil P dynamics and P uptake. Two-years consecutive field study indicates that the organic fertilizers along with jivamrut quite promising in improving plant P uptake and available P pools as compared to chemical P fertilizer. The 2-years cumulative P uptake was significantly higher in the treatment receiving vermicompost (37.5-39.4 kg ha-1) and castor cake (35.2-36 kg ha-1) along with jivamrut as compared to chemical P fertilizer (25.4-31.9 kg ha-1). The same organic treatments recorded a high recovery of P, which indicates the native use of P, which also results in a negative balance of P. A positive correlation between the plant and soil P parameters indicates that the organic P source contributed to the plant P uptake by improving soil P availability. So, organics like FYM, compost and oilcake could be an effective substitute of chemical P fertilizer.











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## ESSENTIAL OILS AND AROMA THERAPY - A BRIEF OVERVIEW ON INDIAN INITIATIVES

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#### **ABSTRACT**

The term "aromatherapy" is a combination of the words "aroma," which connotes "fragrance" or "smell," and "therapy," which denotes a sort of treatment. Since ancient times, India has recorded a history of employing fragrant herbs in its Ayurvedic therapeutic practices. The utilization of aromatic herbs with essential oils in the past includes dhuma (smoke), dhupana (fumigants), nasya (snuff), snana (baths) and various other procedures. Essential oils, which are highly concentrated substances derived from flowers, leaves, stalks, fruits, and roots as well as distilled from resins, are used as the primary therapeutic agent in aromatherapy. Ayurvedic medicines like Aguru, Guggulu, Kumkuma, Usheera, Jatamansi, Musta, Chandana, Tejapatra, Tvak, etc. that include essential oils are described. These plants containing essential oils have antimicrobial, antibacterial, anti-inflammatory, and antiviral properties that are beneficial for treating conditions like Alzheimer's, cardiovascular disease, cancer, labor pain during pregnancy, and sleep diorders. Upon inhalation, their mechanism of action involves signal transmission from the olfactory bulb to the limbic and hypothalamus regions of the brain. These stimulation secrets messengers such as serotonin, endorphin etc., to create link between our nervous and other systems providing a feeling of relief. It is essential to utilize the herbal aromatherapy knowledge explained in classics in promoting and treating clinically diagnosed medical ailments.

**Keywords:** Aromatherapy, Essential oils, Ayurveda.











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#### AMELIORATIVE ROLE OF ALOE VERA (L.) AGAINST DIABETES-ASSOCIATED OXIDATIVE STRESS INDUCED TESTICULAR HYPO-FUNCTION IN MALE ALBINO RAT: A COMPARATIVE STUDY WITH METFORMIN, GOLD STANDARD

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#### **ABSTRACT**

Combating the rising incidence of diabetic cases and its complications is a major challenge nowadays. To tackle this situation different strategies have been made by WHO. Herbal drug with a multi-target approach is one of them. The study has been designed to establish the most potent dose of the n-butanol fraction of Aloe vera (L.) for the management of diabetes-induced testicular hypo-function and a comparative analysis was done with the standard drug, Metformin (2 mg/100 g of body weight/day). Diabetes was developed by a single injection (intramuscular) of streptozotocin at a dose of 4 mg/100 g body weight. Treatment was continued for 28 days with three doses (2.5, 5, and 10 mg/100 g of body weight) of n-butanol fraction of Aloe vera (L.). Fasting blood glucose level at an interval of 7 days was checked. Different spermiological sensors along with the measurement of the activities of anti-oxidative enzymes, carbohydrate metabolic enzymes, and androgenic key enzymes were done. Enzyme-linked immunosorbent assay of serum testosterone, serum insulin, androgen receptor, FSH, and LH were also done. Histological study of the pancreas, liver, and testis was conducted. The phytomolecule (s) present in the n-butanol fraction not only recovered the blood glucose level by stimulating carbohydrate metabolic enzymes but also significant (p. 0.05) improvement in sperm parameters was noted. Diabetes-associated testicular dysfunction condition was also rectified significantly (p 0.05) in fraction-treated groups in comparison to the vehicle-treated diabetic group as well as the metformin-treated group. But the intensity of recovery of testicular parameters showed maximally in 5 mg dose-treated group which is 30-50% more than the recovery level of the standard drug. In conclusion, it may state that phytomolecule (s) regarding this action present in nbutanol fraction of Aloe vera (I.) can be used as an alternative to the gold standard for cafeteria choice.

**Keywords:** Diabetes, Aloe vera (L.), Metformin, Testicular hypo-function, Herbal drug.











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#### ROLE OF AGADA TANTRA IN ENVIRONMENTAL POLLUTION

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#### **ABSTRACT**

Pollution is one of the most dangerous environmental problems the world is facing today. To stop the impending perils that pollution could cause, it is necessary that we start taking some actions to keep our environment safe and healthy. Pollution is the process by which harmful substances, called as pollutants, are released into the natural environment. Agada Tantra, a branch of Astanga Ayurveda that deals specifically with poison identification, forms of poison from the mineral, plant, and animal kingdoms, as well as synthetic poisons and their treatment. The idea of air, water, and land pollution has also been explored in a number of significant literature, and its contribution to diseases and the downfall of civilizations has been clarified. Dincharya, Ritucharya, and Janpadodhvansa are three ways in which our Acharyas, the founders of Ayurveda, have already described environmental wellness. The cumulative toxicity has also been included in the Dushi Visha concept. Pollutants like dust, gases, metals, chemicals, etc. that are regularly exposed to build up in our bodies and act as Dushi Visha. Ayurvedic practices and different kinds of Ayurvedic formulation can significantly reduce the environmental pollution and their bad effects of human body. This review article is a step forward in utilizing our ancient science to identify answers to problems with growing environmental degradation and their management.













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## PROMOTION OF HERBAL MEDICINE AND PROBLEMS THAT NEEDS TO BE ADDRESSED

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#### **ABSTRACT**

In spite of global reorganization and very sound history of traditional uses, promotion of herbal medicine faces number of challenges around the glove mainly in developed nations. WHO incorporates a new global health policy "Health for All in the 21st Century" and set the goal to achieve health security, health equity, increased healthy life expectancy and to ensure access to essential quality healthcare for all. Indian traditional medicinal system like Ayurveda, Siddha and Unani has a very rich history of their effectiveness; modern research also acknowledged the importance of such medicine. The issues like quality control, processing and harvesting of the medicinal plants, irrational use, clinical trials and pharmacovigilance needs to be addressed. Research and development on dosage, processing, techniques are the key need for any drug, but in herbal sector it is quite less compare to allopathic medicine. Several governments recognized laboratories are involved in laying down the pharmacopeial standards, preparation of monographs and Standard Operating Procedures (SOPs) for ASU drugs. Evidence based incorporation of Indian traditional medicine in clinical practice will help to provide quality healthcare to all. Stick implementation of rules, monitoring and periodic revision of regulations are absolute necessary to promote Indian traditional medicine. Overall, adequate knowledge about the system, high quality clinical trial, proper information about such drugs and their effectiveness among common people are required towards the promotion of such medicine.











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## EFFECT OF ENDOTOXIN ON FEMALE REPRODUCTIVE HEALTH: PROTECTION BY MELATONIN

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#### **ABSTRACT**

The association between inflammation and metabolic disturbances leads to various female pathophysiological conditions. We investigated the ameliorative/protective actions of melatonin on LPS-induced ovarian pathophysiology in golden hamsters, Mesocricetus auratus. Hamsters were administered with exogenous melatonin (5 mg/kg BW) and LPS (100 g/kg BW) intraperitoneally for 7 days. LPS treatment impaired ovarian folliculogenesis as evident by histoarchitecture and steroidogenesis. On the other hand, LPS administration also perturbed thyroid hormone (T3 and T4) homeostasis, ovarian melatonin receptor (MT-1) expression, antioxidant potential (S0D and catalase) and concomitantly elevated nitro-oxidative stress (decreased S0D, catalase and elevated CRP, TNF and nitrate/nitrite level) and inflammatory load (NFB and C0X-2) which culminated into ovarian follicular apoptosis (elevated caspase-3). LPS also disrupted metabolic homeostasis as indicated by hyper- insulinemia with a simultaneous decrease in ovarian IR/GLUT-4 and glucose content. Moreover, LPS treatment decreased expressions of key markers of ovarian physiology (SIRT-1, pErk1/2, PI3K and pAkt). Melatonin co- treatment with LPS improve these detrimental changes proposing melatonin as a potent therapeutic candidate against ovarian dysfunction induced by endotoxin. We can draw the conclusion from our study that LPS exposure had profound deleterious effects on ovarian physiology. On the other hand, melatonin supplementation to LPS has alleviated these modulations thus leading it to emerge as a potent therapeutic agent with remarkable capacity to attenuate the ovarian detrimental changes triggered by LPS-induced endotoxemia.











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## TRANSFORMING AANDHI VILLAGE IN ZERO WASTE MODEL BY INTEGRATING GREEN TECHNOLOGY INTERVENTIONS

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#### **ABSTRACT**

The project aims to develop the Aandhi village situated in Rajasthan into an ideal Zero-waste model village, by integrating various sustainable and green technologies. Extensive Investigation of the village concluded in identification of two basic problems: Management of Wastewater and Solid waste. There are few case studies reported in Ambapur, Gandhi Nagar; Chhota Narena, Rajasthan; Hiware Bazar, Ahemadnagar and Jahota, Rajasthan for the development of the sustainable village, but most of them focused on either of the problem-solid waste or wastewater, and the success rate was reported to be high. The current project aims to develop a holistic change in the village through integrated green technology interventions by application of a circular economy approach. The project aims to develop natural, sustainable, user-friendly, affordable technology for wastewater treatment such as, Constructed wetlands for onsite grey wastewater treatment, Vermifiltration technology for hospital wastewater treatment and Biogas plant for converting domestic and cattle waste into energy. In Phase one Constructed Wetlands, Vermifiltration plant and Biogas plant (Integrated with Solar Energy for self-sustainability) were Established. The treated effluents from both the technologies will be used for sustainable agriculture practices. An integrated solid waste management plan has been designed using source segregation strategies, waste collection systems, composting and vermicomposting units for biodegradable waste and recycling strategies. The project is also supported by continuous awareness & sensitization campaigns and health check-up campaigns for local population participation. Health Camps and free blood test camps were Organized for the well being of rural people.. The surveys will be monitored before, during, and after the execution of the project, to quantify the measurable indicators of the progress. This is the first project of its kind from Rajasthan to develop an ideal role model village through state-of-the-art infrastructure, capabilities, and expertise. We aim to provide on-site treatment of solid and liquid waste management through natural & green technology interventions.

**Keywords:** Zero waste model village, green technology interventions, circular economy approach, wastewater management, solid waste management, Constructed Wetland, Vermifiltration











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## ANTIOXIDANT CONTENT OF DEVIL'S HORSEWHIP (ACHYRANTHES ASPERA) IN DIFFERENT ETHANOLIC SOLVENTS

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#### **ABSTRACT**

Achyranthes aspera has been used widely in the realm of magic such as the seeds were given in case of hydrophobia however its medicinal properties and various beneficial activities for the health gives the new opportunities to explore this traditionally used ancient remedy for the purpose of ailment with modern technology. Moreover, different type of activities such as antioxidant activity was found to be effective against the aging and stress other than that it also increases the SOD as well as catalase activity.

Different concentrations of ethanol 0% (water), 25%, 50%, 75% and 100% has been used for maceration at room temperature for 15 days at the intervals of 5 days then filtered and centrifuged at 12000 rpm for 10 minutes. Collected supernatant was then lyophilized to obtain the extract. Total Phenolic content (TPC) by Folin-Ciocalteu's method, Total Flavonoid content (TFC) by aluminium chloride method, and DPPH Free radical scavenging (FRS) Assay were done to determine the antioxidant content.

In all three DPPH, TPC and TFC assays, extract obtained from 25% ethanolic solvent shows the maximum amount of antioxidant content. As the 25% ethanolic extract of Achyranthes aspera contains maximum amount of the antioxidant contents in all these three assays which suggests that it is the most reliable solvent for the extraction of antioxidants from Achyranthes aspera.

**Keywords:** Achyranthes aspera, Antioxidant, Flavonoid, DPPH lyophilized contents.











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## VALUATION OF ECOSYSTEM SERVICES IN A PART OF MANDAL-CHOPTA FOREST OF CHAMOLI GARHWAL, UTTARAKHAND

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#### **ABSTRACT**

This study was carried out in Mandal-Chopta Forest in Chamoli Garhwal, which lies between 30027.560'N latitude and 79015.234'E longitude. The altitudinal range varies from 1500m asl to 3000m asl. The Ecosystem services valuation plays a significant role in environmental policy planning and execution of better management practices. In fact, these are the services and utility provided by the ecosystems in natural conditions to sustain the human life. Provisioning Services are the externalities obtained from ecosystems like food, fibre, fuel, genetic resources, biochemicals, ornamentals and fresh water etc. The market price method was used to calculate the value of provisioning goods and ser vices. It was estimated that the Mandal-Chopta Forest is providing variety of provisioning services worth Rs. 5900144/village/ year and Rs. 11306/person /year in the area. The average monetary values of various provisioning services such as fuel wood, livestock food (fodder), leaf litter and etc. were2348720, 287094, 304590 rupees/year respectively. The valuation of ecosystem services is essential because it aids in prioritizing conservation and management efforts and can inform policy decisions such as the allocation of funds for conservation programs.

**Keywords:** Provisioning Services, Benefits, Quantification, Human life.











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# SIMPLE AND SENSITIVE ELECTROCHEMICAL DETERMINATION OF 4-NITROPHENOL USING FACILE SYNTHESIZED HIGH-QUALITY ANATASE-TIO2 NANOPARTICLES

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#### **ABSTRACT**

Accurately detecting dangerous 4-nitrophenol (4-NP) is essential for the wellness of humans and the environment. Exploring efficient and low-cost monitoring techniques is becoming critical in the twenty-first century. Herein, A simple electrochemical sensor technology is used to detect hazardous 4-NP using the highsensing behavior of pure anatase-Titanium dioxide (TiO2) nanoparticles is reported. Pure anatase-TiO2 nanoparticles were prepared via sol-gel methods, characterized with various sophisticated instruments and designed an electrochemical sensor for the sensitive detection of a key environmental pollutant 4-NP in solution, X-ray diffraction pattern revealed the formation of highly crystalline tetragonal anatase TiO2 NPs. TEM images of the as-prepared NPs were spherical with high phase purity and the size of NPs in the range of 107.44 nm in diameter. EDX is performed in conjunction with TEM; EDX analysis results endorsed the elemental compositions of Ti and O in the corresponding anatase TiO2 NPs sample. To evaluate the material's optical absorption characteristics and bandgap energies, the UV-Visible spectrum was measured. Ultravioletvisible spectroscopy results exhibited a broad absorption band at  $\sim 384$  nm due to the surface plasmon resonance (SPR)effect. The optical band gap energy of the semiconductor TiO2 NPs was calculated from the tauc plot, and the band gap is 3.30 eV. The synthesized TiO2 NPswere electrophoretic deposited onto indium-tin-oxide (ITO) glass, which is sensitive to the electrochemical determination of 4-NP, which investigate through cyclic voltammetric (CV) and differential pulse voltammetry methods. The TiO2 NPs show superior electrocatalytic performance for detecting 4-NP with high sensitivity (298.4 A M-1 cm-2) coupled with a low limit of detection (LOD), which were found to be 0.06052 M respectively with these responses obtained under optimized experimental conditions. This research provides an outstanding platform for investigating anatase-TiO2 NPs with a high prospect for monitoring harmful environmental pollutants.

**Keywords:** Surface plasmon resonance, Optical band, Semiconductor, Electrocatalytic.











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## PRODUCTION OF AGLAONEMMA SP. USING MICROPROPAGATION TECHNIQUE

Jessica and Ajay Gupta

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#### **ABSTRACT**

Aglaonemma, also known as Chinese Evergreen, a genus of flowering plant belongs to family and sub family - Araceaea and Aroideae respectively. Aglaonemma, with its brighter colour and bold pattern is native to tropical and sub-tropical region with adorable varieties and thereafter maintained by Vegetative propogation. Its been the most widely used Foliage plant due to its ability to tolerate low light, low humidity and its resistance to disease and pest. The genus Aglaonemma includes 21 species out of which the wild ones are open pollinated and it is believed that production of this plant are exclusively developed via interspecific hybridisation. Moreover, Aglaonemma are conventionally propogated vegetatively by means of stem cutting. Arcaeae plants have been tissue cultured such as Aglaonemma anjumani, In this study micropropogation of Aglaonemma using its explants were used for formation of a diploid plants. In addition to this, ovules of the inflorescence were used to germinate a haploid plant (n). The growth hormone plays a crucial role in the above process such as cytokinin for rapid multiplication and cell division of meristematic cell and auxins for growth.

**Keywords**: *Aglaonemma anjumani*, micropropagation, interspecific hybridisation, explant callus, cytokinin.











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#### NEED A PARADIGM SHIFT FOR POPULARISING AYURVEDA IN INDIA

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#### **ABSTRACT**

Traditional Indian Medicine (AYUSH) is a golden field for phytomedicines and is necessary seriously exploring and investigating to the brim to increase the utilization of AYUSH as the mainstream in medical field. Strong research capacity and future challenges had to be evidence based scientific research. There are several plants being investigated since ancient times, since plants exhibiting diverse medicinal and phar macological properties. The systematic study herbal medicinal plants may reinforce the importance of the chemical investigative approach as a potential source of bioactive marker compounds. Authentication of genuine herbs and isolation and characterization of active principles along with quantification of markers in the herbal drugs is the main essential criteria for bringing the AYUSH system into modern medicine and for acceptance globally. Among the tribals medicines is not readily available either in tribal areas or in villages where people cannot avail modern system of medicine. However, AYUSH system can help them to get effective and cheap medicines. There should be proper guidance and knowledge of utilization of potent medicinal plants at large. In AYUSH drugs, herbs of genuine quality should be studied chemically and Pharmacological evaluation. Standardization and quality control studies need to be developed to make herbal drugs popular as safe, efficacious and free from toxic substances. So, let us bring the change by making efforts to improve the health care needs through AYUSH system and make to accept worldwide. As a first step in his direction basic selection of plants may be from Ayurveda, Unani, Sidda, Homeopathy, Tribal medicine or Folklore claim. All such plants were not fully chemically investigated to identify the active principles responsible for its curable properties. While Traditional Chinese medicine (TCM) developed plant medicines available locally in their region in China. India has got its own specific medicinal plant not available in other countries. So therefore, one need to investigate our own medicinal plants from the point of view of chemical investigation and standardization of active principles who called as biomarkers. The optimum concentration that are must be present in the formulations must be quantified. Several pharmacologists are isolating plant extracts from medicinal plants by organic solvents /water extract/plant powder itself/wet or dry for pharmacological studies. Such results are may not to be reproducible to advancement of discovery as plant drugs. pharmacologically such plants extract and active principle and quantity in the formulation to exert necessary medicinal activity. Then only it is possible to get internationals approval.











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#### HOUSEHOLD AIR POLLUTION IS ALSO A HEALTH HAZARD

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#### **ABSTRACT**

Pollution generated at household level is mainly due to use of open fires in form of Chullha, Barosi, Tandoor-drums etc. which make use of biomass such as wood, coal, animal dung and crop waste as source of fuel. Similarly the stoves which make use of kerosene also add to increase pollution. This addition is done by almost 2.4 billion people from all over the globe –WHO reports,2022. The combined effects of ambient air pollution and household air pollution are associated to 6.7 million premature deaths annually. The National and International Projects working in direction of generating alternate renewable energy resources should also take note of household Pollution factors and work in that direction to reduce global domestic air Pollution which leads to many health problems especially amongst women and children who are directly and indirectly exposed to domestic air Pollution. The non-communicable diseases met as a result of continuous exposure to domestic air Pollution arestroke, IschaemicHeart Disease, chronic obstructive pulmonary disease (COPD) and lung cancer and many more.

**Keywords:** Biomass, Household, Pollution, COPD.











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## OBSERVED AND FUTURE TEMPERATURE OF TAMIL NADU STATE AND ADDRESSING THE CHALLENGES OF HEAT STRESS

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#### **ABSTRACT**

Temperature is increasing around the globe and leading to an increase in the number of hot days and nights. Heat trapping CO2 and other greenhouse gases build up in the atmosphere causes the Earth's temperature to rise. This extra trapped heat disrupts many of the interconnected systems in our environment. Humidity and lack of wind can make a day or night feel even hotter. Human health also affected by increasing the frequency and intensity of extreme heat events. Sweeping reports by top climate scientists and meteorologists describe how climate change drove unprecedented heat waves and droughts in recent years. Hot, humid days and nights contribute to heat stress. heat-related deaths, reduced productivity and can increase the severity of poverty. At humidity higher than 80%, the temperature thresholds are even lower because dangerous heat stress conditions can rapidly develop and endanger health. Observed temperature trends of the annual and seasonal and its variations are explored in the Tamil Nadu State of India from the temperature data collected from 17 climatological stations in the past 60 years. Evidently, the increasing trends in MMaxT, MMinT, and MAT are observed at the majority of the stations. The MAT has increased up to 1.4 °C with a variation in the rate of change from 0.01 to 0.29 °C per decade. Future changes in extremes of temperature using high-resolution PRECIS RCM data under simulation of A1B scenario with respect to baseline (1970–2000) reveal that almost all temperature indices denote a highly significant trend. The minimum temperature indices have shown prominent increase compared with maximum temperature indices, which is also upheld by the significant decrease in the diurnal temperature range trend. The summer days above 40 °C have indicated a substantial increase. The overall results of indices intimate that Tamil Nadu will be shifted to the extreme warmer condition by 2080s (2065-2095). The change in future climate projections with reference to baseline indicates an increase of 3.30 °C during daytime and 3.55 °C during night-time by the end of the century. The minimum temperature seem to increase significantly higher than maximum temperature which is indicated by the extreme positive change by 4.34 °C and by 3.75 °C by the end of the century. The maximum temperature above 40 °C (summer days) is projected to increase drastically. These results suggests that Tamil Nadu will be adversely affected by war mer condition. Furthermore, the change may increase the occurrences of heat wave and health hazards in the future. The warming tendency can affect the atmospheric circulation and consequently the broader ecosystem leading to less water availability, agricultural productivity, and comfort and health which will make the environment hostile to live. This requires the development of appropriate adaptation strategies to capture the benefits of climate change and to mitigate its more negative anticipated impacts on water resources, coastal land use, health, and biodiversity. Heat is classed as a hazard and comes with legal obligations like any other hazard. Limit time in the heat and/or increase recovery time spent in a cool area for workers. Reduce the metabolic (physically difficult) demands of the job. Other Control of heat stress are increase air velocity. Use reflective or heat-absorbing shielding or barriers, wet floors, or humidity. Wear light-colored, loose clothing or clothing designed to cool the person down. Keep shaded from direct heat where possible (e.g., wear a hat in direct sunshine). Reduce the workload and increase the use of equipment on hot days to reduce physical labor. Vetiver, (Chrysopogon zizanioides), also called khus, perennial grass of the family Poaceae. The roots of Khus drink is the ultimate summer cooler. It has the unique property of cooling the body and hydrating during summer time. All time other natural cooling drinks for summer are buttermilk, lassi, coconut water kokum juice, cucumber honey limeade, water melon ,etc., will help to overcome the heat stress. Increasing the green cover and become carbon neutral very soon are important to ensure the climate resilience of the state.











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## DEVELOPMENT OF NANOCOMPOSITE ECO-FRIENDLY PACKAGING POUCHES FOR CHICKEN MEAT

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#### **ABSTRACT**

The latest food packaging regulations amidst climate change endorse the usage of decomposable packaging material for foods for averting environmental pollution. Biopolymer-based films have a poor barrier and thermal properties compared to plastic films. This makes exclusive biopolymer films barred for use as primary packaging material for moisture-rich food products like meat. Hence research was commenced to develop an eco-friendly nanocompositebiopolymer film for enhanced barrier and thermal properties for packaging meat. The eco-friendly nanocomposite packaging material was developed by integrating polylactic acid, nano clay, and clove oil in chloroform. The film was prepared by casting method in a large glass tray. The nanocomposite film was characterized for quality parameters in comparison with the commercial low-density polyethylene (LDPE) films. The results indicated that film thickness, transparency, tensile strength, and lightness were significantly (p < 0.05) greater for nanocomposite film when compared with the LDPE film. Whereas, traits like elongation at break were significant (p < 0.05) in LDPE film compared to nanocomposite film. There was no significant difference in the parameters like moisture content, moisture absorption, water vapor permeability, and film solubility between the LDPE and nanocomposite films. Then the developed nanocomposite film was made into pouches to hold 250g of chicken meat. The pouches were sealed and the meat was stored in a refrigerator at  $4\pm1^{\circ}$ C to evaluate the shelf-life attributes of the chicken meat. A control group was maintained with chicken meat packaged in LDPE pouches. The storage quality attributes have shown that there was no significant difference between the chicken meat packaged in LDPE and nanocomposite films for the parameters like pH, titratable acidity, and thiobarbituric acid reactive substances. While the parameters like extract release volume and tyrosine values differed significantly (p<0.05) between the chicken meat packaged in LDPE and nanocomposite films during the refrigerated storage. The shelf-life attributes showed that chicken meat was acceptable upto day 6 in both LDPE and nanocomposite films. It is concluded from the above results of film features and shelf -life aspects that the developed nanocomposite film is an ideal substitute for LDPE films for packaging fresh chicken meat and consequent refrigerated storage.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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## MORPHOLOGICAL CHARACTERISTICS OF INDOOR PM2.5 DURING COOKING AND NON-COOKING HOURS

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#### **ABSTRACT**

Indoor air quality (IAQ) has become an area of great interest due to increased health-related issues associated with indoor exposure. The chemical species associated with fine particulate matter (PM2.5)emitted during indoor cooking shows a direct impact on human health. Heavy metals are one of the major pollutants which are emitted during cooking and result in various cardio-vascular diseases. Studies focusing on indoor air quality have gained impetus during COVID duration as people have spent most of their time at home, so their exposure to indoor environment has increased. Hence, this study was planned to determine the exposure towards indoor emissions and associated health-related issues. ThePM2.5 samples were collected during cooking and non-cooking hours at two different types of kitchens around urban residential sites for a period of six months using Envirotech APM 821 sampler. Each sample was collected for 24 h of duration at a flow rate of 3 lpm. High emission rates and concentrations of PM2.5-bound chemical species were determined based on the corresponding mass fraction. Higher concentration of PM2.5 in the kitchen area was observed during the cooking hours. The chemical profile of PM2.5 varies with different cooking methods in different types of kitchens. Image profiles of PM samples captured using Field Emission Scanning Electron Microscope (FESEM) revealed the formation of spherical particles during cooking. Energy Dispersive X-rays (EDX) analysis indicated the dominance of C, S, Ca, Na, K, Al, and Cl, accounting for over 80% of total elemental composition.

Keywords: IAQ, Indoor PM2.5 and FESEM-EDX.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# IDENTIFICATION AND TARGETING ORPHAN G-PROTEIN COUPLED RECEPTOR (GPCR) IN MOSQUITO FOR APPLICATION OF HERBAL REPELLENT

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#### **ABSTRACT**

Many odorant-binding proteins (OBPs), which are abundant in the agueous lymph surrounding the dendrites of olfactory receptor neurons, are a ubiquitous but poorly known element of the insect olfactory system. Current research has improved our understanding of the molecular networks that control the emergence of pesticide resistance by revealing the expression and role of GPCRs in insecticide resistance. While G-protein-coupled receptors (GPCRs) control signal transduction pathways and are essential to the physiology of insects, their specific involvement in pesticide resistance is yet unknown. GPCR from all the species of the anopheles family serves as an olfactory receptor protein. Literature studies shows that GPCR holds a structurally common fold. Aspartic acid and Serine residues serve to be predominant for performing their function competently. In this study, the amino acid sequence of Orphan GPCR class A from Anopheles darling having 326 amino acid residues was extracted. Domain being the independently functional part of a protein, was examined for the protein as well. Evolutionarily conserved residues were analysed and mutation for the residues were examined as well. The percentage of helices and sheets were predicted to examine the secondary structure conformation. Binding sites in the olfactory receptor protein for the ligands was studied. The mutational impact on the protein functionality was also examined. Till date, such in silico study was unexplored and this would serve as a stepping stone to prevent the spread of mosquitoes. This sequence level insight into the GPCR orphan receptor for mosquitoes would shed light for the future research to inhibit the mosquito population through analysis of its binding to certain ligands, specifically to herbal ones.

**Keywords:** GPCR, Anopheles, Binding Sites, Evolutionarily Conserved Residues, Secondary Structure Prediction, herbal mosquito repellent.











#### Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# ELUCIDATING THE CELLULAR AND MOLECULAR MECHANISM OF NATURAL PRODUCT DERIVED SMALL MOLECULES AS ANTI-CANCER AND ANTI-FILARIAL AGENTS

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#### **ABSTRACT**

In spite of enormous technological and social development, cancer and filaria are still one of the most common diseases of concern and a leading cause of human suffering and death. The alarming rise in incidence of new types of cancer and the public burden represents a real crisis for public health and health systems worldwide. Detailed analysis of pathways and mechanisms and structures of antitumor compounds have led to significant developments in the prevention and treatment of cancer. Establishment of tumor cell lines and analysis of the effect of many natural and synthetic antitumor compounds have achieved remarkable success. Despite their toxicity. chemotherapy, irradiation and immunotherapy are the gold standard approaches for the treatment of cancer worldwide. Other than these classical ways, use of natural products from plants and animals and their derivatives have produced remarkable leads for the control of cancer. Due to the toxicity of currently used therapeutics for the treatment of various types of tumors, several natural products are being tried as an alternative. Natural products and their structural derivatives (small molecules) have contributed to more than 50% of the drugs that are used in cancer chemoprevention. Among several classes of natural compounds terpenoids, flavonoids, alkaloids, polyesters, polyphenols and other secondary metabolites have shown promising anticancer properties. To identify the novel target of the anticancer drugs, rational drug design and combinatorial chemistry with high throughput biological screening is at present being carried out to obtain desirable leads from natural products which demonstrate potential as anticancer chemotherapeutic drugs. Lymphatic filariasis (LF) is a major vector borne parasitic disease caused by Wuchereriabancrofti, Brugiamalayi, and B. timori. LF majorly prevails throughout the tropics and subtropics with a heterogeneous distributional patter n. As per March 2020 report of World Health Organization (WHO) on filariasis states that, 893 million people in 49 countries are living in areas requiring preventive chemotherapy to impede the flow of infection. Moreover, the same report states that nearly 597 million people across the globe now no longer require deter rent therapies. Filarial parasites can persist for years inside the human body particularly in the lymphatics resulting in lymphatic damages and dysfunctions ultimately leading to elephantiasis. The deformities as well as disabilities caused due to LF have extensive economic and psychosocial impacts on the infected individuals. To deal with the disease, extensive research works have revealed handful of chemicals of both natural and synthetic origins that are known to be effective against the filarial parasites, however unfortunately they are not in use yet. Diethyl carbamazine citrate, ivermectin, albendazole, doxycycline, suramin, levamisole are in use as antifilarials but are associated with major drawbacks such as poor solubility, small plasma half-life, wide bio-distribution, instability, low gastrointestinal tract uptake, rapid clearance by the immune cells, lower molecular weight, toxicity and various adverse side effects. Therapeutic molecules with greater adulticidal effectiveness as well as less toxicity profiles are of choice. Therefore, the quest for effective therapeutic molecules is still on. On this context, we have made substantial contribution in the field of novel anti-cancer and anti-filarial drug identification, screening and development from natural resources and successfully identified some very interesting and effective natural and synthetic small molecules against these diseases.

**Keywords:** Cancer, Filaria, Natural products, Small molecules, Apoptosis, ROS, Signaltransduction.











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# IMPLICATIONS OF DIFFERENT APPROACHES TO DELIVER CURCUMIN FOR TRIPLE NEGATIVE BREAST CANCER THERAPY IN IN-VITRO AND IN-VIVO MODEL

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#### **ABSTRACT**

Among the different sub-type of breast cancer, triple negative breast cancer (TNBC) refers to the most aggressive breast cancer phenotype where ER (Estrogen receptor), PR (Progesterone receptor) and HER2 (human epidermal growth factor receptor 2) are not expressed. Curcumin has shown promising therapeutic activity against triple negative breast cancer cell (TNBC), but it shows low efficacy and low bioavailability when administered as a free drug hindering its therapeutic applications. We have developed athree pronged approach involving the development of three different drug delivery systems which includes the isoreticular nanoscale metal organic frameworks (IRMOF) nanoparticles. biopolymeric microspheres synthesized from natural excipients Gum acacia (GA) and polymeric microvehicles synthesized from PLGA which is a biodegradable copolymer. We have used biocompatible drug delivery systems where curcumin can be loaded comfortably by co-precipitation method and thereby increases its bioavailability. The curcumin encapsulated drug carriers were found to induce apoptosis in TNBC cells by perturbing the mitochondrial membrane potential. Folic acid was conjugated to curcumin encapsulated biocompatible dr ug delivery systems, for delivering it specifically to the cancer cells since the folate receptors are overexpressed in the TNBC cells. The in-vivo study in BALB/C mice model exhibited encouraging tumor regression. Our results vividly implicates that these drug carrier systems can be deployed as effective vehicle for the delivery of different anticancer drugs particularly which are hydrophobic in nature to the various folate receptor over expressing cancer cells circumventing any adverse effects on the normal cells.

**Keywords:** TNBC, Curcumin, Biocompatible delivery systems, Animal model.











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### EXPEDITIOUS AYURVEDIC MANAGEMENT OF MUKHAPAKA-A CASE STUDY

#### **Lalit Nagar and Ringzin Lamo**

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#### **ABSTRACT**

One of the crucial components of our body is the mukha, often known as the oral cavity. Since the digestive system begins in the mukha, it is crucial to keep good oral hygiene for the state of our general health. The inflammation of the mucous membranes found in the lips, mouth, and tongue is known as mukhapaka (stomatitis). These are universal issues that everyone encounters. Even while it is treatable and does not pose a life-threatening risk, it has a poor impact on oral health, which in turn impacts daily activities like eating, talking, and swallowing. Some of the contributing reasons of mukhapaka include excessive intake of fast food, mixing different types of food and chewing tobacco, smoking, drinking alcohol, irregular eating patterns, sleeplessness, constipation, vitamin deficiency, illness, poor dental hygiene, and interrupted sleep cycles. There are four types of MukhapakaVataj,Pittaj, Kaphaj andSannipataj in Ayurveda. Various Mukhapaka varieties present with various symptoms. Aphthous ulcer/Stomatitis is typically treated with painkillers, mouthwash, corticosteroids, and vitamin B complex. Case study of a 26-year-old female patient who is currently experiencing symptoms of Toda (Pricking Pain), Daha (Burning), Aasyavairasya (Diminished Taste of Food), difficulty in eating Food, Anxious to swallow. Diagnosed as a KaphaPittaiMukhapak, receive 3 days of Shamana (Palliative therapy) and GandooshVidhi Ayurvedic treatment. The patient felt substantially better after three days. The purpose of the current case study was to investigate kaphaPittaiMukhapak (Apthous Ulcer) from an Ayurvedic perspective, as well as the effects of Ayurvedic treatment on symptoms and the efficacy of GandooshVidhi and Shamana (Palliative therapy) treatment.

Keywords: Mukhapaka; Gandoosh; Stomatitis; Shamana.











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#### TRIGONELLINE A BIOACTIVE COMPOUND OF TRIGONELLA FOENUM-GRAECUM PROTECT HEART TISSUE FOR ALCOHOL INTOXICATION: A CLINICAL STUDY WITH REFERENCE TO ANTIOXIDANT ENZYMES AND OXIDATIVE STRESS MARKERS

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#### **ABSTRACT**

Alcohol is the most widely abused drug. As per WHO statistics the total deaths of alcohol is 3million every year and is also responsible for more than 200 diseases. Every 10 seconds a human being dies because of alcohol intoxication. The aim of the study was to detect the cardio protective activity of Trigonelline (TG) a bioactive compound of Trigonella foenum-graecum (TF) in alcohol intoxicated rats. The rats are divided in to 5 groups and treatment was given as per the experimental design. Antioxidant enzymes Superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione reductase (GR) are estimated cardiac tissue of all experimental groups. Cardiac markers Creatine kinase-MB (CK-MB), Troponin-T (TT), Troponin-I (TI), Myoglobin (MG) are estimated in all the experimental groups. SOD, CAT, GPx, GR, GSH activities are depleted CK-MB, TT, TI, MG activities are elevated in alcohol intoxicated rats. Trigonelline supplementation to alcohol rats for 30days elevated antioxidant enzymes, depleted cardiac markers in alcohol intoxicated rats. Furthermore, our histopathological evidence also proves that TG protected the heat tissue from alcohol toxicity in rats. Our study concluded that TG may be useful to the alcoholic and myocardial infarction subjects. Keywords: Alcohol, antioxidant enzymes, Trigonelline, Trigonella foenum-graecum, rats

**Keywords:** Chronic kidney disease, end stage renal disease, renal replacement therapy, fibrosis, transforming growth factor-B1, sodium-copper chlorophyllin.











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# CHARACTERIZATION AND BACTERICIDAL EFFICACIES OF SILVER NANOPARTICLES SYNTHESIZED FROM LEAF EXTRACT OF MEDICINAL PLANTS, OCIMUM BASILICUM AND PERSEA AMERICANA

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#### **ABSTRACT**

Silver nanoparticles (AgNPs) were synthesized using the leaf extracts of medicinal plants, Ocimum basilicum and Persea ameriana. Particles were characterized by Uv-visible extinction spectroscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM) and powder X-ray diffraction (PXRD) studies. The particles are spherical, and the average particle size calculated using PXRD and TEM analysis were 16-20 nm to and 15-30 nm respectively for those obtained from Ocimum basilicum and Persea americana. Diffraction pattern in the PXRD spectrum and the selected area x-ray diffraction (SAED) pattern are indicative of silver being crystallized in to face centred cubic (FCC) structure. Bactericidal effect of the synthesized AgNPs against the spreading of gram-negative bacteria, Escherichia coli (E. coli) and gram-positive bacteria, Staphylococcuus aureus (S. aureus) were determined in terms of their minimum inhibitory concentration (MIC), in nutrient agar media and the results were compared with that exhibited by ciprofloxacin, a commercial reference substance. The MICs of the AgNP solutions synthesized from Ocimum basilicum were  $9.00 \times 10^{-5} \, \text{g/mL}$  against the spread of E. coli and  $11.25 \times 10^{-5} \, \text{g/mL}$  against S. aureus. The antibacterial effects exhibited by AgNPs synthesized using both the selected plants are superior, compared to that exhibited by the reference compound selected for the study.

**Keywords:** Silver nanoparticles, Ocimum basilicum, Presea americana, Antibacterial activity, Escherichia coli, Staphylococcus aureus.











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## ISOLATION AND BIOLOGICAL ACTIVITY OF TERPENES BIOMOLECULES

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#### **ABSTRACT**

Natural products are small molecules produced naturally by any organism including primary and secondary metabolites. The nature products may have isolated from the plant source and in these plants some are aromatic plants which have a very rich source of essential oils and the essential oils has aroma, essence, fragrance, flavour and odour or smell. Essential oils are aromatic substances present in the specialized cells or glands of certain plants used by them to protect themselves from predators and pests, but also to attract pollinators. These volatile liquids are very complex molecular substances, extremely potent and precise as action. Essential oil is not actually an oil because it contains no fatty substance. It is obtained from the essence rich in natural flavours and active ingredients that it secretes the cells of certain parts of the plant. Precious liquids are obtained by distilling or pressing the secretory organs.

The secondary metabolites are terpenes biomolecules isolated from essential oils of aromatic plants which have biological activities such as antioxidant, anticancer, antiprotozoal, antifungal, antibacterial and anti-inflammatory. The natural products from Some aromatic plants have bioactive terpenes biomolecules and it may have specific important properties and enormous application potential research study in term of bioactivity,

**Keywords:** antioxidant, anticancer, antiprotozoal, antifungal, antibacterial and anti-inflammatory.











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# EFFORTS OF TROPICAL FOREST RESEARCH INSTITUTE, JABALPUR FOR THE CONSERVATION OF DIMINISHING MEDICINAL TREE SPECIES OF CENTRAL INDIA

#### Manish Kumar Vijay\* and Neeraj Prajapati

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#### **ABSTRACT**

Natural forests are diminishing globally due to the loss of natural habitat and/or due to overexploitation, leading to the loss of a variety of goods and services, such as fuel wood, medicines, biodiversity, timber etc. It is believed that the only option to protect these endangered tree species with great medical potential and demand is to cultivate them. Apart from cultivation need, the need of better tree seed supplies is also anticipated to grow significantly for afforestation and regeneration programmes, necessitating increasing research efforts on these diminishing medicinal tree species. The medicinal tree species, however, have received less attention than herbaceous and shrubby species. In order to domesticate, conserve, and regenerate the species of exploited medicinal plants, seed handling protocols are urgently required for these MAPs in order to ensure the availability of quality seeds. To address these issues, a number of projects funded by CAMPA (MoEF&CC) are underway at the ICFRE-Tropical Forest Research Institute in Jabalpur (Madhya Pradesh), including the All India Coordinated Research Project on Seed Technology of forestry species envisages to utilize and further develop the technology for seed processing, handling, viability, storage physiology and developing seed storage protocols and nursery techniques of rare, endangered and threatened and less explored but medicinally important fourteen tree species found naturally in the forest of Central India (Madhya Pradesh, Maharashtra and Chhattisgarh). Outcome of these ongoing studies will undoubtably aid in the proliferation of these vulnerable medicinal plants in the future.











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## COCOS NUCIFERA LINN. A COMPLETE AYURVEDIC SATTVIC DIETARY SUPPLEMENT FOR VEGETARIAN PEOPLE

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#### **ABSTRACT**

Due to Pandemic and lifestyle modification health crisis gradually increases day by dayafter Covid-19 pandemic people are more conscious about health. Now a days,people are shifting towards sattvic vegetarian diet (plant based) but the challenges they are facing is choosing supplements this is an attempt to enlightened the facts and phenomena related to use of Cocos nuciferaas excellent dietar y supplement. Cocos nucifera is a well known plant used in Indian system of medicine. It is cultivated for its multiple utilities, mainly for its nutritional and medicinal values. The coconut palm eugolised as 'Kalpavriksha' (the all giving tree). Its each part are used in some way or another way in day life of the people in the traditional coconut growing area as food supplement. Acharya Kashyap said 'Ahara' as Mahabhaishajya (greatest and best medicine). Coconut waterand kernel have numerous medicinal properties as it contains micronutrient and minerals such as potassium etc. Coconut milk is amagnificient substitute for milk as it contain high levels of lauric acid which aids in good cholesterollevel. Various study suggest that Coconut oil contains antidiabetic property. Acharaya Charak describe the properties of ideal medicine isbahukalpam, bahugunam, yogyam and ausdham coconut full fill all the criteria as medicine also. In classics, it describes as cardio tonic, improve strength and act as excellent detoxifier for urinary bladder.

**Keywords:** Sattvic Dietary, Mahabhaishajya, Acharaya Charak.











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## EVALUATION OF WOUND HEALING ACTIVITY OF ETHANOLIC EXTRACT LEAVES OF NYCTANTHES ARBORTRISTIS LINN.

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#### **ABSTRACT**

**Context:** The leaves of *Nyctanthesarbor-trisitis* (Linn.) are used in Traditional System of Medicine for the treatment of stomachic, carminative, intestinal astringent, expectorant, biliousness piles, hair tonic and wound healing.

**Objective:** To evaluate wound healing activity of *Nyctanthesarbor-trisitis* (Linn.)

**Material & Methods:** Extracts from the dried leaves of *Nyctanthesarbor-trisitis* (Linn.) were prepared using methanol as solvent in order to investigate the wound healing activity in vivo. Circular excision and linear incision wounds were created on rats. Three groups of rats were prepared viz. control, standard and treated with extract. The methanol extract of *Nyctanthesarbor-trisitis* (Linn.) was tested for wound healing activity.

**Results & Discussion:** The wounds were monitored and the area of wound was measured on 4, 8, 12, 16 post-wounding days and the mean % wound closure were reported. Epithelization period was calculated as the number of days required for falling of the dead tissue remnants without any residual raw wound. Wound healing rate was measured using formula (Muthusamy et al., 2008). Significant wound healing activity was observed for the ointment prepared with methanol extract at 2% (w/w) concentration and with aqueous extract at 2% (w/w) concentration.

**Conclusion:** The experimental data revealed that the methanolic extract of Nyctanthesarbor-trisitis (Linn.) leaves displayed remarkable wound healing activity.

**Keywords**: Betadine ointment, Excision wound, Incision wound, Period of epithelization.











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## COSMETIC USE OF LEAD MOLECULES FROM AYURVEDIC DRUGS: A REVIEW

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#### **ABSTRACT**

Concept of beauty and cosmetics is as ancient as civilization of human beings. There are highly advanced ideas of selfbeautification by both men and women were present in ancient India. These practices were inter woven with seasons (Ritucharya) and normal rituals of daily life (Dincharya). Ashtanghridyadescribes six different formulations to be used for six different seasons. DifferentAyurvedicGhrita and Taila were used for facial beautification. Different ingredients were used for hair washing, hair growth, premature greying, skin care, lip care, for curing discolouration of skin. It is common saying that glowing skin is result of good quality of rasa and rakta and Ayurveda believes that beauty is harmony of whole body, mind and soul, Acharvas classified cosmetics in different groups as varnya, jiyniya, keshya, chakshushva, kushthaqhna,kanduqhana, twachava etc. Some drugs like sesame oil is defined best for oleation. It contains Sesamin and Sesamolin as biologically active compound which is responsible for its antioxidant activity. Turmericconsists of curcumin which helps in bringing glow to the skin. Arishtaka consist of saponins which is used for hair wash. Kesar is useful in depigmentation of skin and act as dermoprotective. Review of scientific databases such as ScienceDirect, PubMed, Research Gate, and Google scholar to find out better cultivation, propagation, harvesting, and conservation techniques. Present study helps to identify different plants used in Ayurveda to cure dermatological disorders and act as cosmetics. Use of herbal cosmetics has increased too many folds in daily life. The presentinformation will be useful for setting up better cosmetic products based on active biological components. This review helps in building research protocols on different skin care, lip care, and hair care drugs mentioned in Ayurvedic text.

Keywords: Dincharya, Ritucharya, Cosmetics, Dermoprotective, Ayurveda.











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# ISOLATION, MORPHOLOGICAL, PATHOGENICITY TEST AND MOLECULAR CHARACTERIZATION OF RHIZOCTONIA SPP. CAUSING SHEATH BLIGHT OF PADDY

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#### **ABSTRACT**

Sheath blight of paddy is an economically significant rice disease worldwide. The disease cause significant grain losses, yield losses of up to 50%. The objective of this study is to isolate and identify the Rhizoctonia species on the basis of their Pathogenicity test and Molecular characterization from the infected paddy crop collected from different localities. Pathogenicity test of seven isolates are evaluated on rice crop under greenhouse condition. All tested isolate was able to infect rice plants causing Sheath blight of paddy with some different degree of severity Isolate RS1, RS2 and RS3 showed significantly highest sheath blight severity while isolate RS5 gave the lowest percentage of sheath blight severity. The DNA markers obtained from all isolates showed genetically similarity among different isolates obtained from different geographical regions. Precise identification of cause of disease based on morphological characters and symptom induced by Rhizoctonia spp. Become tedious because of similarity in symptoms. The identification of isolates at genus and species level Molecular markers for genetic differentiation would be ideal approach. The isolate RS1and RS5 were 99.7% homologous to Cs Ka, RS2 and RS7 were 99% homologous to Rh 28, RS 3 is 99.74% homologous to 331-7 at molecular level as well as was found in our study.

**Keywords:** Sheath blight, Pathogenicity, Paddy, DNA Marker, Rhizoctonia spp.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### **EFFECT OF YOGA ON HYPERTENSION DISEASE**

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#### **ABSTRACT**

Many people are suffering from illnesses among which ethology of some is known and some is not known. BP is so common disease in now for everyone and also known as hypertension. In the starting of hypertension a person is not even know that he has this disease. It can happen because of unhealthy lifestyle choices, such as not getting enough regular physical activity. Certain health conditions, such as diabetes and having obesity, can also increase the risk for developing high blood pressure. The normal range of bp is systolic: less than 120 mm Hg diastolic: less than 80 mm Hg. But in hypertension the range of bp became systolic: 140 mm Hg or higher diastolic: 90 mm Hg or higher. It can cause other health conditions like kidney disease, heart disease and stroke. People with very high blood pressure (usually 180/120 or higher) can experience symptoms including; severe headaches, chest pain, that affect a wide range of body parts and produces diseases of that system. The main aim of the study is to assess the effect of yoga and healthy lifestyle on hypertension. Regular practice of Yoga and life style modification greatly benefit the patients suffering from hypertension in controlling the progress and complications of the diseases. Recent studies indicated that moderate exercises can reduce/minimise stress in the body, which is common with hypertension. Traditional yoga asanas are easy to practice and comfor table to the patient. Therefore, habitual, and unrelenting yoga practice can boost muscle strength, endurance, and balance. Asanas also improves the flexibility of the joints and pranayama is very useful for releasing stress which are very helpful in the case of hypertension. Information will be compiled from various texts, articles published in PubMed, Scopus and other journals, web of sciences, Google Scholar, and various indexing bodies.

Keywords: Yoga, hypertension, life style.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# EMISSIONS OF VOLATILE ORGANIC COMPOUNDSFROM RURAL KITCHENS, HEALTH RISK ASSESSMENT AND THEIR ROLE IN THE FORMATION OF SECONDARY ATMOSPHERIC POLLUTANTS

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#### **ABSTRACT**

Elevated concentrations of Volatile Organic Compounds (VOCs) and Trace Gases (tropospheric ozone (O3), nitrogen oxides (NOx) and carbon monoxide (CO)in the atmosphere has become a matter of concern. VOCs are precursors for most of the atmospheric processes and also result in the formation of tropospheric O3 and Secondary Organic Aerosol (SOA) and exert direct impact on human health and significantly affect the Earth's climate. VOCs (BTEX) were monitored from January, 2019 to March, 2019 outdoor from the kitchen exhaust of rural homes in order to monitor their levels, estimate their 03 forming potential and perform health risk assessment at a rural site(GhadhiJeavan Ram) in Agra. Samples of BTEX were collected using activated charcoal tube by SKC pump (Model 224-PCXR8) and analyzed by Gas Chromatograph coupled with Mass Spectrometer and Flame Ionization Detector (GC-MS/FID). The concentration of BTEX ranged from 46.2 to 108.3  $\mu$ g/m3 with an average concentration of 65.2  $\pm$  33.1  $\mu$ g/m3. BTEX concentration during the sampling period was dominated by benzene with an average of 35.2  $\pm$  9.3  $\mu$ g/m3.BTEXshowed higher concentration during the morning and evening hours and lower in the noon. The diurnal pattern of BTEX was highly influenced by the emission sources (cow dung cakes and wood burning), vehicular emissions and photochemical oxidation. Ozone Formation Potential (OFP) was determined by the Maximum Incremental Reactivity (MIR) scale. Amongst all the BTEX, Toluene and Xylene showed maximum contribution towards the OFP. The formation of O3 per unit VOCs emission was affected by emission sources and MIR coefficient. The cancer risks for benzene were higher (11.7×10-6) (more than the acceptable value1×10-6), health quotient was also higher. The present study indicates that biomass emissions (cow dung cakes and wood) particularly inrural kitchens has adverse health effects. The results of this study suggest the promotion and use of cleaner fuels like Liquefied petroleum gas (LPG) and Green Gas to be used for the cooking.

Keywords: Volatile Organic Compounds; Ozone Forming Potential; Health Risk Assessment; Personal Exposure.











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### FAECAL SLUDGE TREATMENT AND CONCOMITANT RESOURCE RECOVERY

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#### **ABSTRACT**

Material resources structure the base of every economy. Even the most efficient resource utilization process produces quantifiable waste, which has diverse characteristics and could replace resources thereby giving life to a circular economy. Every habitat battles with its blackwater, whose storage as well as treatment produces partially digested or undigested solids or semisolids, i.e., faecal sludge. After a decade-long attempt to impart proper sanitation in low- and medium income countries, the global sanitation community has started to rethink the approach adopted to accomplish the same. The technology opted for wastewater treatment cannot be as such employed for faecal sludge remediation owing to the vast difference in pollution load. In addition, the degree, as well as the technology employed for treatment, depends on the end goal, wherein application based strategies become the step forward. In the past, exploring costeffective and sustainable ways to extract wealth out of faeces during treatment was a major detriment to waste management technologies. However, over the period of time, researchers have ascertained numerous technologies capable of the safe recovery of resources as value-added products and energy from faecal waste. Hence, resources recovered from faecal sludge can take multiple shapes, including electricity, building material, manure, protein, soil nourisher, nutrients, animal fodder, etc. Consequently, grouping and choosing technology according to the targeted application as well as economic feasibility is crucial. This chapter gives key insights into the potential and limitations of existing faecal sludge treatment technologies, faecal sludge sampling, quantification, operations and resource recovery which enlighten the transformation of waste to wealth. In addition, an insight into the economics of the technologies over their expected life span with anticipated impacts on the society and environment will be discussed in brief.











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#### IMPACT OF PAX6 AND PUTATIVE MARKERS OF NEUROINFLAMMATION

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#### **ABSTRACT**

Background: Neuroinflammation is a complex defence response involving activation of glial cells and innate immune cells caused by locally released or targeting toxins released, leading to the secretion of pro-inflammatory cytokines and the generation of oxidative stress. Lipopolysaccharide (LPS) is an endotoxin, present on bacterial membrane of Gram negative bacteria, is one of the most common pathogen-associated molecular patterns. Pax6 is a transcription factor and master regulator of central nervous system and eye development. The Pax6 is known to have a spectrum of functions from Brain patterning, neuronal plasticity, neurogenesis, immunological surveillance, ageing. According to In Silico studies Pax6 is expected to bind to the promoter regions of genes involved in the inflammatory, anti-inflammatory, and TLR, NLR signalling pathways. Various phytochemicals can interact with neuroinflammatory modulators are utilised to counteract the effects of neuroinflammation. Curcumin is one such phytochemical (diferuloylmethane) having a number of pleiotropic effects including anti-inflammatory, neuroprotective, anti-ageing, anti neoplastic and free radical scavenger. Therefore it has been intended to explore Pax6 expression, effect of Curcumin on Pax6 and find putative markers of Neuroinflammation.

Material and Methods: Lipopolysaccharide (LPS) 1 mg/kg was injected intraperitoneally in AKR stain of Mus musculus for five days to develop neuroinflammatory mice model. Equal amount of saline was injected in Control group. Status of expression of Pax6 and potential biomarkers of Neuroinflammation were done through PCR, ChIP-sequencing and protein sequencing through HRMS. Analysis of enriched genes and pathways were done using Eukaryotic Promoter Database, DAVID, g: Profiler, GENEMANIA and STRING database, KEGG pathway.

**Results:** Differential gene expression and functional enrichment analysis of unique genes at transcript and translational level of Control and LPS treated mice reveals many genes are modulated which are involved in Cell survival, proliferation, communication, adhesion, inflammation and oxidative stress with Pax6 as a potential player regulating the genes involved in Neuroinflammation.











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# ETHNOBOTANICAL STUDIES ON SOME MEDICINAL PLANTS OF SONBHADRA DISTRICT OF UTTAR PRADESH, INDIA W.S.R. TO ANASARCA

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#### **ABSTRACT**

Sonbhadra is the only district in India which borders four states namely MP, Chhattisgarh, Bihar and Jharkhand. This district has eight blocks- Babhani, Chatra, Chopan, Duddhi, Ghorawal, Myorpur, Nagwan and Robertsganj. This district has an area of 6,788km2 and a population of 1,862,559 (2011 census), with a population density of 270 inhabitants per square kilometre. About 83.12% population of this district lives in rural areas. These tribes having distinct culture, values and practices hold on their traditional knowledge which is transmitted only to people belonging to their community. The present study is designed to explore the traditional medicine used for generalized swelling i.e. anasarca by different tribal communities of Sonbhadra. To find out the ethnobotanical knowledge of different tribes of Myorpur and Chopan block of Sonbhadra district of Uttar Pradesh; related to anasarca 2. Collection of medicinal plants used by tribes for treatment of anasarca (generalized swelling) and their botanical identification in lab.

It is a survey study in which primary and secondary data has been collected. Primary data was collected by interview of participants; collection of medicinal plants used by tribes for the treatment of skin disorders, cuts, wounds and fracture and their botanical identification in lab. Audio and visual aids (camera and mobile) was used to take photographs and videos related to the present study. Secondary data was collected by related books and previous researches.

Many of the plants used by different tribal communities of Sonbhadra for the treatment of skin disorders, cuts, wounds and fracture. There are many plants which are known by different vernacular names by different tribal communities. Some of the plants used by them are — Bhengaraiya (Argemone Mexicana L.), Dagdaua (Oroxylum indicum Vent.), Parsidha (Hardwickia binata Roxb.), Sulwari (Celosia argentina L.), Guma (Leucas cephalotus Spreng.), Dhatura (Datura innoxia Mill.), Ghikunwara (Aloe barbadensis Miller.), Rohina (Soymida febrifuga A. Juss), Kathmahuli (Bauhinia racemosa Lamk.) etc. Tribal communities of Sonbhadra have Unique life style and culture. Their Knowledge about herbs related to treatment of generalized swelling (anasarca) are unique. There is need to explore their knowledge related to anasarca and to establish it on scientific ground.

**Keywords:** Ethnobotanical, Sonbhadra, Anasarca,











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#### APPLICATION OF DIFFERENT HERBS ON SKIN DISEASES

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#### **ABSTRACT**

Skin diseases occur worldwide and amount to approximately 34% of all occupational diseases encountered. They affect people of all ages from neonates to the elderly and constitute one of the five reasons for medical consultation. Herbal therapy for skin disorders has been used for thousands of years. Specific herbs and their uses developed regionally, based on locally available plants and through trade in ethnobotanical remedies. Many herbal medicine that are used clinically in the treatment of skin disease are such as Neem (Azadiracta indica), Haridra(Curcuma longa), Jati (Jasminum grandiflorum), Chandan (Santalum album), Kesar (Crocus sativus), Ghritkumari (Aloe barbadensis) etc. The aim of the present study was to collect ethno-medicinal knowledge for the application of medicinal plants as a treatment for skin disorders. Information on the herbal cosmetics was collected via electronic search (using pub med, scifinder, Google Scholar and web of science) and library search. Furthermore, information also was obtained from some local books on ethnopharmacology. Herbal drugs have found to possess great potential in the treatment of various kinds of skin disease. The cost effectiveness, availability and greater curative potential and lesser side effects of herbal drugs over allopathic medications make them more popular among common people nowadays. As skin disorders have personal and social relevance, the area should be considered relevantly and discovery of plant based medicine is necessary. Therefore, ayurvedic knowledge supported by modern science is necessary to isolate, characterise, and standardise the activec onstituents from herbal source. This combination of traditional and modern knowledge can produce novel drugs for skin diseases.

**Keywords:** ethnopharmacology, skin disorders,











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# MEDICINAL UTILITY AND VARIABILITY IN PHYTOCHEMICAL PARAMETERS OF SOME MEDICINAL PLANTS FROM THE INDIAN ARID ZONE

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#### **ABSTRACT**

Thepresent paper deals with variability in phytochemicals in terms of primary and secondary metabolites during different developmental stages,viz. vegetative, flowering and fr uiting in three important medicinal plants of the Indian arid zone, viz. *Alhagi maurorum* (Camelthorn), Caralluma edulis (Pimpa) and *Schweinfurthia papilionacea* (Sanipat). Primary metabolites are important for growth and development of plants, which includes chlorophylls, proteins, phosphorus and sugars, whereas secondary ones including total phenols and alkaloids play a significant role in plant defense system against competitors, pathogens or predators.

Alhagi maurorum Medikus (Family: Fabaceae) commonly known as Camelthorn, is a small erect shrub, armed with sharp and long spines. The plant is used to treat numerous diseases such as headache, toothache, cancer, liver disorders, kidney stone and urinary tract infections. Caralluma edulis Edgew. (Family: Apocynaceae), popularly known as Pimpa is an erect, succulent, branched, perennial herb and 15- 60 cm high with viscous watery sap. The young shoots are edible and acidic in taste. Traditionally, plant is used to treat parasitic infections, alzheimer disease, rheumatism, hypertension, gastric problems, diabetes and leprosy. Schweinfurthia papilionacea Linn. (Family: Plantaginaceae), commonly known as Sanipatis a dwarf glaucous herb with 15-30 cm height. The powdered leaves and fruits are sold in the market as a drug, which is prescribed by Vaids in typhoid fever and also used as stuff for bleeding in the nose.

Results revealed that leaf pigments were reported maximum during vegetative stage in all selected plants. The higher amounts of osmotic potential were reported during vegetative stage in A. maurorum and S. papilionacea, while in C. edulis during flowering stage. In A. maurorum, the highest content of proline were observed in vegetative stage, whereas during fruiting stage in C. edulis and S. papilionacea. The maximum amounts of total sugars were reported during fruiting stage in all selected plants. In A. maurorum, the highest amount of phosphorus was observed during vegetative stage, whereas in C. edulis and S. papilionaceaduring flowering stage. The highest content of crude protein were reported during vegetative stage in A. maurorum and C. edulis, whereas during flowering stage in S. papilionacea. The maximum amount of total alkaloids were observed during vegetative, fruiting and flowering stages in A. maurorum, C. edulis and S. papilionacea plants, respectively. The highest content of total phenolswas reported during vegetative stage in A. maurorum, whereas in fruiting and flowering stages in C. edulis and S. papilionacea, respectively.











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# CURATIVE ROLE OF HUMAN CHORIONIC GONADOTROPIN, VITAMIN E AND VITAMIN C ON ETHYL ACETATE FRACTION OF TERMINALIA CHEBULA MEDIATED HYPO TESTICULAR ACTIVITIES IN WISTAR RAT: GENOMIC AND FLOW-CYTOMETRIC APPROACHES

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#### **ABSTRACT**

The present study was performed to evaluate the effective role of hCG (human chorionic gonadotrophin) or vitamin E or C against ethyl acetate fraction of hydro-methanolic (3:2) extract of *Terminalia chebula* induced hypo testicular activities. In that case the treatment was done by co administration of ethyl acetate fraction with hCG (0.5 International Unit / 100 g body weight) or vitamin E (20 mg/ 100 g body weight) or vitamin C (20 mg/ 100 g body weight) at different treated groups. Sperm viability and mitochondrial status through flow-cytometry, androgenic key enzymes activity, serum testosterone level, oxidative stress parameters, histological study, metabolic toxicity level and genomic profile were assessed. Fraction treatment for 5 mg dose showed an increased dead sperm cell population size and sperm with depolarized mitochondria. Androgenic key enzyme activities, serum testosterone were decreased significantly along with catalase activity and increased level in thiobarbituric acid reactive substance (TBARS) in ethyl acetate fraction of 5 mg dose treated group. Gene expression and histological study showed significant diminution in the same treated group in respect to the control. Serum GOT and GPT levels not differ from control significantly. Recovery against hypo testicular activity of ethyl acetate fraction was noted after hCG (0.5 I.U) or vitamin E (20 mg) or vitamin C (20 mg) treated groups towards control. In this concern vitamin C (20 mg) treated group showed most effective and promising result for the reduction of hypo-testicular activity.

**Keywords:** *Terminalia chebula*, Flow-cytometry, Anti-fertility, Oxidative stress, Vitamin C, hCG.











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### VARIOUS PLANTS SPECIES AND THEIR PRODUCTS ARE USED FOR THE CONTROL OF FASCIOLIASIS

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### **ABSTRACT**

Fascioliasis infections are caused by two major species of parasitic trematodes (Fasciola hepatica and F. gigantica) that mainly affect the liver among cattle and human populations. These trematodes are leaf-shaped worms that are mainly habitat in the cattle's liver. These diseases are also known as liver flukes. Fascioliasis is a food-borne disease, commonly acquired by eating encysted metacercaria on aquatic leaves are eaten as vegetables. It is also transmitted through metacercaria-contaminated water. An infection of Fascioliasis is the most common zoonoses among cattle and humans, which affect a large number of the worldwide population. Various medicinal plants have been identified and used traditionally throughout the world from the beginning of human civilization to control parasitic infections. Several plant species with various properties have been mentioned in the oldest Indian mythology such as Rig-Veda and Athar-Veda, thus history of the use of medicinal plants in India dates back to 3500-1800B.C. Some plants have medicinal properties as well as anti-parasitic activity due to the presence of active components. The controls of Fascioliasis infections in a different part of the world are using various synthetic drugs among cattle and human populations which are very effective in the control of these flukes, but it also causes several side effects. Snail is an important intermediate vector host for fascioliasis infections among cattle and human populations. The snail population can be controlled by using plant products as well as chemotherapy of infected snails by the use of phytochemicals with different techniques it may be effective in the Fascioliasis control program. Thus, the use of different phytochemicals or plant products can be useful for control of the snail population below the threshold level in the environment. Phytochemicals are easily available biodegradable and ecologically safer. These approaches may be new techniques for the control of flukes.

**Keywords:** Liver Fluke; Fascioliasis; Vector snail control; Medicinal plants; Phytochemicals.











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### INSIGHT ON GLANDULAR TRICHOMES OF SOLANUM VIARUM DUNAL IN ACCUMULATION AND EXTRUSION OF HAZARDOUS HEAVY METALS

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### **ABSTRACT**

Trichomes are specialized epidermal extensions which are present only on the aerial parts of the plant. They can be categorized into non-glandular trichomes (NGTs) and glandular trichomes (GTs) according to morphological and cellular variation. GTs are specialized micro organs, considered as factories for the biosynthesis of considerable amount of different classes of bioactive metabolites. Trichomes are known for their protective roles against different biotic and abiotic stresses. GTs are model status of high biotechnological interests and studied well for various functional attributes such as secretion, absorption and storage of different kind of exudates. However, the molecular regulation and production of secondary metabolite along with HMs accumulation and extrusion is not fully explored in GTs. A weed species belongs to Solanaceae family Solanum viarum Dunal have not studied for the same purposes. Aerial parts of the plant covered with different types of trichomes and sharp prickles which make them inedible to animals. In the present scenario, remediation of HMs contaminated soil has become an important work to be done for the well-being of human and their environment. Phytoremediation can be regarded as an excellent method in environmental technologies. The present contemporary research explores the S. viarum Dunal function as a potential accumulator of hazardous HMs viz. lead (Pb), cadmium (Cd), zinc (Zn), and their combination (CHM). Later, SEM-EDX microanalysis suggested involvement of S. viarum capitate glandular trichomes (CGTs) as excretory organs for Cd and Zn. Metabolic profiling of ripened GTs revealed they are the storage site of different medicinally important metabolites. Identification and characterization of SvMYB315-like transcription factor in GTs may provide clue for the mechanism of action of both the processes.

**Keywords:** Extrusion; Glandular trichome; Heavy metal; Metabolite; Phytoremediation; SEM-EDX.











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### CONCEPTUAL STUDY OF KRIKATIKA MARMA CHIKITSA IN MANYASTAMBHA (CERVICAL SPONDYLOSIS)

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### **ABSTRACT**

Cervical spondylosis is a relatively common disease that typically interferes with the patient's day-to-day activities. It affects the vertebral bodies, intervertebral disk, and contents of the spinal canal in the neck resulting neck pain and neck stiffness and restricted movements. It is a chronic degenerative disorder of the cervical spine that is primarily age-related There is currently no effective treatment for the condition in modern medicine. Therefore, it is imperative to identify new, safe, and effective treatments for cervical spondylosis. In contemporary medicine, we can correlate cervical spondylosis to Manyastambha with respect to etiology, pathology, and clinical features, which is Urdhava Jatru Gata Vikara and has Vata kaph dosh dominancy. Due to its rising prevalence today, it requires appropriate management that produces both short-term and long-term effects. Therefore, Marma chikitsa, an alternate Ayurvedic therapy, can be suggested to such patients. Marma therapy is one that instantly relieves pain by balancing the Vata and Kapha Dosha in the area without causing any negative side effects. Several sessions are necessary for improved outcomes. Acute or chronicManyastambha instances, mild, moderate, or severe cases, can all be treated with noticeable changes taking into account the relevant literature, attention is placed in this study on particular Marma points (or energypoints)i.e, krikatika marma therapy for managingManyastambha(cer vical spondylosis). This conceptual investigation could be useful from a clinical point.

**Keywords:** Energy points, Manyastambha, Marma Chikitsa, Cervical spondylosis.











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### ASSESSING ANTHROPOGENIC PRESSURE AND THREATS ON PAEONIA EMODI WALL. EX ROYLE HABITATS IN GARHWAL HIMALAYA, INDIA

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### **ABSTRACT**

The Garhwal Himalaya is among the major repositories of immensely valuable wild edible plants and provides food security to the local population. Among the valuable plant species, Paeonia emodi (family Paeoniaceae) is an important wild edible species that found in temperate regions with an altitude range between 1800 and 2800 meters. The species is facing a severe threat to its sustainability due to overharvesting, habitat disturbances, and a lack of effort regarding conservation. This study investigated anthropogenic pressure, population decline perceptions in the natural habitat, and vulnerability assessment of P. emodi under selected study sites (n=23 villages). A semi structured guestionnaire was used to interview approximately 45% of the local inhabitants, including herbal practitioners. The perceptions and responses of 464 local people were documented regarding potential causes of deterioration and feasible options for sustainable utilization. Using the weight survey method, we estimated the actual amount of collection based on personal interaction and direct observation. In order to determine the threats status, a rapid vulnerability assessment (RVA) was performed and twelve threat criteria were used based on the current exploitation and usage. The present study revealed that leaf (100%) was the most frequently harvested part, followed by stem (95.65%), seed (26.09%), root (21.74%) and flower (13.04%). The village Triyuginarayan and Pothivasa recorded the highest collection scores (140.27 $\pm$ 3.28, and 136.40±2.17) while the purpose of collection was mostly edible (100%), medicinal (100%), and least commercial (8.70%). The RVA (total = 21) is categorized as category II (intermediate side of the RVA index), indicating a degree of vulnerability. Growing this species through agro-production techniques may alleviate the pressure on the existing population as a result of the availability of raw materials for commercial and household uses. These findings will provide an effective framework for conservation and management decisions and plans.

**Keywords:** Sustainability, Anthropogenic, Deterioration, Household, Agro-Production.











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### IN-SILICO SCREENING OF 'TRAYUSHNADI-VATI' FOR DETECTION OF POTENTIAL INHIBITORS OF ALDOSE REDUCTASE AND ALDO-KETO REDUCTASE

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### **ABSTRACT**

Diabetes mellitus, a metabolic syndrome characterized by hyper-glycemia that could result either from inadequate insulin synthesis and secretion, or insulin resistance, or over-seretion of glucagon. Ayurvedic drug 'Trayushnadi-Vati' contains several phytochemical compounds that exhibits medicinal properties viz. anti-hyperglycemic, anti-oxidant, hepatoprotective, anti-hypertensive and anti-inflammatory. Aldose reductase or AR (EC 1.1.1.21), is an important enzyme of Polyol pathway; and Aldo-keto reductase or AKR1C1(EC 1.1.1.112), is an enzyme critical for steroid biosynthesis and metabolism. Botheznymes plays crucial role in diabetic complications. LDT and Glibenclamide are known inhibitor of AR (PDB:1USO) and AKR1C1 (PDB: 4YVP). 'Trayushnadi-Vati' powder was prepared and its phytochemicals were extracted in ethylacetate by 'maceration cold extraction' method. GCMS (untargeted analysis) of ethylacetate extract was done at Metabolome Division, NIPGR which led to detection of seven major compounds, By utilizing PubChem database, the PubChem SDF files and CID number of these compounds were retrieved. Then, these seven compounds were screened through in-silicomode for possible toxicity, mutagenecity and carcinogenecity using TOPKAT software. The potential inhibitors of AR and AKR1C1 were screened out of non-toxic, non-mutagenic and noncarcinogenic compounds, using Discovery Studio 2021 computer-aided virtual screening technique. Libdock was used for virtual screening and scoring of LDT and Glibenclamide (control drug for AR and AKR1C1 respectively), as well as for candidate inhibitor compounds, and CDOCKER module was utilized for molecular docking analysis. Two out of seven compounds (CID64860and 5317320) were screened out as toxic by TOPKAT screening while other compounds were screened out as non-mutagenic and non-carcinogenic. Based on Libdockscore, CDOCKER Energy and CDOCKER Interaction Energy scores of LDT (Control drug for AR), Glibenclamide (Control drug for AKR1C1) and candidate phytochemical compounds, CID 638024 and CID5366423 were found to be candidate potential inhibitor of AR and AKR1C1 respectively, as they yielded scores either greater than or near to the scores of the 'control drug' of respective target enzyme.

Keywords: TOPKAT, Libdockscore, GCMS, Ayurvedic drug.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ARSENIC CONTAMINATION GROUND WATER AND ITS IMPACT ON HUMAN HEALTH

### Prithviraj Karak

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### **ABSTRACT**

Arsenic toxicity is now considered as one of the biggest environmental issue and major public health concern across the world. Different parts of the world are affected by arsenic contamination of groundwater, the largest population at risk in Bangladesh, followed by West Bengal in India. Among the various routes of exposure of arsenic, drinking water is the main source of arsenic poisoning. According to the recent World Health Organization report, arsenic from contaminated water can be quickly and easily absorbed and depending on its metabolic form, may adversely affect human health. The main aim of this article is to summarize the impact of arsenic contamination on human health. A per usal of literature reveals that exposure to higher concentrations of arsenic are serious for a number of reasons. Such exposure for a longer periods leads to ill effect on several systems such as cutaeneous system, respirator y system, cardiovascular system, gastrointestinal system, nervous system, reproductive system, hormonal system and immunity. The adverse effects of inorganic arsenic cause many human diseases, human sufferings and increased human mortality. It affects various age groups variously. Population of some countries are more vulnerable to arsenic contamination problems. Studies have revealed the mechanisms of arsenic induced many diseases particularly for cancer, cardiovascular effects, immunological effects and neurological effects in human. This article represents the scientific information emerged especially during the last two decades in the field of the ecotoxicological properties of arsenic and the potential mechanism of arsenic-induced toxicity, with a special emphasis on arsenic induced carcinogenesis.

Keywords: Arsenic, contamination, cancerous effect, ecotoxicological properties, toxicity.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### COW DUNG (GOMAY) MICROORGANISMS FOR BIO-FUEL PRODUCTION AND BIOREMEDIATION OF ENVIRONMENTAL POLLUTION

### Priyanka Jasani and Bhuwal Ram

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### **ABSTRACT**

Cow dung is a cheap and easily available bio-resource on our planet. Many traditional uses of cow dung such as burning as fuel, mosquito repellent and as cleansing agent are already known in India. As per Ayurveda the cow dung (Gomeya) as not mere a rejected material but as a best natural purifier. It contains approximately 80% of water, around 24 minerals, crude fibers like cellulose, lignin, hemicelluloses and crude proteins with diverse group of microorganisms such as Acinetobacter, Bacillus, etc. which makes them suitable for microbial degradation of pollutants. Along with the production of novel chemicals, many cow dung microorganisms have shown natural ability to increase soil fertility through phosphate solubilization. Cow dung slurry maintained in the ratio of 1:10 or 1:25 is able to degrade the rural. urban and hospital wastes, including oil spillage to five basic elements. In India, 69.9 % population resides in rural areas. where cow (Bos indicus) is major cattle and generates 9-15 kg dung/day. Palm oil biomass mixed with cow dung in the ratio of 1:3 significantly improved the compost quality with respect to various parameters such as pH, electrical conductivity and C:N ratio. Thus, cow dung may not only act as a substitute for chemical fertilizers because it supplements organic matter, but also as a conditioner for soil. Cow dung is the major source of biogas or gobar gas production in India. Cow dung generated from 3-5 cattle/day can run a simple 8-10 m3 biogas plant which is able to produce 1.5–2 m3 biogas per day. Cow dung and its microorganisms have recently been tapped for the remediation of heavy metals like chromium, strontium and arsenic. Using cow dung for bioremediation is a simple and eco-friendly method as it does not produce any harmful by products.

Keywords: cow dung, microorganism, environment, pollution, biogas.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### POWER QUALITY ENHANCEMENT THROUGH MITIGATION TECHNIQUES IN GRID CONNECTED SOLAR PV SYSTEM

### Priyanka Rathore<sup>1</sup> and Surender Kumar Sharma<sup>2</sup>

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### **ABSTRACT**

The need for electrical energy is continually increasing as per population demand, thus the integration of Solar photovoltaic systems into distribution networks is also rapidly increasing, This system is a viable renewable and carbon-free electric energy supply for addressing the fossil-fuel shortfall and global warming even though it has a substantial impact on the network's power quality. The goal of this paper is to investigate the impact of solar PV integration on distribution network power quality. Latest developments indicate that photovoltaic (PV) is primarily based on competitive technological improvement of power quality challenges therefore, this study gives a modified composite observer-based Instantaneous reactive power theory (IRPT) along with Soft computing-based techniques, Artificial neural network(ANN)techniques, Unified Power quality conditioner (UPQC), Least squares harmonic extraction technique and Maximum Power Point Tracking (MPPT)also various custom power devices such as DSTATCOM, DVR in solar photovoltaic systems are becoming more important. The major key concerns and obstacles in solar photovoltaic systems are Transients, Poor power factor,Reactive power burden, Harmonic currents, Unbalanced current spartial shading situations, rapid changes in climatic conditions, installation cost, cost of semiconductor material, and poor solar panel power conversion efficiency in grid-connected photovoltaic (PV) systems in order to increase power quality (PQ) and grid risibility under low grid voltage. PV power is fed into the grid using voltage source inverters (VSIs).

**Keywords:** Soft computing-based techniques, Artificial neural network (ANN) techniques, Unified Power quality conditioner (UPQC), Least squares harmonic extraction technique and Maximum Power Point Tracking (MPPT), DSTATCOM, DVR.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### PRE-CLINICAL PARALLEL THERAPY OF PHYTOCEUTICALS MIXTURE WITH GOLD STANDARD DRUG FOR DIABETES MANAGEMENT IN RAT: GENOMIC AND PROTEOMIC APPROACHES

### **Debidas Ghosh**

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### **ABSTRACT**

As globalization continues to bring everyone and everything closer together, but not all of the outcomes are necessarily positive. Globalization of distinct cultures and experiences spreads chronic health issues widely. Diabetes mellitus, a public health catastrophe that is threatening the economies of all countries, but especially in developing nations fueled by rapid urbanization, nutrition transition, and increasingly sedentary lifestyles. Urbanization has a detrimental effect on the environment by creating environmental stressors, which in-turn has a negative overall impact on health. Environmental stressors produce ROS can generate point-mutations that result in mutant enzyme production and cellular metabolic problems, particularly abnormalities of the metabolism of carbohydrates, a major contributor to diabetes. Furthermore, free radicals inhibit the gene expression of antioxidant enzymes via the cellular signalling system, which leads in high levels of cellular free radicals in metabolic organs, may cause DM. For the management of diabetes, natural compounds with potent antioxidant properties are play crucial role for sustainable development. Nutraceuticals presents in E. jumbulana, Camellia sinensis, H. antidysenterica have major contribution for such management by increasing gene expression of antioxidant enzymes, hexokinase in liver and kidney that favors glucose utilization in cell. The effectiveness of nutraceuticals has also established by the fact that they are capable of generating -cells from hepatic stem cells and consequently, plasma insulin and c-peptide levels both are elevated. Insulin receptor gene expression is also corrected by such nutraceuticals in diabetic model animals. The efficacy of such nutraceuticals is comparable with anti-diabetic gold- standard drugs. Such studies have been confirmed by genomics and proteomics studies using real time PCR-followed by southern and western blotting studies. This field of research unfolds a new domain known as 'Neutrogenomics' in health science.

It is concluded that natural products may be the parallel management process of modern therapy as per guideline of WHO.

**Keywords:** Diabetes, Natural products, Nutraceuticals, Oxidative stress, Gene expression.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### COMPARATIVE STUDY OF ANTI-TESTICULAR ACTIVITY OF ETHYL ACETATE FRACTION OF TINOSPORA CORDIFOLIA (WILLD.) WITH TAMSULOSIN HCL, AN ADRENERGIC RECEPTOR ANTAGONIST

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### **ABSTRACT**

Population overgrowth has detrimental effects on the planet and the economic progress of developing nations. Several contraceptive methods are required to control population growth. Scientific advancement in natural resources renders phytotherapy a demanding domain of study for sustainable development. Synthetic anti-androgenic drug i.e., Tamsulosin-Hcl is used as a contraceptive and showed adverse effects such as hepatotoxicity, osteoporosis, hypotension and erectile dysfunction. The use of herbal contraceptives as complementary and alternative medicine that have less side effects and reversible efficacy is now more acceptable by society. Tinospora cordifolia stem commonly known as giloy or gulancha has been used as a folk medicine in Ayurveda and reported for antifertility effects in male albino rats. This comparative study aims to evaluate the effectiveness of the ethyl-acetate fraction (Et-Fr) of T. cordifolia stem in relation to the gold standard drug i.e., Tamsulosin-Hcl, for anti-testicular and associated toxicological effects. Et-Fr of T. cordifolia at different doses i.e., 1.25, 2.5 and 5 mg/100 gm of body weight (BW)/day and Tamsulosin-Hcl at the dose of 0.04 mg/100 gm of BW/day were given to the male albino rats for 28 days. Significant reductions (p < 0.05) of reproductive organo-somatic indices, spermiological sensors, serum testosterone, LH, FSH level, androgenic testicular key enzymes activities, seminiferous tubular diameter and germ-cell populations at stage VII spermatogenic cycle were noted in all treated groups respect to the vehicle-treated control group (VTCG). Anti-testicular effect was near about 100% in 5 mg and 50% in 2.5 mg Et-Fr group compared to standard-drug. Toxicity parameters were increased 40-50% in standard-drug treated group but in Et-Fr treated-group, this elevation was 7-10% compared to VTCG which is far less than standard-drug. So, it may be concluded that Et-Fr of T, cordifolia stem is non-toxic and possesses effective anti-testicular activities that can be used for herbal male contraceptive development.

**Keywords:** Tamsulosin, Anti-testicular, Tinospora cordifolia, Contraceptive, folk medicine.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### BIOCHAR: A SUSTAINABLE, CIRCULAR, AND CARBON-NEGATIVE APPROACH TO VALORIZE THE WASTE

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### **ABSTRACT**

Biochar is defined by the International Biochar Initiative as "The solid material obtained from the thermochemical conversion of biomass in an oxygen-limited environment used for the soil amendments purposes". Biochar has higher surface functionalities, negative surface charge, porous surface, recalcitrant carbon, and rich in nutrient content. It has multiple applications in agricultural and environmental areas. It may also be used for energy production such as the briquettes of biochar for combustion purposes. An innovative circular model was examined for biochar production for minimizing the resources use and carbon emissions. Biochars from animal waste have greater potential for fertilizer supplements while distilled waste-derived biochar and crop residue can be more effective for carbon sequestration and reduction in greenhouse emissions. Biochar prepared from different waste were compared for agricultural properties, GHG reductions and nutrients supplements. The distilled waste derived biochar was also studied for immobilizing the metal and pesticide in soil vis a vis their uptake in the plant. The multiple beneficial effects such as immobilization of Pb and Cd, improvement in plant nutrients, lower metal uptake, and improved plant growth and secondary metabolite content was observed for application of biochar in metal contaminated soil. Biochar amendment significantly reduced the atrazine toxicity on soil microbiotaand enhanced the microbial activities of soil. Soil enzyme index revealed that biochar amendments significantly

**Keywords:** Greenhouse, Biochars, Recalcitrant, Pesticide.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### PHYTOCHEMICAL STANDARDIZATION OF DHATAKI[WOODFORDIAFLORIBUNDA]SALISBFLOWERS

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### **ABSTRACT**

Background: Fire Flame bush (wood for diafloribunda) commonly called as Dhatakibelongs to Lythraceae family, is an important medicinal plant used in Ayurveda. It is mainly emphasized in the ancient Ayurvedic texts as one of the most important fermentation agents, hence the names Madya Pushpa and Madakara. Acharya Charaka quoted it among the fermenting agents (Asava yoni) and described under Purishasangrahniya, Mutravirajaniya and Sandhaniya group of drugs. Dhataki is one of the major ingredient of many important formulations used in Ayurvedic system of medicine such as Dhatakyaditaila, Dhatakyadicurna, Pusyanugacurna, Brhat Gangadharacurna, Aravindasava Therapeutically these are employed in Vrana (wound) Raktasrava (haemorrhage), pradara (leucorrhoea) and Shukradosha (seminal abnormalities).

Aim: To investigate preliminary phytochemical aspects of flower to standardize the drug.

**Materials and Methods:** In the current study flowers of W. floribunda are collected and subjected for macromicroscopicand physico-chemical analysis aiding standard methodology.

**Results:** Macro-microscopic features of different parts of flower are documented along with their photographs. Physico-chemical values like total ash, acid insoluble ash, water soluble ash, ethanol soluble extractive and water-soluble extractive are recorded.

**Conclusion:** Macro and microscopic features along with physico-chemical value serve as reference standard for identification and distinguishing the sample from its substitutes and adulterants.

**Keywords:** Dhataki, Wood for diafloribunda, phytochemical, standardization, physico-chemical.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### RESTORATION TECHNIQUES FOR THE CONSERVATION OF NATHSAGAR WETLAND AT PAITHAN IN THE AURANGABAD DISTRICT OF MAHARASHTRA

### Rahul Mahamuni

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### **ABSTRACT**

Wetlands of India, estimated to be 58.2 million hectares, are important repositories of aquatic biodiversity. The diverse Eco climatic regimes extant in the country resulted in a variety of wetland systems ranging from high altitude cold desert wetlands to hot and humid wetlands in coastal zones with its diverse flora and fauna. Anthropogenic impact on wetlands is the indication of destroyed or shrinkage of wetland on yearly basis and agricultural conversion. Nathsagar wetland is located at 19°29.8'.7"N and 75°22'12"E. longitude at Paithan Taluka of Aurangabad District of Maharashtra in India. Nathsagar Reservoir is the name of the reservoir formed by Jaikwadi dam. Fed by the Godavari and Pravara rivers the reservoir is about 55 km long and 27 km wide and spans over 350 km2. Study of anthropogenic pressure at Jaikwadi dam area shows some parts of wetland was turn in to rice field. The study was carried out to evaluate the water quality of the Jaikwadi dam area by studying the physico-chemical aspects of the Nathsagar wetland. The study was carried out seasonally during the year 2019 to 2020 by collecting water samples from Nathsagar wetland.

Direct deforestation in wetlands, inundation by dammed reservoirs, alteration of upper watersheds, degraded water quality, reduction in ground water table, introduced species and extinction of native biota are responsible for the destruction of the wetland areas. Where sites are adjacent to existing wetlands, restoration can sometimes be left to natural regeneration. This occurs through seed drift from nearby areas, germination from the seed bank and the arrival of flood borne diaspores, and rhizome fragments. Here, the technology can be used to enhance the rate at which species recolonize a wetland site where natural sources of material are not present, these involve the introduction of biological material using rhizomes, seed, seedlings, mature plants, and cuttings.

Keywords: Anthropogenic activities, Nathsagar wetland, Restoration, Conservation and biological material.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### DEMARCATION OF LANDSLIDE SUSCEPTIBLE ZONES IN THE WESTERN GHATS REGION OF KOLLAM DISTRICT (KERALA, INDIA) USING THE FREQUENCY RATIO MODEL

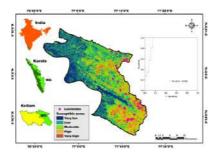
### Rajendran Shobha Ajin

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### **ABSTRACT**

Landslides are the major natural catastrophes occurring in the Western Ghats (WG) region due to the heavy rainfall occurring during the monsoon season and the rugged topography, which has been modified as a part of development activities. The Western Ghats of Kerala are prone to landslides, with a total of 4728 incidences reported in the year 2018. In this study, the WG portion of the Kollam district was selected as the study area because the susceptibility of this region had not been properly studied by the landslide experts. The creation of a landslide susceptibility map using the Frequency Ratio (FR) model and assessment of its accuracy are the goals of this modeling. Ten landslide conditioning factors, such as slope, normalized difference vegetation index (NDVI), soil, stream channel buffer, aspect, road buffer, land use and land cover (LULC), lithology, lineament buffer, and elevation, have been considered in this research. This modeling determined that the very high-susceptible zone covered approximately 23% of the study area. As evidenced by the validation, the FR model's prediction accuracy (AUC score of 0.926, or 92.6%) is outstanding. This showed how well the FR model would work to identify locations that were susceptible to landslides. With the aid of a validated susceptibility map like this one, it will be easier to find infrastructure and socially and economically weaker groups, like tribals, who live in the critical zones.

Keywords: Frequency ratio, India, Landslides, Western Ghats.













## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### A STUDY ON SHEEP MARKETING PRACTICES OF HASSAN DISTRICT AND ITS INFLUENCE ON PROFITABILITY IN SHEEP PRODUCTION

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### **ABSTRACT**

Effective marketing of products remains the key to profitable sheep farming. The present study was conducted at Hassan district of Karnataka state to record the sheep marketing practices adopted by the farmers of this region. A stratified multistage random sampling method was adopted to select 150 sheep farmers from the study area. The information on sheep marketing practices was gathered using a pre tested structured interview schedule and the data obtained was analysed statistically. The study revealed that marketing of sheep was considered to be a major constraint faced by many of the sheep farmers. They chose mainly the village collectors (55.33 %), local market (40.67 %) relatives and friends (3.33 %) and other channels (10.67 %) as their main marketing channels. Need based marketing channel was observed and 41.33 per cent of sheep farmers sold their stock to meet financial requirement of domestic needs. About 24 per cent sold the surplus animals while, 19.33 per cent sold the animals to repay their loans and 9.33 per cent sold their stock, due to other reasons. The price fixation was based on both market demand as well as body condition judgement of the animals (40.67 %). The choice of animals for sale belonged to the age group of 6-12 months old (59.33 %) followed < 6 month old animals and > 12 month old. It was noticed that 46.67 per cent of the sheep farmers travelled < 10 km to buy or sell their animals, followed by 28 per cent travelling about 10-20 km and 25.33 per cent travelled > 20 km for marketing of animals.

The marketing strategies adopted by the sheep farmers of this region were fragile and unscientific. As such no specific marketing plans were noticed and it was majorly need based and middleman dominated.

**Keywords:** Sheep, Marketing, Hassan, Profitability.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### AMELIORATING POTENTIAL OF FENUGREEK SEED EXTRACT ON SODIUM FLUORIDE INDUCED SPERMATOGENIC AND ANDROGENIC DISORDERS IN MALE ALBINO RATS

### Rajkumar Maiti

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#### **ABSTRACT**

Presently the lack of drinking water due to fluoride contamination is a global challenge in rural and urban areas. Presence of fluoride in low concentration is essential for health; but beyond the concentration of 1-1.5 mg/L may contribute health hazards as per WHO and BIS. It is well known that low concentration fluoride contributes to the development of teeth and bones, while excessive fluoride intake has an adverse effect on various tissues and organs, including bones, teeth, liver, kidneys, intestines and testes. Excessive fluoride ingestion via drinking water interfere with spermatogenesis and lowered sperm quality of human and animals. Fluoride contamination can disrupt steroidogenesis and male gametogenesis which may also induce testicular oxidative stress and infer tility. The aim of this present study was to investigate the efficacy of fenugreek seeds as a potential natural source for the amelioration of sodium fluoride induced testicular dysfunctions. This study was carried out to evaluate the effect of hydro-methanolic extract (60:40) of fenugreek seeds at the dose of 200 mg/kg body weight/day for 28 days on fluoride induced testicular toxicity in albino rats. Treatment of rats with sodium fluoride at the dose of 20 mg/kg/day for 28 days resulted a significant diminution in activities of key androgenic enzymes like  $\Delta^5$ , 3 $\beta$ -HSD, 17 $\beta$ -HSD and testosterone, LH, FSH as well as sperm count, motility and viability. Antioxidant markers like superoxide dismutase, catalase, glutathione peroxidase, glutathione-Stransferase and reduced glutathione level were significantly diminished along with significant elevation of ROS and lipid peroxides in fluoride treated group. The levels of caspase-3/8 and Bax were also increased along with diminution of Bcl-2 following sodium fluoride treatment. TUNEL assay of the testicular tissue section also evidenced the induction of germ cell apoptosis. After fenugreek seed extract administration in fluoride treated animals, the above-mentioned parameters were protected towards the control level. Moreover, there was no liver and kidney toxicity noted following the treatment of fenugreek seed extract. The supplementation of fenugreek seed extract which contains some beneficial phytochemicals might have the potential therapeutic efficacy against sodium fluoride induced testicular dysfunctions.

**Keywords:** Sodium fluoride; fenugreek seed extract; antioxidant enzymes; lipid peroxidation; apoptotic markers.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### SIGNIFICANCE OF NUTRACEUTICALS OILS ON HUMAN HEALTH: A REVIEW

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### **ABSTRACT**

Nutraceuticals can be defined as nutritional components that provide therapeutic or physiological benefits beyond the basic nutritional needs and include a wide range of compounds. The rise of nutraceuticals has increased over the past few years, and they are being used by people for various preventive and therapeutic ailments which reduces the risk of cancer, cardiovascular diseases, and other metabolic and lifestyle disorders. Among the various processed and fortified derived foods, nutraceuticals oils contribute a pivotal role on impact of human health conditions. Nuts oil are rich source of nutraceuticals, and contain desirable components such as carotenoids, lecithin, phytosterols and other free fatty acids. This study comprises the health benefits of different nutraceuticals oils like peanut oil, pine nut oil, chestnut oil etc. Peanut oil contains around 80% of these fatty acids are either oleic or linoleic acid. Pinolenic acid from pine nuts is emerging as a dietary PUFA and promising supplement in the prevention of inflammatory disorders. Similarly, to these gaining properties and due to its potential health benefits chestnut oil popularity have been increases and used as routinely human diet. Smoke point is also an important contributing factor in determining the consequences of human health benefits. Oils which have been used for frying high smoke point oil should be used which resist its degradation and oxidative capability. There exists a huge scope in exploring these nutraceuticals benefits for various diseases.

**Keywords:** Nutraceuticals, Fatty acids, Smoke point.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### PESTICIDES IN FOOD CROPS AND HEALTH HAZARDS: A REVIEW ARTICLE

### Rajni Devi\* and Munna Lal Prajapati

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### **ABSTRACT**

Background: Pesticides are chemical compounds that are used to eliminate insects, rodents, fungi, and weeds etc. They include insecticides, herbicides, fungicides, rodenticides and other compounds. Basically, pesticides are substances that are used to either kill or prevent the growth of pests. It revealed that pesticides were the main case of poisoning, with an overall prevalence of 63% due to widespread use of pesticides for agricultural and household activities. About one-third of agriculture products are produced depending on the application of pesticides. Pesticides which are used in food crops has different properties and toxicological effects. In addition, the method of exposure—such as ingestion, inhalation, or direct skin contact—can affect the degree of toxicity. It is widely acknowledged that pesticides are crucial to the development of agriculture since they can decrease product losses, increase affordable yields, and enhance food quality. Some pesticides only cause negative effects when exposure levels above a specified safe limit. Those who are exposed to significant amounts of pesticides may experience immediate poisoning or long-term health problems.

**Aim:** The purpose of this study is to make awareness about the pesticides in food crops and health hazards.

Material And Method: Reviewed from various databases, books, websites and various journals.

**Result:** Classification of the pesticides has been done. Their mechanism of action has been recorded. Their toxicity effect in the body is also mentioned. The effects of the pesticides on the human health has been described.

**Discussion and Conclusion:** Pesticides are chemical fertilizers used mostly in agriculture sector for controlling unwanted organisms which can damage crops. They damage our natural environment by contaminating it and cause several health issues. Pesticides can be removed from soil, water and environment by using plants, animals, and different chemicals. Soil and environment can be saved from pesticides toxicity by wise use of pesticide for crops.

**Keywords:** Pesticides, crops, toxicity, health hazards.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### EFFECT OF ENDOTOXIN ON FEMALE REPRODUCTIVE HEALTH: PROTECTION BY MELATONIN

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### **ABSTRACT**

The association between inflammation and metabolic disturbances leads to various female pathophysiological conditions. We investigated the ameliorative/protective actions of melatonin on LPS-induced ovarian pathophysiology in golden hamsters, *Mesocricetus auratus*. Hamsters were administered with exogenous melatonin (5 mg/kg BW) and LPS (100  $\mu$ g/kg BW) intraperitoneally for 7 days. LPS treatment impaired ovarian folliculogenesis as evident by histoarchitecture and steroidogenesis. On the other hand, LPS administration also perturbed thyroid hormone (T3 and T4) homeostasis, ovarian melatonin receptor (MT-1) expression, antioxidant potential (S0D and catalase) and concomitantly elevated nitro-oxidative stress (decreased S0D, catalase and elevated CRP, TNF $\alpha$  and nitrate/nitrite level) and inflammatory load (NF $\alpha$ B and COX-2) which culminated into ovarian follicular apoptosis (elevated caspase-3). LPS also disrupted metabolic homeostasis as indicated by hyper-insulinemia with a simultaneous decrease in ovarian IR/GLUT-4 and glucose content. Moreover, LPS treatment decreased expressions of key markers of ovarian physiology (SIRT-1, pErk1/2, PI3K and pAkt). Melatonin co- treatment with LPS improve these detrimental changes proposing melatonin as a potent therapeutic candidate against ovarian dysfunction induced by endotoxin. We can draw the conclusion from our study that LPS exposure had profound deleterious effects on ovarian physiology. On the other hand, melatonin supplementation to LPS has alleviated these modulations thus leading it to emerge as a potent therapeutic agent with remarkable capacity to attenuate the ovarian detrimental changes triggered by LPS-induced endotoxemia.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### ASSOCIATIONS OF SPERM DNA FRAGMENTATION AND POST-THAW SURVIVAL OF SPERMATOZOA WITH PRIMARY AND SECONDARY MALE INFERTILITY IN INDIA

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#### **ABSTRACT**

**Background and objectives:** The cryopreservation of spermatozoa is a key procedure in several assisted reproductive techniques (ART). The knowledge about the inter-relationships between the extent of sperm DNA damage in infertile males and the possible effects of cryopreservation is essential to optimize the therapeutic approaches. The present study evaluated the association of different types of infertility with sperm DNA damage and post-thaw sperm cryosurvival.

**Methods:** Twenty-one infertile couples with either primary (n=14, PI) or secondary infertility (n=7, SI) and with suitable sperm counts were randomly considered for semen freezing. The semen samples taken at <7 days of sexual abstinence were subjected to routine semen analysis (semen volume, pH, and motility), and sperm DNA fragmentation testing before freezing. The post-thaw sperm motility was evaluated in all the samples. Data from the two groups were analyzed by the Mann-Whitney test.

**Results:** Semen characteristics (semen volume, semen pH, percent leukocytes, and pre-freeze sperm concentration and motility) were similar (P>0.05) between the patients with PI and SI. However, the post-thaw motility was lower (P<0.05) in patients with SI as compared to PI. In contrast to PI patients, significant (P<0.05) drop in post-thaw motility ( $66.00\pm6.85\%$ ) was recorded in SI patients as compared to their pre-freeze state ( $42.96\pm3.63\%$ ). Irrespective of the type of infertility, the cryopreservation resulted in significant drop (28.8%) in sperm motility compared to fresh ejaculates. The sperm DNA fragmentation was higher (P<0.05) in freshly ejaculated semen samples of patients with SI than in those with PI.

**Interpretation & conclusions**: It can be concluded that the low post-thaw sperm survival in patients with SI may be due to already existing higher sperm DNA fragmentation in them. The supplementation of SI patients and/or fortification of semen samples with appropriate additives should be adopted to prevent sperm DNA damage for better subsequent ART outcomes.

Keywords: Assisted reproduction techniques, cryopreservation, DNA fragmentation, infertility, sperm motility.











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### ANTHROPOGENIC DISTURBANCES AND SPECIAL CASE OF DESTRUCTION OF SAUSSUREA OBVALLATA IN THE MADHYAMAHESHWAR REGION. WESTERN HIMALAYA. INDIA

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### **ABSTRACT**

Anthropogenic disturbances are caused by humans on the natural environment and its ecosystems. These are the primary causes of resource depletion, climate change, biodiversity loss and other problems. We can create several strategies to minimize the detrimental effects of anthropogenic disturbances on the natural environment or its ecosystems by analysing them. In the Madhymaheshwar region of the Rudraprayag district (Uttarakhand), Western Himalaya, India, the study was conducted to analyse the various parameters of anthropogenic pressure and disturbances that negatively affect the forest and grassland ecosystems. Disturbance parameters such as grazing intensities, lopping percentage, disturbance index, density, Total Basal Cover (TBC) of cut stumps were studied by random sampling plots (quadrats). Destruction of Saussurea obvallata was analysed by visiting after specific period of time. On the basis of frequency of disturbances (conspicuously of anthropogenic nature) the studied forest sites were categorised into highly disturbed (HD), moderately disturbed (MD) and least disturbed (LD) classes. Carl-Pearson correlation coefficient was used as a statistical tool to demystify the relationship between different disturbance parameters. On the basis of altitudinal gradient, entire study area was divided into five sites. These sites were fur ther categorised into highly disturbed (HD), moderately disturbed (MD) and least disturbed (LD). Construction of road was found to be the significant source of anthropogenic disturbance along with other anthropogenic disturbances. Belief that Brahma Kamal makes Lord Shiva happy (Hindu deity) was found to be most important reason for the destruction of Saussurea obvallata. Within one weak, 500 to 700 flowers were removed from their natural habitat for worship. To minimize the anthropogenic disturbances multiple approaches are required. There must be alternative livelihoods for local communities and efforts must be made to aware them about biodiversity conservation.

**Keywords:** Anthropogenic disturbance, belief, livelihood, biodiversity conservation.











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### ROLE OF HERBAL MEDICINES & AYURVEDIC PALLIATIVE CARE IN CANCER MANAGEMENT

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### **ABSTRACT**

As we know that Cancer is more serious illness all over world. Cancer is the second largest cause of death after cardiovascular disease Somewhere on Earth, a female dies every 68 seconds because of breast cancer. World wide, 21.7 million new cases of cancer and 13 million cancer related deaths will be estimated by 2030. Palliative care is the medical care that improve the quality of life of patients and their loved ones. In Ayurveda, we can provide palliative care in three form: Deva-vyapashryachikitsa, Yukti-vyapashryaChikitsa and Satva-vajayChikitsa. By this way, we can diminishes the side effects of active treatment (Surgery, chemotherapy, Radiotherapy, Immunotherapy and Brachytherapy etc.) of cancer patients &improved the quality of life of patients. Ayurveda has possess many herbs which have kept anticancerous property like Moringa oliefera, Tinospora cardifolia and Curcumin etc. In Yukti-vyapashrya Chikitsa, we use the herbs which are immunomodulator & anti cancerous in action for the management of side effects of modern technologies and medicines.

**Keywords:** Cancer, *Tinospora cardifolia, Moringa oliefer,* curcumin, palliative care, Ayurveda.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### EXPLORING THE POTENTIAL OF MICROALGAE AS A SUSTAINABLE BIODIESEL FEEDSTOCK: A STUDY ON CHLORELLA MINUTISSIMA MCC 27

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### **ABSTRACT**

The world's dependence on energy sources, particularly fuels, has led to an increased interest in biofuel production due to concerns about finite resources. This study focuses on the viability of using microalgae, specifically Chlorella minutissima MCC 27, as a third-generation biodiesel feedstock. Chlorella minutissima MCC 27 was grown in a photo incubator at 25°C in BG-11 medium, and once the cells had reached optimal growth, they were harvested and subjected to drying and lipid extraction. The Bligh and Dyer method was employed to extract the lipids from the microalgae, which were then used for further analysis. The extracted lipids were transformed into biodiesel through the process of transesterification. To characterize the resulting biodiesel, FT-IR and GC-MS were utilized. Functional groups such as aldehyde, carboxyl, and ester groups, which align with the abundance of carbohydrates, proteins, and lipids, were expected to show peaks. The FT-IR analysis confirmed the presence of biodiesel through the identification of methylester. In the future, this study could be expanded to investigate the scalability of producing biodiesel from microalgae. This could involve exploring different growth conditions for C. minutissima MCC 27, as well as other microalgae species, to determine the optimal conditions for maximal lipid production. Additionally, the economic viability of producing biodiesel from microalgae could be analyzed to assess its potential as a sustainable and cost-effective alternative to traditional fossil fuels. Further characterization of the biodiesel produced from C. minutissima MCC 27 could be conducted, including assessing its stability and performance in engines. Overall, these future aspects could provide valuable insights into the potential of microalgae as a renewable source of biodiesel.

**Keywords:** Sustainable Biodiesel, Chlorella minutissima MCC 27, FT-IR, GC- MS, transesterification.











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### NUTRACEUTICALS IN AYURVEDIC PERSPECTIVES: UNDERSTATING ROLES IN PREVENTIVE MEDICINE

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### **ABSTRACT**

Ayurveda has mentioned the importance of the food, its benefits in maintenance of the health, and for therapeutic purposes. Nutraceutical, a term combining the words "Nutrition" and "Pharmaceutical" is a food or food product that provides health and medical benefits, including the prevention and treatment of disease as well as assistance in lowering the risk of chronic diseases. Nutraceutical has more advantages over themedicine as they avoid side effect, have been naturallyfor tified with nutritional supplement etc. The roots of the concept of nutraceuticals can be traced to the ancient Ayurvedic system of health care. Ayurvedic system advises a wide range of food preparations that can be consumed daily for improving quality of life by providing protection from external and internal stressors. Ancient classical texts like Charaksamhita to newer classics Bhavaprakash, have mentioned nutritional guidelines. The global nutraceutical market is expanding rapidly and is expected to reach a value of \$74.7 billion in 2020, up from its 2016 value of \$36.6 billion. Given the importance of nutraceuticals, the shifting trends in perception of people and, the growing industrial/ markets, it is necessary to investigate the fundamental class of dietary supplements with medicinal properties (general nutraceuticals) with the implications of Ayurveda. The current review is aimed to explore the fundamental herbal nutraceuticals and their benefits for both health and disease states

**Keywords:** Chronic diseases, Nutraceutical, Bhavaprakash, Charaksamhita.











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### ASSESSING THE INFLUENCE OF SALICYLIC ACID ON GAS EXCHANGE AND PHOTOCHEMICAL EFFICIENCY OF VALERIANA WALLICHII DC SYN. JATAMANSI JONES UNDER THE INFLUENCE OF DROUGHT STRESS

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### **ABSTRACT**

In recent days there are many incidences of er ratic climatic events worldwide. These changes negatively affect plant growth, development and economical yield. The changes in the plant growth patterns are the results of various physiological and biochemical reactions. In current research, Valeriana wallichii is studied for the effect of salicylic acid on gas exchange and photochemical efficiency under drought stress. Valeriana wallichii is a temperate perennial herb commonly known as Indian valerian or Tagar. The plant is valued for essential oil obtained from roots, recognized in world trade for its utility in pharma and cosmetics. The interaction between environment and genetics of plant initiate a number of physiological and metabolic activities resulting in synthesis of bioactive compounds. Interruption in any of the processes due to the alteration in external environment directly affects the synthesis of these medicinally important bioactive constituents. Study is carried out with four levels of water availability (100%, 75%, 50% and 25%FC) and four concentrations of salicylic acid (1, 0.75, 0.50 and 0.25mM). A significant effect of drought was observed for physiological and yield traits under study. During severe stress photosynthesis rate (Pn), transpiration rate (Tr), stomatal conductance (gs), carboxylation efficiency (CE), ratio of internal to ambient CO2 (Ci/Ca), maximum photochemical efficiency (Fv/Fm), water use efficiency (WUE), relative water content (RWC) and dry yield decreases whereas. % conductivity and electron transport flux/ reaction centre of PS II (ETo/RC) increases significantly. It was also observed that salicylic acid (SA) at various drought level efficiently moderates the impact of drought stress. Under severe water stress, SA at 1mM and 0.50mM concentration efficiently reduces the effect of drought by increasing WUE, intrinsic water use efficiency (iWUE), qs. CE, transpiration rate (Tr), maximum photochemical efficiency and dry root yield. At moderate to mild drought stress, 0.75mM and 0.50mM SA concentration effectively improves gas exchangeparameters, photochemical efficiency and yield traits under observation. Consequently, from the current study it is evident that SA as an elicitor efficiently improves the efficiency of gas exchange parameters, photochemical efficiency and yield by moderating stress owing to water deficit conditions. Thus, foliar application of SA might be useful in improving yield efficiency of medicinal plant under moderate to severe drought stress condition.

Keywords: Drought stress, Physiological trait, Photochemical efficiency, Tagar, Salicylic acid.











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### TISSUE CULTURE OF ORCHID NODAL EXPLANTS : COMPARATIVE RESPONSE OF CYTOKININ AND AUXINS

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### **ABSTRACT**

Orchids are cold climatic ornamental and medicinally important plants. Those are of great interests due to high commercial value. Orchids plants are cultivated by both in vivo and in vitro methods. Or namental orchids have taken floriculture industry in a big way. Keeping in mind commercial importance, tissue culture of Orchids have gained much interests. There are many media compositions being used for micro-propagation of Orchids (*Dendrobium* sp) along with plant growth regulators (PGR). In this study, we used nodal explants for regeneration of shoot buds using MS media with different concentrations of Cytokinins and Auxins. For shoot induction using nodal meristems, different concentrations of BAP (0.5, 1, 1.5, 2, 2.5 mg/l) supplemented with 0.5 mg/l NAA was used. Explants from four varieties, White Big sanam, Aiyara Pink, Sonia Red and Big white were tested. The best shoot induction was seen when BAP and NAA were used in concentration of 1.5 mg/L of BAP and 0.5 mg/L of NAA. However, different varietal responses were seen.

**Keywords:** Cytokinin, Auxin, Orchid, in-vitro propagation, *Dendrobium* sp.











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### POTENTIAL THERAPEUTIC MECHANISMS OF PLANT-DERIVED NATURAL PRODUCTS FOR CERVICAL CANCER

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### **ABSTRACT**

Due to its high morbidity and mortality rates, cervical cancer, the second most frequent gynaecological malignancy worldwide, seriously jeopardises women's health. Dr ug resistance, recurrence, metastasis and even adverse effects are risks associated with conventional therapies. Therefore, it is urgently necessary to create new, highly effective, unobtrusive and add on medications for the treatment and prevention of cervical cancer. Natural substances derived from medicinal plants have recently been investigated as promising anticancer treatments that preferentially destroy tumour cells while posing little risks. An increasing body of research has demonstrated that natural products can effectively combat cervical cancer through a variety of methods, including apoptotic induction, suppression of angiogenesis and telomerase activity, immune system improvement, and reversal of multidrug resistance. Sthauneyaka (Taxus baccata), Sadampushpa (Lochnera rosea), Bhallataka (Semecarpus anacardium), Yashthimadhu (Glycyrrhiza glabra), Haridra (Curcuma longa), Damanaka (Artemisia annua), Kokilaksha (Asteracantha longifolia), Vanatrapushi (Podophyllum hexandrum), etc are some potential medicinal plants investigated for anticancer activity. This essay examines the mechanism and benefits of treatment.

**Keywords:** Cervical cancer, Haridra, Medicinal plants, Natural compounds, Sthaunevaka,











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### HEPATOPROTECTIVE ACTIVITY OF PUNARNAVA (BOERHAAVIA DIFFUSA LINN.)

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#### **ABSTRACT**

Boerhaavia diffusa L. belongs to the family of Nyctaginaceae. It is also known as Punarnava in Ayurveda .The whole plant or its specific parts (root ,stem and leaves) of Punarnava is known to have medicinal properties and have a long history of its use by indigenous and tribal people in India. In Ayurveda, Punarnava (Boerhaavia diffusa L.) had been used in the treatment of liver diseases since past years. Due to its Madhura, Tikta and Kashaya R asa it is useful in Paittika disorders like Hepatic disorders, considered as Pandu in Ayurveda. Pharmacological profile of Aqueoust root extract of B.diffusa possessed marked activity againt thioacetamide induced hepatotoxicity. It has been found that Swarasa form of the drug administration has more hepatoprotective activity than powdered form. It is an established herbal drug used for the management of stress, inflammation, urinary tract disorders and cardiac disorders. It also possesses many pharmacological activities like diuretic, hepatoprotecive, anti-inflammatory, anti-diabetic, immuno-modulatory, adaptogenic, anticonvulsant, antistress and antiurolithic activity. All these properties are due to different essential phytochemical constituent.

**Keywords:** Boerhaavia diffusa, pharmacological profile, swaras.













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### ROLE OF A NOVEL NATURAL PRODUCT DERIVED CALEBIN A ANALOG AS-18 AS AN ANTICANCER AGENT VIA DISRUPTING CELLULAR REDOX BALANCE IN HUMAN TRIPLE NEGATIVE BREAST CANCER CELL LINE.

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### **ABSTRACT**

Chemotherapy, radiation therapy, and immunotherapy are now recognised as the most effective methods for treating cancer worldwide, however they do have certain drawbacks due to their toxicity. The use of natural products from plants, animals, and marine organisms and their derivatives for proper targeting of both the cancer cell and cancer stem cell colonies has thus produced remarkable leads for the control of cancer due to their limited cytotoxicity to the normal cell as compared to cancer cells. This is because current therapeutics for the treatment of various types of tumours are toxic, and natural products from plants, animals, and marine organisms have been used for centuries. Around 50% of the medications used for cancer chemoprevention are made from natural sources and their structural derivatives (small molecules). Calebin-A, a naturally occurring curcuminoid analog derived from turmeric root (Curcuma longa) has gained attention due to its tremendous anti-cancer potential. Thus, keeping this in mind an array of Calebin-A analogs were designed and created and were evaluated for their cytotoxic potentials on various murine and human malignant cell lines. One such analog compound AS-18 was effectively opted out as most potent with a high cytotoxic effect against cancer cells specially in Triple-negative breast cancer cell line MDA-MB-231 cell line and less toxicity against normal cell lines. Triple-negative breast cancer (TNBC), is a specific subtype of epithelial breast tumours that are immuno-histochemically negative for the protein expression of the estrogen receptor (ER), the progesterone receptor (PR) and lack over expression/gene amplification of HER2. Our present study established ROS-induced mitochondrial dysfunction and finally apoptosis induction by the lead compound in MDA-MB-231. The inhibition of cell propagation was linked to the data confirming G2/M phase arrest. The mitochondrial dysfunction was confirmed by JC1 and MitoSOX assay along with the change in Bax/Bcl-2 ratio. The lead compound AS-18 suppressed the NRF-2 protein expression thus increasing the free radicals in the tumor cells. The compound AS-18 induced ROS-mediated caspase-dependent apoptosis as the western blot data confirmed caspase activation. The 4T1 injected Balb/C syngeneic tumor model confirmed the augmentation in the inhibitory outcome of the lead compound. This study sums up the mechanistic pathway by which the compound AS-18 mediates its cytotoxic effect in cancer cells. A novel Calebin-A compound AS-18 caused ROS mediated mitochondrial-dependent apoptosis in MDAMB-231 cells. AS-18 was also found to restrict the in-vitro cell migration through its anti-mitotic property. Thus our results cumulatively propose AS-18 as a new chemotherapeutic regime which might be effective to target the deadly aspects of the TNBC.

Keywords: Calebin -A, Apoptosis, ROS, Nrf-2, AS-18, TNBC.











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### NANOCOSMECEUTICAL FORMULATIONS OF NATURAL OILS FOR SKIN CARE

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### **ABSTRACT**

Skin conditions such as wound healing, inflammation, and infections are traditionally treated with herbal medicines from time immemorial. Natural oils are a complex mixture of phytochemicals poised with immense potential and biological activities via varied mechanism of actions to treat various skin conditions. However, these natural oils suffer from poor stability issues are prone to oxidation in the presence of air and rancidity at high temperatures. With the help of nanotechnological interventions these problems associated with natural oils can be waived off. The lipid based nanoformulations of natural oils can enhance their skin permeation and provide protection to them against light and heat, thus increasing their stability profile. Nano-based cosmetics of natural oils such as transferosomes, ethosomes. liposomes, niosomes, nanomicelles, solid lipid nanoparticles, and nanostructured lipid nanoparticles are being formulated nowadays. The essential oils of Lavandula species. Calendula officinalis. Common sage. Curcuma longa L.. Origanum vulgare L., Moringa oleifera oil, Rose oil, Tea-tree oil, Sweet almond oil, and citronella oil from Cympogon nardus are presently being used in nano-cosmeceutical for mulations such as anti-skin-ageing crèmes, in per fumery industry, as antibacterial and antifungal cosmetic crèmes, in treatment of wound healing, as UV protectant sun-screen crèmes etc in the form of gels, hydrogels, bigels, lotions, and crèmes for hair care and skin care routines by encapsulating the natural oil in a lipid based nanocarrier and controlling their delivery in the deep layers of skin for maximum effectiveness and efficacy. The market value of these nano skin care products seems to be very high because of easy quantification of natural oils, low cost of production and easy preparation techniques.

**Keywords:** Natural Oils, Hydrogels, Bigels, Lotions.











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### MOLECULAR AND BIOCHEMICAL CHARCTERIZATION OF STAPHYLOCOCCUS PSEUDINTERMEDIUS FROM CANINE PYODERMA IN SHIVAMOGGA REGION OF KARNATAKA

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#### **ABSTRACT**

A study on bacteriological investigation of canine pyoderma cases was conducted at the Veterinary College, Shivamogga. Exudate/pus/lesion swabs were collected from clinical cases of canine pyoderma (n=126) and subjected to isolation and identification of bacterial isolates by phenotypic methods. The bacteriological processing of the samples resulted in the recovery of 95 staphylococcal isolates and 18 other bacterial isolates. On culture, staphylococci were the most predominantly (n=95, 75.39%) isolated organisms. The PCR was employed as molecular method in this study for the detection of species of staphylococcal isolates by targeting nuc gene and it was also used for the detection of virulence gene and antibiotic resistance gene in staphylococcal isolates by targeting siet gene and mecA gene, respectively, by using primers published earlier. One of the S. pseudintermedius isolates which confirmed by PCR and sequencing of partial nuc gene was used as positive reference strain for further screening of isolates by PCR.

Based on nuc gene-based PCR, out of 95 staphylococcal isolates obtained, 82 (86.1%)of the isolates were found belonging to S. pseudintermedius. And out of 82 S. pseudintermedius isolates, siet gene was detected in 69 (86.1%)

isolates. S. pseudintermedius was found to be predominant bacterial pathogen responsible for pyoderma in dogs. **Key words**: canine pyoderma. Staphylococcus pseudintermedius. Nuc gene, siet gene, mecA gene, virulence gene.











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### COMBINATORIAL EFFECT OF (-)-EPICATECHIN AND RESVERATROL ON ANTIOXIDANT AND PRO-INFLAMMATORY MARKERS IN D-GALACTOSAMINE INDUCED HEPATITIS RATS

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#### **ABSTRACT**

(-)-Epicatechin and Resveratrol are naturally occurring antioxidant polyphenolic compounds originate in some green plant components. The current study was designed to investigate the combinatorial effect of (-)-epicatechin and resveratrol on antioxidant defense system and proinflammatory cytokine gene expression studies in D-Galactosamine hydrochloride (D-GalN)-mediated hepatic damage to rats.

Male Wistarstrain albino rats were distributed equally into 5 groups of 6 animals each. Group I (Normal healthy control) received saline (0.9% NaCl) orally and olive oil intraperitoneally (ip), group II rats were intoxicated with D-GalN[800mg/kg BW, ip] only, while Groups III, IV and V were induced with D-GalN, thereafter they were administered100 mg/kg body weight of silymarin, combined dose of (-)-epicatechin and resveratrol (50 and 50 mg/kg bw , 1:1) for 21 days respectively. After 21 days of treatment, the rats were sacrificed, and the fasting blood sample was collected by cardiac puncture for liver functional biomarker analyses.

Our experimental results show that there were significant increases (p 0.05) in serum liver functional biomarkers (AST, ALT, ALP, and GGT activities), albumin, bilirubin, and malondialdehyde (MDA) content, but a significant decrease in hepatic SOD, CAT, GPx, GR activities and GSH content. Notably, (—)-epicatechin and resveratrol significantly reduced the expression levels of TNF- , TGF- and IL-6 compared to their levels in D-GalN intoxicated group. Administration of the combined dose of (—)-epicatechin, resveratrol(1:1) and silymarin drug attenuated the toxic insult of D-GalNat the biochemical and molecular levels. Our results reveals that a combination of (—)-epicatechin and resveratrolmay have exhibited a synergistic hepatoprotective activity against D-GalN induced liver damage.

**Keywords:** (—)-Epicatechin, Inflammatory markers, D-GalN, Antioxidants, Liver biomarkers.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# ANTI-DIABETIC AND ANTI-OXIDATIVE EFFICACY OF DIFFERENT (60:40) SOLVENT EXTRACTS OF AERIAL PARTS OF COMMELINA BENGHALENSIS LINN. IN STREPTOZOTOCIN INDUCED DIABETIC MALE ALBINO RAT

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#### **ABSTRACT**

Rapid population growth, urbanization, and industrialization results in an air-polluted environment that minimizes healthy and sustainable living environments. At present WHO recognizes non-communicable diseases (NCDs) as a major challenge in the 2030 agenda. Diabetes is one type of non-communicable disease cum unhealthy lifestyle metabolic syndrome, affects a large number of people worldwide. It is caused due to the low level of insulin from the degenerated beta cell of the pancreas or desensitization of insulin receptors. Several synthetic drugs have been established for reduction of diabetic complications. In spite of that uses of herbal medicinal choices is one of the best approach in developing countries. The study aims to find out the anti-diabetic and anti-oxidative effect of hydromethanol (60:40) (HM), hydro-ethanol (60:40) (HE), and aqueous (AQ) of aerial parts of Commelina benghalensis linn. in streptozotocin induced male albino rat in comparative approach. Streptozotocin was used for the induction of diabetes at a dose of 4 mg/0.1M citrate buffer/100 g body weight. All extracts were administered orally in diabetic rats at the dose of 20 mg/0.5 ml distilled water/100g body weight for 28 days. Treatment with 20 mg/0.5 ml of HE extract showed maximum recovery than other extract-treated groups. The activities of super oxide dismutase and catalase in renal and hepatic tissues, hexokinase in liver and skeletal muscle, serum high density lipoprotein level were significantly increased (p<0.05) after extract treatment in comparison to untreated diabetic group. Glucose-6-phosphatase (liver and skeletal muscle), level of thiobarbituric acid reactive substances, glutamate oxaloacetate transaminase activities in renal and hepatic tissues and serum low density lipoprotein level were significantly decreased in HE (60:40) extracttreated group. It has been concluded that HE extract of C. benghalensis linn, shows maximum recovery level in most of the relevant sensors.

**Keyword:** Anti-diabetic, anti-oxidative, streptozotocin, C. benghalensis linn.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### SHIFTING OF WORLD TOWARDS GREEN ENERGY AS A STEP TOWARDS SAVING OUR PLANET: A NEED ANALYSIS

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### **ABSTRACT**

**Background:** Fossil fuels have powered us for centuries at the cost of harming our planet. Contrary to them green energy sources are renewable and cost effective without disturbing the ecology of the planet. Fossils fuels sources like natural gas or coal take millions of years to develop as compared to green energy sources which are naturally replenished. Solar, Wind, Geothermal, Biomass, Hydroelectric, & Tidal energy are some of the important sources of green energy. Green energy being more sustainable, cost effective and environmental friendly approach is the need of the hour in order to preserve our mother earth.

**Objective:** Encouraging & spreading awareness about the positive effects of green energy usage as an revolutionizing initiative to preserve our planet.

Material and Method: Reviewed from various databases, books, websites and various journals.

**Results:** Green energy sources release less greenhouse gases and air pollutants as compared to fossil fuels, which is the reason behind disturbance of ecology of our environment. Green energy sources are ecofriendly as these don't pollute the environment which is responsible for the healthy survival of the species on this planet. Green energy sources are not affected by geopolitical crisis, price spikes or supply chain disruptions. In the nearer future fossil fuels cost will shurely increase with their scarcity and this would shurely make a shift of humanity towards green energy sources which is far better and sustainable approach.

**Conclusion:** Green energy can replace fossil fuels in the future due to their environmental friendly and sustainable approach. Green energy sources can become better way of job creation at the same time being economically viable. Shifting towards green energy sources is the need of hour to improve climatic and environmental conditions to save our planet.

**Keywords:** Planet, sustainable, environment, green energy, fossil fuel.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### AYURVEDIC MANAGEMENT OF THYROID DISORDER THROUGH HERBAL MEDICINE

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### **ABSTRACT**

The thyroid gland is the largest endocrine gland of the body and is responsible for the secretion of hormones like thyroxin that control the metabolic rate in the body. In India, there are 42 million people who are suffering from it and it is increasing approx. 1 million per year there are many diseases related to thyroid problems like-thyroid nodules, goiter, hypothyroid, hyperthyroid, Hashimoto's thyroiditis, thyroid cancer, etc. Thyroid disorders can be caused by an overproduction or underproduction of thyroid hormones. Previous studies have shown that the prevalence of hypothyroidism is 10.9%. The prevalence of self-reported goiter or thyroid disorder in National Family Health Survey IV INFHS IV (2015-2016)1 was 2.2%, while it was 2.9% in NFHS-V (2019-2021). Avurvedic medicine can be used alongside standard treatments to help you manage your thyroid disorder. In hypothyroidism, Kapha and Vata doshas are aggravated and pitta dosha is reduced from normal. It is a Sthanikvyadhiunder Galagandaroga, Its Lakshanas are seen in the whole body. In the Ayurvedic text, the thyroid is mentioned as 'Avattu'. Various assortments of formulations are available for such conditions in the Ayurveda system of medicine. Natural resources can be used for the prevention and amelioration of thyroid in human beings. The objective of this review article is going to explore both Ayurvedic and natural aspects of curing thyroid problems and focusing on the prevention and curing of hypothyroidism. It is a literaturebased review article in which some research papers and Ayurvedic textbooks are included. The combinations of Ayurvedic methods were effective in the management of hypothyroidism. By some Ayurvedic practices maybewe can tackle the problem of the thyroid.

**Keywords:** Ayurveda, Medicinal plants, Metabolism, hypothyroidism, T3, T4, TSH.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## YOGA AND ITS EFFECT ON ENVIRONMENT BORN DISEASES

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## **ABSTRACT**

Environmental diseases are directly attributed to environmental factors. There are various examples of these diseases including skin cancer, diseases due to exposure to toxic metals, allergens, toxins for m biological agents, toxic social factors in environment like racism, alcoholism, smoking related diseases, immune deficiency disorders etc. Yoga and Ayurveda are both about working with the forces of nature and environment. Yoga means the union of individual consciousness with supreme consciousness. Yoga consists of eight steps or limbs (Yama, niyama, asanas, pranayama, pratyahara, dharna, dhyana, samadhi). The five elements of yoga (air, water, fire, earth and space) all are connected to environment. The imbalance in any of them will lead to diseases. Y oga leads to reduction of stress and anxiety, provides better cardiovascular health, strengthens our immune system. So, there is increment in body's innate immunity to fight with various diseases. The practice of yoga is beneficial for all dimensions of health like physical, mental, social, emotional and is in relation to promote the harmony of nature. It helps in conserving environment and also decreasing the incidence of environment related disorders.

Keywords: Yoga, Environment, Asanas, Immunity.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# BOTANICALS AS SUSTAINABLE BIO-PRESERVATIVES OF DRY FRUIT COMMODITIES

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## **ABSTRACT**

Dry fruits have been kept in an incredibly pricey section of food commodity because of their restriction to grow only in particular world regions. Rich in essential oils, potassium, protein and calcium, they aid in immunity enhancement and general human health as super foods. Their water content is removed either naturally by sun-drying or by special dehydrators or dryers, to impart them a long-term storage. But still they are suffering deterioration via xerophiles; mainly species of Aspergillus, Penicillium, Chrysosporium etc. The contaminating fungi release mycotoxins viz., aflatoxins, ochratoxins, ergot alkaloids, fumonisins etc. which have harmful manifestations for human health on consumption. Physical and biochemical deterioration of dry fruits reduce their commercial value and are also hazardous to human health due to myctoxin production. In rescue, chemical preservatives are being used but most of them have been found to have some cytotoxicity. With the goal of managing them, several botanicals with meagre mammalian toxicity are now being proposed to be used as biopreservatives. Thus, plant-based preservatives can be used as a sustainable mitigant in order to prevent deterioration of dry-fruits in food industry.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# EVALUATION OF ANTIDIABETIC AND ANTIOXIDATIVE EFFICACY OF ROOT TUBER OF IPOMOEA MAURITIANA IN STREPTOZOTOCIN (STZ) INDUCED DIABETIC MALE ALBINO RAT: A DOSE SELECTION STUDY

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## **ABSTRACT**

Unhealthy lifestyles, and poor mental health negatively impact on human metabolic processes. Diabetes mellitus, a group of metabolic disorders characterized by chronic hyperglycemia due to insufficiency of insulin action, insulin level or both. Morbidity and mortality related to diabetes increase the global economic burden and disturb sustainability. Antidiabetic treatment with synthetic drugs has numerous side effects, which increases the use of herbal drugs for this purpose. Ipomoea mauritianaknown as 'Bhuikumra' has a folk reputation in diabetes prevention. This experiment has been conducted to search out an effective dose of hydro-methanol (60:40) extract of Ipomoea mauritianainstreptozotocin(STZ) induced diabetic rats. To developdiabetes, STZwas injected intramuscularly at the dose of 4mg/100 g body weight. Fasting blood glucose level (FBG), serum insulin and oral glucose tolerance test (OGTT) were checked to assess glycaemic status. Glucose-6-phosphatase, hexokinase activities in liver and skeletal muscle. antioxidant enzyme activities and lipid peroxidation end product in liver and kidney tissues were also measured along with the plasma HDL and LDL levels. There has significant increase (P < 0.05) in FBG, serum insulin and OGTT levels in diabetic rats compared to the vehicle-treated control group. After treatment with the doses of 10mg, 20mg, 30mg of hydro-methanol extract of said plant part resulted significant recovery (P < 0.05), Glucose-6-phosphatase activity. TBARSlevel, LDL level were elevated and hexokinase activity, SOD and catalaseactivityand LDL level were at significantly diminished in diabetic group (P < 0.05) in comparison to the untreated diabetic group after treatment (P < 0.05) 0.05)doses. Dose dependent recovery showed that 10 mg dose is threshold dose in this purpose. It is concluded that hydro-methanol (60:40) extract of root tuber of Ipomoea mauritianaat the dose of 10mg per 100g body weight gives maximum antidiabetic and antioxidative effects.

**Keywords:** Ipomoea mauritiana, Diabetes mellitus, Streptozotocin..











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# ENVIRONMENTAL EFFECTS OF DECCAN VOLCANISM ON BIOTIC CHANGES AND K/PGB MASS EXTINCTION IN THE INDIAN SUB-CONTINENT: ORGANO-MOLECULAR EVIDENCES

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# **ABSTRACT**

Deccan volcanism triggered environmental stress controlled biotic transformations and Cretaceous/Palaeogene boundary mass extinction in the Indian sub-continent. Although, these revelations still remain inconclusive. Thus, high resolution organo-molecular studies on marine Um-Sohryngkew river (USR) and Mahadeo-Cherrapunji road (MCR) K/PgB succession have been attempted. These findings further used as standard reference to compare biotic attributes of the brackish (Jhilmili)/fresh (Aniar) water intertrappeans and bole beds of the Deccan Traps. Additionally, organo-molecular compounds of the former section show strong correlation with the Global Stratotype and Section Point. Prolific abundance of n-alkanes in the Um-Sohryngkew river succession implies mixture of terrestrial input from emergent and submerged/floating aquatic macrophytes. Low molecular weight aromatic hydrocarbon markers peak out in biozone CF2 of the Um-Sohrynakew river succession. Possibly, it corresponds to Greenhouse effects, linked to second phase of Deccan volcanism at the latest Masstrichtian 29r. High amount of short chain n-fatty acids and n-alkanes derived from autochthonous marine algal remains noticed in these sections. This suggests enhanced continental runoff and soil bacteria biomass passage into the marine realm. Comparing the MCR to the published KPB bearing shallow-marine facies of the Um-Sohryngkew River (USR) section data, we document high SCA and FA contents together with the abundance of the even carbon numbered SCA (n-C16 and n-C18). This suggests thermal degradation and partial combustion of non-woody biomass. But, dominance of mid and long chain n-alkanes over short chain nalkanes in the Jhilmilliinter trappean and intra-volcanic bole beds of the eastern Deccan volcanic province suggested terrestrial origin from higher plants under semi-arid climatic conditions. Abundant n-fatty acids found in the eastern Deccan bole beds suggested their origin from the bacteria, developed in terrestrial environment. Depleted 13Cbulk values recorded from Jhilmilliintertrappean and eastern Deccan bole beds are indicative of low primary productivity and burning of terrestrial biomass. TOC maxima observed in the lowermost DanianP1a foraminiferal biozone of the Um-Sohryngkew river succession is also linked to late Deccan phase-2 eruptions. Presence of three low molecular weight aromatic hydrocarbon markers noticed in the eastern Deccan bole bed; imply incomplete combustion of organic compounds in terrestrial environment. Moreover, Dominance of high molecular weight aromatic hydrocarbon markers noticed in the biozone CF3 of the Um-Sohryngkew river succession is akin to those reported from the other well-established K/PB successions, suggestive of their possible derivation from regional fire induced by the heat, supplied by the Deccan volcanism, linked to K/PgB transition. Notable rise in the PAHs and exhibit maximum abundance in the shaly KPB transition layer (in biozone PO) and the immediately underlying layer of MCR KPB succession. The PAH excursions match well with the major incidences of the Deccan volcanic episodes and convergence of the Indian-plate with the Eurasian and Burmese-plates. These events were responsible for sea-water disturbances, eustatic and depositional changes, including the retreat of the Tethys. Anomalous concentrations of combustion-derived PAHs together with the high fragmentation and dissolution of the planktonic foraminifer shells show marine biodiversity and biotic distress. Significantly, the pyrogenic PAH excursions are restricted to either the KPB layer itself or strictly below or above it, indicate regional-fire incidences and attendant KPB transition (66.016 ± 0.050 Ma). Thus, regional wildfire played significant role and effected ecosystem which was perhaps accountable for the mass extinction.

**Keywords:** Cretaceous-Paleogene boundary (KPB), n-alkanes, n-fatty acids, Pyrogenic PAH compounds, Mahadeo-Cherrapunji Road (MCR) section, Um-Sohryngkew River (USR) section, regional fire.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# IMPORTANCE OF THE PRINCIPLE ORIENTED APPROACH OF AYURVEDIC SAMHITAS IN RESEARCH

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### **ABSTRACT**

The science of Ayruveda has met a long journey from the period of Veda and Upanishad till today. During course of gradual evaluation till the human civilization human being have experienced different up and down, these experiences has influenced and enriched the science of India, Resources of Ayruveda are derived from principle literary works named Brihattrayi and Laghuttrayi. Prime objective of Ayruveda is maintenance of health of healthy person and treatment of person suffering from any psychosomatic diseases.

In Ayurvedic Samhitas there are two approach viz; Principle oriented approach and Disease oriented approach for the all the aspects related to the maintenance of health of healthy person and treatment of person suffering from any psychosomatic diseases. All the principle related to the origin of diseases, their etiological factors and management are described in detail in Brihattrayi and Laghuttrayi. For the proper understanding of the Ecological factors and biological factors which are related with the maintenance of health of healthy person and treatment of person suffering from any psychosomatic diseases. Proper understanding of the Principle Oriented Approach of Ayurvedic Samhitas is very important for Ayurvedic Research.

**Keywords:** Samhitas, Brihattrayi, Laghuttrayi, Veda and Upanishad.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# IMPACT OF MATERNAL AND CHILD HEALTH AWARENESS PROGRAM ON TRIBAL WOMEN OF REPRODUCTIVE AGE GROUP AT PASCHIMANCHAL UNNAYAN PARSHAD AREA (PUPA), WEST BENGAL: CROSS-SECTIONAL AND LONGITUDINAL STUDIES

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### **ABSTRACT**

Substantial inequalities in maternal health service utilization among tribes and non-tribes are obvious in India. Present study has been conducted to evaluate the effectiveness of Theory of Planned Behavior (TPB) based awareness program in improving maternal and child health status among tribal mothers in West Bengal. The study covers family planning, antenatal care, intranatal care, postnatal care, breastfeeding and child rearing, child immunization as well as water sanitation and hygiene. This study was conducted on 445 tribal women of reproductive age group and was equally allocated to control and experimental groups. The awareness program was applied only to experimental group twice at six months intervals. Evaluation was made at baseline, midline and end-line. A baseline cross-sectional study showed that knowledge, attitude, subjective norms (SN), perceived behavioral control (PBC) and intention were found to predictors of mothers' practice regarding utilization of maternal and child health care services. In most of the experiments, significant improvements have been noted in experimental group at midline study but improvement was much better at endline than midline. Significant mean differences in scores regarding knowledge, attitude, SN, PBC and intention between control and experimental groups indicated the effectiveness of program. But this program has failed to change PBC levels regarding intranatal care and immunization. Subjective norms regarding family planning and antenatal care have changed very little in experimental group in comparison with baseline and endline. Family planning and contraceptive use are sensitive issues and are considered a personal matter to tribal women which might the reason of poor involvement of the family members of the respondents in this study. Despite physical and environmental challenges, awareness generation and behavioral change are possible through program. Regular knocking and interaction between local community health workers and backward mothers are required for sustainable health status at improved levels of tribal communities.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# HRMS CHARACTERIZATION AND FREE RADICAL SCAVENGING CAPACITY OF POLYHERBAL FORMULATION-JARUL VISHESHYOG

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## **ABSTRACT**

Introduction: High resolution mass spectrometry is revolutionized spectrometry which analyses the complex sample and useful in metabolite profiling and characterization. Oxidative stress tweaks in cellular metabolism in many ways. However, it is largely destructive. It's cascade generally is originated by the production of free radicals, which causes the disruption in redox state of cell viainteraction with macromolecules where it is eventually stabilised by electron pairing, chemically and leaving the former highly destabilized. This damage to macromolecules inturninterferes in cellular functioning, resulting several metabolic diseases. Largely, herbal plants are source of various antioxidants as they are rich in polyphenols, phenolic acid, flavonoids, etc.

**Objective:** This study aims to evaluate phytochemical screening of methanolic extract of polyherbal formulation-Jarul Visheshyog (containing three medicinal plants mentioned in AyurvedaLiterature) by HRMS analysis and free radical scavenging capacity using DPPH monitoring.

**Materials and methods:** Methanolic extract of polyherbal formulation was obtained using maceration method and HRMS analysis of the extract was done at SATHI facility, Banaras Hindu University, Varanasi. Free radical scavenging activity was evaluated by DPPH assay. Ascorbic acid was taken as standard and absorbance of test was taken at 517 nm.

**Result:** This study shows that HRMS analysis of the methanolic extract revealed about 3000 phytoconstituents and majority of antidiabetic compounds and polyherbal extract exhibit free radical scavenging activity. The percentage inhibition ofmethanolic extractis 87.30% at 1mg/ml concentrationwhen compared to ascorbic acid as standard at 517 nm.

**Conclusion:** This polyherbal formulation was found to have potential radical scavenging activity and may be effective in nullifyingoxidative stress. Further studies require isolation and characterization of the bioactive compounds for the development of drug.

**Keywords**: HRMS, Anti-oxidant, phytochemical screening, DPPH assay.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# DECLINING HEALTH AND THE COVID-19 SHOCK; MISTAKES IN OUR APPROACH, IN MANAGING HEALTH

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### **ABSTRACT**

As our health, both physiological and psychological, is declining or becoming weak, so even with advancing medical science our health issues are increasing; and this is majorly due to our defective lifestyle, which is very well known. And with declining health human future can't be good. The present COVID-19 pandemic has been more fatal to individuals in weak health, especially with weak lungs; which results mainly due to less aerobic activity and old age. Aerobic activity not only makes our lungs efficient, it improves metabolism and physiological health, which is equally important to fight Covid-19; and help maintain health in many ways. The situation is becoming alarming due to tremendous commercialization and fragmented efforts. Unjustified use of modern medical science has significantly contributed to weak health, among individuals. Many things are well known that can make our health good, but as they don't have commercial importance, they don't get due attention. With COVID-19 shock, we must realize our mistakes and take remedial measures. Very simple but important remedial steps, together with psychological points for its successful implementation, which can have high impact, are highlighted here.

**Keywords:** COVID-19 Shock; Medical Science; Weak Health; Policy; Human.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# HYPO-TESTICULAR EFFECT OF HYDRO-ETHANOLIC (6:4) EXTRACT OF SEED OF ARECA CATECHU (L.): IN AN APPROACH FOR HERBAL CONTRACEPTIVE DEVELOPMENT

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# **ABSTRACT**

**Objective:** To explore the hypo testicular efficacy of hydro ethanol extract of seed of *Areca catechu* (L.)

**Methods:** Hydro ethanolic extract of seed of Areca catechu was administrated orally by gavage feeding at a dose of 40 mg/ 0.5 ml D.W/ 100 gm of body weight for 28 days. Sperm count, testicular androgenic key enzymes such as 5,3 - HSD and 17- -HSD, bio-markers of oxidative stress and toxicity analysis of the testicular tissues were conducted activities.

**Results:** The treated group showed a significant reduction in spermatogenic profile. And serum testosterone level showed a significant diminution (p < 0.05) in the *Areca catechu* (L.) treated group. The above-mentioned androgenic key enzymes activity significantly decreased (p < 0.05) in the extract-treated group. Superoxide dismutase activity was decreased (p < 0.05), while thiobarbituric acid reactive substances level was significantly elevated (p < 0.05) in testicular tissue in the treated group. Toxicity parameters i.e., ACP and ALP activities of the liver and kidney showed nonsignificant changes (p > 0.05) which established the nontoxic nature of *Areca catechu* (L.) extract metabolic organ.

**Conclusion:** This result supported that the Hydro-ethanolic extract of *Areca catechu* (L.) seed has a significant hypo testicular effect in male rat that enlist a possibility of herbal male contraceptives from this drug.

**Keywords:** Areca catechu (L.), hypo testicular, 5,3 -HSD and 17- -HSD, testis.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# MOLECULAR DOCKING ANALYSIS OF PHYTOCHEMICALS FROM RHEUM AUSTRALE AGAINST ER- RECEPTOR

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## **ABSTRACT**

Rheum australe (Himalayan Rhubarb) is a multipurpose medicinal herb found in the Nor th Western Himalayas that is both endemic and endangered. Since antiquity, it has been widely used as a medicinal herb in various traditional systems of medicine to treat a variety of infectious diseases as well as a wide range of conditions affecting the circulatory, digestive, endocrine, respiratory, and skeletal systems. The therapeutic properties of this plant species are attributed to a variety of bioactive secondary metabolite components, including dietary flavonoids and anthraquinones (emodin, chrysophanol, physcion, aloe-emodin, and rhein), as well as stilbenoids (piceatannol, resveratrol). Recent research shows that some of these metabolites and their derivatives are effective lead molecules for treating a range of human diseases. Autodock software was used to conduct the molecular docking analysis. Based on the ADME and drug-likeness properties, the phytochemicals from Rheum australe were chosen. The protein data bank was used to download the ER- protein's structure (PDB ID: 3ERT). From the results obtained, rhein showed the highest affinity towards ER- . Therefore, the phytochemicals from Rheum australe can be used in a diet that has potential nutritional value and helps in breast cancer prevention.

**Keywords:** Rheum australe. Phytochemicals. ER- . Molecular docking.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### SUPPLY CHAIN CHALLENGES IN PHARMA INDUSTRY

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### **ABSTRACT**

**Background:** Ayurvedic classics have given scientific descriptions of the drugs. In those classical texts, where root bark of big plants has been described and suggested for the preparation of therapeutic for mulations. The possibility of the sacrifice of the plant after the collection of the root bark cannot be overruled.

**Objectives:** Therefore, possibilities for the use of some other plant part in place of root bark must be explored for the sustainable utilization of natural resources.

**Methodology:** So, an attempt should be made towards substitution of root bark with stem bark which will be a big step towards plant conservation.

**Observation:** Only a few studies are found that investigate the challenges faced in the supply chain of crude drugs. So study must be oriented toward the exploration of the sustainable utilization of natural resources for the pharma industry.

**Conclusion:** The issue becomes more serious when unskilled persons are deployed for the collection of crude drugs. With the increasing demand and imposition of the wildlife protection acta huge gap has been created between the demand and supply of crude drugs.

**Keywords:** Ayurveda, Crude drugs, Sustainable utilization, Substitution.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# OZONE &VOC AND THEIR IMPACTS ON ENVIRONMENT AND HUMAN HEALTH

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# **ABSTRACT**

Ozone Pollution is considered as one of the greatest health hazard for the Environment and Humans. Photochemistry of secondary air pollutants specifically ozone and its precursors plays an important role in determining the ambient air quality of a particular region. Several recent studies have reported the ozone exposure related mortalities and morbidities. Recently occurrence of extreme levels of 03 concentration which is intimately linked with NO variations has drawn attention of researchers worldwide. Reduction in NO2 levels is primarily attributed to Increase in Ozone concentration during lockdown. The increasing trend of O3due to more favorable conditions for photochemical reactions which can be attributed to more solar insolation, secondly as NO2 is a quencher of O3so the increase in Ozone can be majorly attributable. NOX decreases as less Ozone is quenched. The main purpose of this work has been focused on analysing the photochemistry of one of the major secondary pollutant ozone in Delhi-NCR, India. Spatiotemporal variation in O3concentrationshas been analyzed with data obtained in Delhi-NCR India. Tropospheric ozone is an ambient air pollutant and severely impacts human health and ecosystem. It is a secondary air pollutant which is produced by the pollutants released by the traffic sources, thermal power plants. It is produced when volatile organic compounds (VOCs) and oxides of nitrogen (NOX) photo chemically react in the presence of UV radiation and it can be transported to long distances by wind. It can cause number of diseases in human beings such as throat irritation, chest pain, coughing, airway inflammation, bronchitis, emphysema and affects lung functioning. Additionally the previous studies related to photochemical processes associated with the formation of O3and its deleterious impacts on environment and human health also have been summarized. Furthermore study recommends the need for further research at long-term bases to comprehend the complex photochemical processes determining 03concentrations.

Keywords: Surface Ozone, Ozone Precursors, Atmospheric Pollution, Environment, Human Health.











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# DIETARY NEUTRACEUTICALS FROM FISH AND SHELLFISH AND THEIR BY-PRODUCTS: WAY FORWARD FOR HEALTHY LIFE

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# **ABSTRACT**

Now a days, lifestyle-related diseases have become a serious issue to the human population which is mainly due to imbalance diet pattern. Neutraceuticals can be describe as the molecules/substances having physiological benefits as well as protect human body from chronic diseases. These neutraceuticals molecules can be incorporated into foods, or used as drugs or supplements. Therefore, fish may be considered as a solution to lifestyle-related diseases as fish & shellfish and their by-products are full of various types of neutraceuticals. Fish protein is considered as superior quality as it contains all essential amino acids and other vital supplements. Fish and shellfish are also rich source of dietary vitamins and minerals, such as zinc iron, calcium, phosphor us, iodine, selenium, vitamin A, D, E, several B vitamins (B3, B6, and B12). Due to the presence of healthy lipid like PUFAs (omega-3 and omega-6), fish and shellfish are getting popularized among non-vegetarian people and day by day spreading towards vegetarians, looking into health benefits. The neutraceuticals like collagen, bioactive peptides, protein hydrolysates, gelatin, squalene, chitin, chitosan etc., can considerably improve human health by delaying ageing, preventing acute and chronic diseases, supporting development and maintenance of basic structures, and functions of the body, and for healthy life, a portion of fish may be added in our daily diet.

**Keywords:** Fish, Shellfish, Neutraceutical, Pharmaceutical, Health, Vitamins, Mineral.











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# SPERMICIDAL AND ANTI-TESTICULAR EFFECT OF DIFFERENT CONCENTRATIONS OF HYDRO-ETHANOL (60:40) EXTRACT OF SEED OF LUFFA ACUTANGULA (L.) ROXB.IN RAT AND HUMAN

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### **ABSTRACT**

Phytoceutical technology is basically focuses on the production of herbal remedies which is nature-friendly, healthier and more sustainable. Based on this concept, the development of herbal contraceptives is the most commondemandable area to control overpopulation. The aim of this in-vitro experiment was to investigate the spermicidal and anti-testicular efficacy of hydro-ethanol (60:40) extract (HEE) of the seed of Luffa acutangulain rat and human at different concentrations(1, 2, 4 mg/ml). Spermiological parameters i.e., sperm motility, viability, hypoosmotic swelling, acrosome intactness test were assessed fromrats and humans spermatozoa. Activities of testicular Δ5,3 -HSD, 17 -HSD were assessed. Activities of superoxide dismutase, catalase and the level of thiobarbituric acid reactive substances were measured in reproductive (testis, epididymis), metabolic (Liver) and non-metabolic tissues (Cardiac) of rat and sperm pellet (human and rat). Toxicity study (GOT, GPT) were measured from liver, kidney, testis, and prostate of rat. Spermiological parameters and the activities of testicular Δ5.3 -HSD, 17 -HSD were decreased significantly (p<0.05) at different concentrations. The value of Inhibitory Concentration (IC50), in human spermatozoawas reached at 1 mg/ml and in rat at 0.7 mg/ml concentration. Activities of SOD, catalase were significantly (p < 0.05) reduced and the level of TBARS was increased significantly (p < 0.05) in reproductive tissue samples and sperm pellet. Oxidative stress biomarkers (SOD, catalase and TBARS) showed no significant alterations (P > 0.05) in metabolic and non-metabolic tissue samples. No significant alteration in toxicity profile. The phytomolecules present in HEE delivered a sperm specific role by remarkable diminution in anti-oxidative enzymes and elevation in TBARS level in sperm pellet of rat compared to the testis and epididymis of rat. This in-vitro investigation concluded that L. acutangula possess a significant spermicidal and anti-testicular activity that may be used as a potent herbal male contraceptive agent.

**Keywords:** anti-testicular, *Luffa acutangula*, spermiological, spermicidal.











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# MODULATION OF GROWTH AND PRODUCTIVITY OF TRIGONELLA FOENUM-GRAECUM L. USING IRRADIATED SODIUM ALGINATE IN COMBINATION WITH SOIL APPLIED PHOSPHORUS

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## **ABSTRACT**

Fenugreek (Trigonella foenum-graecum L.) is an annual herbaceous plant of family Fabaceae. The plant is used as medicine, spice and as fodder. The chemical and active constituents of fenugreek include trigonelline, 4-hydroxyisoleucine, galactomannans, polysaccharides, polyphenol compounds, nicotinic acid, niacin, steroidal sapogenins, triterpenoids, alkaloids and lipids. The plant has been extensively used in India and the world because of numerous medicinal properties like anti-diabetic, anti-cholestrolemic, anti-malarial, antioxidant, antipyretic, used in treatment of indigestion and flatulence, galactogogue, immunomodulatory agent and as an anti-allergic. Because of its anti-diabetic constituents like trigonelline and it has been recommended for diabetic patients to take as a vegetable and in other suitable forms. Fenugreek seed contains and about 5.5–7.5% lipids including linolenic (25.0%), linoleic (40.0%), and oleic (14.0%) acids. Fenugreek may serve as an excellent fodder and animal food supplement and can even be grown on marginal lands in profitable way. Sodium alginate is a polysaccharide obtained from brown algae members like Sargasum sp. In its depolymerized form using different techniques like irradiation using Cobalt 60 gamma rays it has proved to be a wonderful plant growth regulator. A pot experiment was carried out to explore the influence of foliarapplied irradiated sodium alginate (ISA) (0, 40, 80 and 120 mg L-1) alone and in combination with soil-applied phosphorus (40 kg P ha – 1) on growth, yield, photosynthetic pigments and active constituents of fenugreek employing the soil deficient in phosphorus. Un-irradiated sodium alginate (UN 40 mg L-1) and DDW water were used as control. 80 mg L-1 of ISA applied with 40 kg P ha-1 (P40) proved to be the best treatment. It increased seed yield by 131.0%, trigonelline content by 17.84%, trigonelline yield by 174.0%, seed alkaloid content by 32.98% and seed alkaloid yield by 208.64% over the control. Trigonelline content was estimated using HPLC equipment (Model, LC-20AD).Gel permeation chromatography of ISA revealed the formation of low molecular weight fractions which might be responsible for plant growth promotion in this study.

**Keywords:** Isoleucine, Galactomannans, Polysaccharides.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# ENVIRONMENTALLY RELEVANT CONCENTRATIONS OF ASPIRIN INDUCE APOPTOSIS IN THE LIVER OF INDIAN MAJOR CARP, LABEO ROHITA

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## **ABSTRACT**

Aspirin is one of the frequently detected non-steroidal anti-inflammator y drug(NSAID) in aquatic environment, however, toxicity possessed by aspirin to non-target organisms like fish is poorly explored. The present study evaluated apoptosis induced by environmentally relevant concentrations of aspirin (1, 10, and  $100 \,\mu g/L$ ) in the liver of the Indian Major Carp, Labeorohita. The immunostaining analysis with anti-caspase 3 revealed a significant increase (p<0.05) in the number of apoptotic cells in all three exposure concentrations from 7 days (d) to 28 d in a dose and duration dependent manner. The flow cytometry result showed a significant (p<0.05) decrease in live cells and an increase in apoptotic cells in treated groups of aspirin in a concentration dependent manner. Further, a significant reduction of cyclooxygenase enzyme in all three exposure concentrations of aspirin indicates COX dependent pathway of cell death induced by aspirin.

**Keywords:** Aspirin, Fish, Apoptosis, Immunostaining, Flow cytometry, Cyclooxygenase enzyme.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# EVALUATION OF ANTIDIABETIC AND ANTIOXIDATIVE EFFICACY OF ROOT TUBER OF IPOMOEA MAURITIANA IN STREPTOZOTOCIN (STZ) INDUCED DIABETIC MALE ALBINO RAT: A DOSE SELECTION STUDY

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## **ABSTRACT**

Unhealthy lifestyles, and poor mental health negatively impact on human metabolic processes. Diabetes mellitus, a group of metabolic disorders characterized by chronic hyperglycemia due to insufficiency of insulin action, insulin level or both. Morbidity and mortality related to diabetes increase the global economic burden and disturb sustainability. Antidiabetic treatment with synthetic drugs has numerous side effects, which increases the use of herbal drugs for this purpose. Ipomoea mauritianaknown as 'Bhuikumra' has a folk reputation in diabetes prevention. This experiment has been conducted to search out an effective dose of hydro-methanol (60:40) extract of Ipomoea mauritianainstreptozotocin(STZ) induced diabetic rats. To developdiabetes, STZ was injected intramuscularly at the dose of 4mg/100 g body weight. Fasting blood glucose level (FBG), serum insulin and oral glucose tolerance test (OGTT)werechecked to assess glycaemic status.Glucose-6-phosphatase, hexokinase activities in liver and skeletal muscle, antioxidant enzyme activities and lipid peroxidation end product in liver and kidneytissues werealso measured along with the plasma HDL and LDL levels. There has significant increase (P < 0.05) in FBG, serum insulin and OGTT levels in diabetic rats compared to the vehicle-treated control group. After treatment with the doses of 10mg, 20mg, 30mg of hydro-methanol extract of said plant partresulted significant recovery (P < 0.05), Glucose-6-phosphatase activity. TBARSlevel, LDL level wereelevated and hexokinase activity. SOD and catalaseactivityand LDL level were at significantly diminished in diabetic group (P < 0.05) in comparison to the untreated diabetic group after treatment (P < 0.05) 0.05)doses. Dose dependent recovery showed that 10 mg dose is threshold dose in this purpose. It is concluded that hydro-methanol (60:40) extract of root tuber of Ipomoea mauritianaat the dose of 10mg per 100g body weight gives maximum antidiabetic and antioxidative effects.

**Keywords:** Ipomoea mauritiana, Diabetes mellitus, Streptozotocin..











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# ULTRASONICATIONAN INTENSIFYING TOOL FOR PREPARATION OF STABLE DIALLYL DISULFIDE AS BIO-FUMIGANT NANOEMULSION FOR THE CONTROL OF SITOPHILUS ORYZAEADULTS

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# **ABSTRACT**

The rice weevil, Sitophilus oryzaeis a major insect pest infesting rice, wheat and pulses during storage. Diallyl disulfide (DDS) is reported as an effective bio-fumigant against S. oryzae. Nanoencapsulation is an efficient tool to increase their stability of plant bioactives. In order to enhance the fumigant toxicity of DDS, we developed DDS based nanoemulsion(DDS-NE) for the control of S. oryzae. DDS-NEs were prepared at different concentrations (1.25to 5.0%) and surfactant ratios (1:1 to 1:3) using ultrasonication based method. The prepared nanoemulsions were characterized by dynamic light scattering (DLS) technique. Storage stability of the optimized DDS-NE was analysed by gas chromatography-mass spectrometry (GC-MS) technique. Fumigant toxicity of the optimized DDS-NE was evaluated against S. oryzaeadults under with-food and without-food conditions. Further, micro-structural impact of the optimized DDS-NE was observed on the body surface of treated S. oryzaeadults under scanning electron microscopy (SEM). DLS analysis exhibited 12.48 to 115.82 nm range of mean particle size, 2.71 to -33.1mV range of zeta potential and 0.17 to 0.37 range of polydispersity index (PDI) in the formulated DDS-NEs. Among the formulated different DDS-NEs, 99.36 nmof particle size, -33.1 mV of zeta potential and 0.30 value of PDI was recorded as optimized DDS-NE. Fumigant toxicity bioassay revealed 0.28 µl/cm2and 0.14 ml/Kg of LC50 values for the optimized DDS-NE at 72 h of exposure under with-food and without-food conditions, respectively. Comparative to DDS alone, fumigant toxicity of DDS-NE was increased (28.5%) against the S. oryzaeadults. Further, the optimized DDS-NE showed that there was no significant changes on its DDS composition. DLS characteristics and fumigant toxicityupto 3 months of storage. The present study results suggests that nanoemulsion enhanced the fumigant toxicity of DDS against the S. oryzaeadults and the optimized DDS-NE was stable upto 3 months of storage.

**Keywords:** Sitophilus oryzaeis, DDS-NE, GC-MS, bio-fumigant, nanoemulsion.











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## TECHNOLOGY TO TREAT WASTEWATER USING BIO-NANOFIBER

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# **ABSTRACT**

Water is a crucial part of life. Earth is merely a planet wherever life exists. Man will survive while not having food for 30-40 days but cannot live without water even for 3-4 days; we want water for drinking, washing, cooking, agriculture, and industries. Due to increasing population, Manufacturing, Urbanization, Over Exploitation, Improper coming up with, water bodies square measure contaminated by rental Municipal Waste, Sewage, Untreated Waste Water from Industries, Agricultural Runoff, and significant metal pollution, all of those successively end up in loss of variety, quality of water creates environmental stress for groups of people, plants, animals and different organisms. Vrishabhavathi is one such watercourse that is currently becoming the Gutter of Kengeri. To beat this downside, many water treatment strategies like Chemical, Physical, Mechanical, and biological methods were adopted. One of the effective, rising technology is engineering science. Here we tend to square measure exploitation Bio-Nanofibers because it is environmentally friendly, have high potency in removing pollutants, have significant metals, are more cost-effective. have the reusable ability, and are considered a higher possibility for treating wastewater. Physico-Chemical Parameters of the Vrishabhavathi river were found to be more than the tolerance limit prescribed by IS:2296,1982 because Industrial pollutants; Domestic waste streamed into the river water. In this study, Plant-based bio-nanoparticles were found to reduce some of the parameters. Hence it is concluded that bio-nanoparticles are efficient and cost-effective. They can be used as one of the components in water purification along with other treatment methods used in sewage treatment plants.

**Keywords:** Bio-Nanofiber, Urbanization, Water-Exploitation, Water Treatment, Wastewater.











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# PRODUCTION OF BIODIESEL FROM A POTENTIAL BIOFUEL CROP MANIHOT ESCULENTA (CASSAVA) A NON EDIBLE OIL SEED AND ITS CHARACTERIZATION METHODS

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### **ABSTRACT**

Diesel plays an essential role in the industrialized economy of every country. High demand of energy and the fossil fuel spread in industrialized countries will lead to the rapid exhaustion of there sources of fossil fuel and the deterioration of the environment. Because the world's petroleum exploration is so erratically distributed and many regions must rely on others for their fuel needs. The unfamiliar crisis connected with petroleum fuels has forced the modern world to look for feasible alternative fuels. Among the possible alternatives, biodiesel has been recognized as a feasible front runner for many reasons. Biodiesel is composed of long chain fatty acid methyl ester (FAME) obtained by responding triglyceride with lower alcohols like ethanol and methanol in the presence of strong bases. KOH is utilized as a catalyst in the generation of biodiesel. Methanol is used for biodiesel production via trans esterification process. Biodiesel is extracted from the Manihoite sculenta seed oil viatrans esterification process. Fuel analysis and GCMS test were conducted for the biodiesel. Gross calorific value, specific gravity and viscosity are the parameters were checked for fuel analysis of biodiesel. The composition of generated biodiesel was discovered via GCMS technique. The chemical and physical analysis of cassava seed oil were observed.

**Keywords:** Biodiesel, Manihoite sculenta Oil, Extraction, Transesterification, Alternative Fuel.











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# ASSESSMENT OF ANTI-BACTERIAL ACTIVITY OF VINCA ROSEA LINN. ROOT THROUGH AGAR WELL DIFFUSION ASSAY

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## **ABSTRACT**

Vinca rosea Linn. (periwinkle) is an important medicinal plant for innovative pharmaceuticals because most bacterial pathogens are acquiring resistance to many of the already known anti-microbial treatments. Plants have established themselves as important natural resources for powerful chemotherapeutic agents and provide a wide range of activity with a focus on prevention. The purpose of this study is to investigate the plant's anti-microbial characteristics. Most of the research has mostly focused on Vinca rosea's anticancer potential. In the present study, we carried out the screening of the root of this plant for its antibacterial potential adopting the antibacterial assay through agar well diffusion method against gram-positive and gram-negative bacteria which encourages the use of plant-based compounds as a potential replacement for current antibacterial therapies.

**Keywords:** Vinca rosea Linn., antibacterial assay, agar well diffusion.











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# INTERACTIVE EFFECT OF CO-EXPOSURE OF AS, CD, AND PB IN DIFFERENT GENOTYPES OF ANDROGRAPHIS PANICULATA

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# **ABSTRACT**

Heavy metal (HM) pollution in the soil is a major environmental threat to food safety and human health. However, the coexistence of arsenic (As), cadmium (Cd), and lead (Pb) in soil worldwide widely, and differences in accumulation and
uptake of the metals in co-contaminated soil such as synergistic, antagonistic, and additive with each other may change
the threshold accumulation concentration of each metal in the plant. The presence of the HMs in herbs used for
medicinal purposes is a serious concern for their safe consumption. Generally, these herbs are considered non-toxic
and free from harmful side effects and are used as therapeutics and dietary supplements worldwide. Kalmegh
[Andrographis paniculata (Burm. F.) Nees] is one of the important medicinal plants used in preventing and treating
respiratory illness and is known for its anti-viral activity. The interactive effect of co-exposure of As, Cd, and Pb in four
genotypes of A. paniculata was evaluated. The growth parameters, ionomics, and metabolism in different genotypes
were compared in different combinations of HMs. Results revealed that metal accumulation, ionomics, and metabolic in
binary and ternary HMs treatments were significantly different than single HM treatments. The co-exposure of the
mixture has an additive effect on As uptake, an antagonistic effect on Pb accumulation, and both antagonistic and
synergistic effects on Cd. A differential ionomics network in plant tissues of genotypes well explained their differential
responses toward the co-exposure of As, Cd, and Pb.

**Keywords:** Heavy metals, Co-exposure, Tolerance, Genotypes of A. paniculata.











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# EFFECT OF SHAMAN AUSHADA ALONG WITH JALUKAVCHARAN IN INDRALUPTA: A CASE STUDY

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## **ABSTRACT**

**Introduction:** Hair-related disorders cause a negative impact towards the individual personality and his/her quality of life. According to *Ayurveda Indralupta* is a type of *Kshudraroga*, which is characterized by the loss of hair in Patches. It can be correlated with Alopecia *Areata*. Alopecia *Areata* (AA) is a common form of non-scarring alopecia involving the scalp and/or body, which is characterized by hair loss without any clinical inflammatory signs.

**Case Report**: The current presentation is a case report of a 16-year-old female patient who visited the outpatient department with patchy hair loss of the scalp over the vertex and left parietal region for 3 months with no associated symptoms. On basis of symptoms, she was diagnosed as a case of I

Aims and Objectives: Aims and objective of this paper is to focus upon the effect of Shaman *Aushada* along with *Raktamokshan* in *Indralupta*.

**Materials and Methods:** This case was treated through Shaman *Aushada* and *Jaluka Avacharan*.

**Possible outcome of the study:** This paper will clarify the role of Shaman *Aushada* along with *Raktamokshan* in management of *Indralupta*.

**Conclusion:** With the help of the proper Shaman Aushada along with Raktamokshan, the disease can be treated easily with minimum side effect.

**Key words**: Alopecia *areata*, *Indralupta*, *Jaluka Avacharan*, *Kshudraroga*.











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# **ROLE OF DIFFERENT HERBS ON KIDNEY DISEASES**

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# **ABSTRACT**

Kidney illness is just one of the distressing diseases that have been prompted by modern living styles and stressful mental health problems. Everywhere in the world, there are steadily more people with renal illness. People of all ages are now frequently diagnosed with one or more kidney issues, especially as they get older. If the kidneys are injured, the body becomes more toxic, which increases the risk of further organ damage and ultimately kidney failure if the condition is not promptly treated. Many health systems around the globe have not been able to adequately address diverse kidney illnesses. In Ayurveda, plants are always an excellent source of drugs; in fact, many of the presently available modern drugs were derived either directly or indirectly from them. There are a large number of drugs of herbal and mineral origin mentioned in Ayurvedic texts that were recommended for the treatment of kidney diseases. Many commonly used home remedies and many classical for mulations are such things that can prevent or cure kidney disease. Many herbs, like Gokshur, increase the urine output, making them useful in kidney stones and the difficulty of passing urine. Pashanbhedha is another herb that is used in kidney stones due to its litholytic activity. Many other herbs like Varun. Kulatha, Chandan, Tamalaki are shows good result on kidney disease. Even regular use of a single herb can enhance the functions and physiology of the kidneys, due to the potency of herbal drugs, without or with minimal side effects. These Ayurvedic herbs do not only treat kidney disease; they also act on various systems and organs and enhance their productivity and physiology. In recent years, where medical facilities are expensive. Avuryeda has provided valuable and cost-effective treatments.

**Keywords:** Kidney Diseases, Herbal Medicine, Ayurveda.











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# ASSESSMENT OF BIJAMRITA AND ORGANIC MANURES ON SEED GERMINATION GROWTH AND YIELD OF FOXGLOVE DIGITALIS PURPUREA L.

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## **ABSTRACT**

Plants had been used for treating countless ailments in various systems of medicine for a long time. Having varied agro-climatic conditions India has rich medicinal flora. Foxglove or tilpushpi, botanically known asDigitalis purpurea L. is one of the medicinally and economically important plant species (cardiac glycosides) used in life-saving medicinesand also as ornamental plant (purple and white coloured flowers). Present study was carried outsiming to improve seed germination, plant growth and vield without leaving any adverse impact on soil and surrounding. Seed germination traitswere assessed with different concentrations of bijamritain petri-dish under 25°C temperatures. It was found that, per -cent germination, speed of germination was highest in 75% concentration and peak value and seedling vigor index-I were found highest in 100% concentration whereas, seedling vigor index-II was highest in 87.5%. For field experiment different organic manures were used as solo and in combination with each other and performance were compared with the recommended dosage of fertilizers and plant grown without fertilizer. The experiment was layout in RBDhaving twelve treatments with three replications each. Vermicompost individually and in combination with mineral fertilizers and other manures showed significant effect on growth and yield traits. It was observed that 100% dosage of vermicompost significantly increases the number of leaves (10.88 and 31.88) and leaf length (13.42 and 24.04cm) during both seasons respectively. It also increases the leaf dry yield (351.57g/plot) during second season of plant growth. Whereas in combination of vermicompost and litter compost in 1:1 enhances the leaf fresh weight (139.98 and 456.10 g/plot) during both seasons respectively and leaf dry weight during first season of plant growth. Moreover, it was observed that vermicompost in combination with the farmyard manure increases the leaf area (63.64 and 67.16cm2) during both seasons. Leaf width (8.34 and 9.61cm) was found enhanced by the application of farmyard manure. The results obtained reflected that higher concentration of bijamritai.e. 75%, 87.5% and 100% were found best for major germination traits. It also showed superiority of organic manure over the mineral fertilizers significantly for the major yield attributing traits, So, from this experiment it can be concluded that higher concentration of bijamritaincreases the germination % as well as helps in the healthy growth of seedlings. Also, organic manures can successfully replace mineral fertilizers without adversely affecting the growth and yield of crop. They not only enhance the growth, yield and quality of plants but also show positive effect on soil health without any residual effect unlike mineral fertilizers.

**Keywords:** Bijamrita, Organic manures, Seed germination, Foxglove.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## PAX6 AND PUTATIVE MARKERS OF PARKINSON'S DISEASE

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## **ABSTRACT**

**Background:** Dopaminergic neurodegeneration in the nigrostriatal area of the brain is a hallmark of Parkinson's disease (PD). The effects of neurodegeneration go far beyond these dopaminergic neurons. Pathogenic protein aggregates that are associated with the gradual degeneration of neurons and the loss of behavioral functions are another feature. F or effective diagnosis and treatment, PD lacks biomarkers. Proteomics is an unbiased qualitative/quantitative approach that can efficiently quantify thousands of proteins from small amounts of complex material. The effect of MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) on the brain proteome in MPTP-induced Parkinson's animal model has thus been evaluated.

**Methods:** PD was induced by intra-peritoneal injection of MPTP (20mg/kg body weight) in 4-6 weeks old AKR strain mice for consecutive 21 days. The vehicle control was given regular saline. Further, the brain tissues were selected for the experiments. We applied HRLCMS to analyze alterations of the brain's proteome to better understand the molecular changes associated with PD. In-silico studies were performed to see the protein-protein interaction (<a href="http://string-db.org">http://string-db.org</a>) and gene ontology, pathway enrichment by KEGG.

**Results:** Proteomic studies showed the most affected pathways are associated with mitochondrial dysfunction, oxidative stress, protein misfolding, cytoskeleton dysregulation, and inflammation, ubiquitination of proteins, GABAergic synapse, synaptic activity, proteosome-lysosome degradation, autophagy and oxidative stress and cell signaling (Ras, Mapk). Pax6 was expressed in the treatment group suggesting its role in survival of neurons. Further, in-silico studies show the interaction of Pax6 with protein associated with these brain's regulatory mechanism suggesting its direct or indirect association of Pax6 with Parkinson's disease that needs to be studied further.

**Conclusion:** Our findings provide the insight into the proteome of MPTP-induced PD mice brain and the underlying dysregulated pathways arising from the MPTP treatment.

**Keywords:** Neurodegeneration, MPTP, Parkinson disease, in-silico











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# Comparative study of breeding performance of cryopreserved milt of Cyprinus carpio and Cyprinus carpio haematopterus

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## **ABSTRACT**

The present study was conducted for comparing the performance of cryopreserved sperm of Common carp (Cyprinus carpio) with its Amur strain (Cyprinus carpio haematopterus) under tarai condition of Uttarakhand. The objective of present study is to develop an improved freezing protocol by determining the effects of three extenders and two cryoprotectants on Amur carp and Common carp. The parameters used for milt quality analysis are sperm motility percentage and motility duration. Fertilization rate, hatching rate and embryonic development were also recorded. Approximately hundred specimens of common carp and Amur carp were obtained from Instructional Fish Farm of College of Fisheries, Pantnagar. 40 specimens of mature common carp and amur carp (1-1.5 kg bw) in separate ponds were stocked. Carp were fed with conventional feed (rice bran: oil cake in 1:1 ratio) in wet form @ 1.5% body weight/day. Fishes were checked for milt availability by pressing the belly and those fishes oozed milt were taken for milt cryopreservation experiments. Water quality parameters (i.e. temperature, pH, dissolved oxygen, carbon di-oxide) had been recorded for the duration of the experimentation period in both ponds and were within the permissible limit. The experiment concludes that observations are indicative of a successful cryopreservation of Amur carp and Common carp sperm using either one of TRIS. RPMI1640 and PBS (Phosphate buffer saline) as extender with the addition of DMSO and Glucose collectively as cryoprotectants. The use of TRIS diluent with DMSO and Glucose is rated as the best combination for freezing common carp and amur carp sperm. The formation of sperm agglutination is probably affected by extender composition, type of cryoprotectant and cooling conditions. For this reason, the use of TRIS, RPMI1640 and PBS with DMSO and Glucose for freezing amur carp and common carp sperm in the liquid nitrogen vapour may additionally have paramount significance being a feasible protocol for captive breeding programme. Among the different diluents, maximum motility percentage, motility duration, fertilization and hatching rates were obtained in amur carp with RPMI+DMSO. In case of common carp, the higher percentage of viability and fertility rate were observed in PBS+DMSO. In case of embryonic development, TRIS+DMSO+Glucose and PBS+DMSO gave much satisfactory results.

**Keywords:** Cryopreserved milt, *Cyprinus carpio*, *Cyprinus carpio haematopterus*.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## Role of Herbs In Water Purification: From Ancient To Modern Era

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### **ABSTRACT**

Among the basic requirements for human existence water attains high priority. This has been realized from very ancient time that the consumption of pure water ensures the healthy status. The concept of impure water as well as tools and methods for its purification has been indicated, discussed and explained in several ancient literature. Ayurveda had several texts which focus on this matter and provide various methods for making the toxic water drinkable. Sushruta Samhita has elaborated many plants which play ver y important role in this context. In addition to the names of these plants their derivatives and methods of its application has also been elaborated. The classics of Ayurveda like Ashtanga sangraha and Ashtanga hridayam discuss its extension by adding some more herbs to it. The text of Kautilya Arthashastra keeps it extending to another level by adding method of entoxicating and detoxifying the same sample for different purposes. Varahamihir in Vrihatsamhita has added more techniques for purifying the water. Nowadays the several herbs are extensively and successfully experimented for this purpose but the techniques have gone to a level of making nanocomposite and magnatic bio-adsorbent for removing the heavy metals like As, Pb, Hg from impure as well as waste water. Details will be elaborated at the time of presentation.

**Keywords:** *Ayurveda, Sushruta Samhita, Vrihatsamhita,* magnetic bio-adsorbent, nanocomposite.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# Cosmetic use of lead molecules from Ayurvedic drugs: A Review

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# **ABSTRACT**

Concept of beauty and cosmetics is as ancient as civilization of human beings. There are highly advanced ideas of selfbeautification by both men and women were present in ancient India. These practices were inter woven with seasons (Ritucharya) and normal rituals of daily life (Dincharya). Ashtang hridya describes six different formulations to be used for six different seasons. Different Ayurvedic Ghrita and Taila were used for facial beautification. Different ingredients were used for hair washing, hair growth, premature greying, skin care, lip care, for curing discolouration of skin. It is common saying that glowing skin is result of good quality of rasa and rakta and Ayurveda believes that beauty is harmony of whole body, mind and soul. Acharyas classified cosmetics in different groups as varnya, jivniya, keshya, chakshushva, kushthaqhna, kanduqhana, twachava etc. Some drugs like sesame oil is defined best for oleation. It contains Sesamin and Sesamolin as biologically active compound which is responsible for its antioxidant activity. Turmeric consists of curcumin which helps in bringing glow to the skin. Arishtaka consist of saponins which is used for hair wash. Kesar is useful in depigmentation of skin and act as dermoprotective. Review of scientific databases such as Science Direct, PubMed, Research Gate, and Google scholar to find out better cultivation, propagation, harvesting, and conservation techniques. Present study helps to identify different plants used in Avuryeda to cure dermatological disorders and act as cosmetics. Use of herbal cosmetics has increased too many folds in daily life. The present information will be useful for setting up better cosmetic products based on active biological components. This review helps in building research protocols on different skin care, lip care, and hair care drugs mentioned in Ayurvedic text.

**Keywords:** *Dincharya*, *Ritucharya*, Cosmetics, Dermoprotective, Ayurveda.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# COMBINATORIAL EFFECT OF (-)-EPICATECHIN AND RESVERATROL ON ANTIOXIDANT AND PRO-INFLAMMATORY MARKERS IN D-GALACTOSAMINE INDUCED HEPATITIS RATS

Bhasha Shanmugam<sup>1</sup>, Kondeti Ramudu Shanmugam<sup>2</sup>, Sahukari Ravi<sup>1</sup>, Ganjikunta Venkata Subbaiah<sup>1</sup> and Kesireddy Sathyavelu Reddy<sup>1</sup>

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### **ABSTRACT**

(-)-Epicatechin and Resveratrol are naturally occurring antioxidant polyphenolic compounds originate in some green plant components. The current study was designed to investigate the combinatorial effect of (-)-epicatechin and resveratrol on antioxidant defense system and proinflammatory cytokine gene expression studies in D-Galactosamine hydrochloride (D-GalN)-mediated hepatic damage to rats.

Male Wistar strain albino rats were distributed equally into 5 groups of 6 animals each. Group I (Normal healthy control) received saline (0.9% NaCl) orally and olive oil intraperitoneally (ip), group II rats were intoxicated with D-GalN [800 mg/kg BW, ip] only, while Groups III, IV and V were induced with D-GalN, thereafter they were administered 100 mg/kg body weight of silymarin, combined dose of (-)-epicatechin and resveratrol (50 and 50 mg/kg bw, 1:1) for 21 days respectively. After 21 days of treatment, the rats were sacrificed, and the fasting blood sample was collected by cardiac puncture for liver functional biomarker analyses.

Our experimental results show that there were significant increases (p 0.05) in serum liver functional biomarkers (AST, ALT, ALP, and GGT activities), albumin, bilirubin, and malondialdehyde (MDA) content, but a significant decrease in hepatic SOD, CAT, GPx, GR activities and GSH content. Notably, (—)-epicatechin and resveratrol significantly reduced the expression levels of TNF- , TGF- and IL-6 compared to their levels in D-GalN intoxicated group. Administration of the combined dose of (—)-epicatechin, resveratrol (1:1) and silymarin drug attenuated the toxic insult of D-GalN at the biochemical and molecular levels. Our results reveals that a combination of (—)-epicatechin and resveratrol may have exhibited a synergistic hepatoprotective activity against D-GalN induced liver damage.

**Keywords:** (-)-Epicatechin, Inflammatory markers, D-GalN, Antioxidants, Liver biomarkers.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### HOUSEHOLD AIR POLLUTION IS ALSO A HEALTH HAZARD

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### **ABSTRACT**

Pollution generated at household level is mainly due to use of open fires in form of Chullha, Barosi, Tandoor-drums etc. which make use of biomass such as wood, coal, animal dung and crop waste as source of fuel. Similarly the stoves which make use of kerosene also add to increase pollution. This addition is done by almost 2.4 billion people from all over the globe –WHO reports, 2022. The combined effects of ambient air pollution and household air pollution are associated to 6.7 million premature deaths annually. The National and International Projects working in direction of generating alternate renewable energy resources should also take note of household Pollution factors and work in that direction to reduce global domestic air Pollution which leads to many health problems especially amongst women and children who are directly and indirectly exposed to domestic air Pollution. The non-communicable diseases met as a result of continuous exposure to domestic air Pollution are stroke, Ischaemic Heart Disease, chronic obstructive pulmonary disease (COPD) and lung cancer and many more.

Keywords: Biomass, household, Pollution, COPD.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# Isolation, Morphological, Pathogenicity test and Molecular characterization of *Rhizoctonia* spp. Causing Sheath blight of paddy

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## **ABSTRACT**

Sheath blight of paddy is an economically significant rice disease worldwide. The disease cause significant grain losses, yield losses of up to 50%. The objective of this study is to isolate and identify the *Rhizoctonia* species on the basis of their Pathogenicity test and Molecular characterization from the infected paddy crop collected from different localities. Pathogenicity test of seven isolates are evaluated on rice crop under greenhouse condition. All tested isolate was able to infect rice plants causing Sheath blight of paddy with some different degree of severity Isolate RS1, RS2 and RS3 showed significantly highest sheath blight severity while isolate RS5 gave the lowest percentage of sheath blight severity. The DNA markers obtained from all isolates showed genetically similarity among different isolates obtained from different geographical regions. Precise identification of cause of disease based on morphological characters and symptom induced by *Rhizoctonia spp*. Become tedious because of similarity in symptoms. The identification of isolates at genus and species level Molecular markers for genetic differentiation would be ideal approach. The isolate RS1 and RS5 were 99.7% homologous to Cs Ka, RS2 and RS7 were 99% homologous to Rh 28, RS 3 is 99.74% homologous to 331-7 at molecular level as well as was found in our study.

**Keywords:** Sheath blight, Pathogenicity, Paddy, DNA Marker, *Rhizoctonia* spp.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

Characterization of biomolecules contained in *Asparagus racemosus* Willd. root tubers with the help of some modern Spectroscopic & Chromatographic techniques

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### **ABSTRACT**

The use of herbal drugs has increased remarkably in line with the global trend of people returning to natural therapies. Herbal drugs have reached widespread acceptability as therapeutic agents for several diseases like diabetics, liver diseases, cough remedies etc. The development of authentic analytical methods which can reliably profile the phytochemical composition, including quantitative analyses of bioactive compounds and other major constituents, is a big challenge to scientists. Standardization is very important step for the establishment of a consistent biological activity, a consistent chemical profile, for production and manufacturing of herbal drugs. Asparagus racemosus Willd. (Shatavari) is extremely healthful Ayurvedic drug which has been exploited since ancient time. Although, a lot of literature on Asparagus racemosus Willd, is available, but crystal clear identification of its phytoconstituents and biomolecules have not been reported till date. In this view, characterization of this medicinal plant becomes quite necessary. The plant extracts usually are occurring as a combination of various types of bioactive compounds or phytochemicals having different polarities. Thus, their separation still remains a big challenge for the process of identification and characterization of bioactive compounds. Various modern techniques have been employed to determine and estimate the presence of such biomolecules in medicinal plants. Spectroscopic and chromatographic techniques are the most useful and popular techniques to identify and authenticate the phytoconstituents/natural drugs. FT-IR. UV-Vis. TLC and HPLC measurement encompasses a wide variety of chemical and biochemical applications which involves in research. The applications of modern technology oriented advanced hyphenated techniques will serve as a rapid and unambiguous tool in the herbal research, thereby, benefiting the entire pharmaceutical industry.

**Keywords:** FT-IR, HPLC, *Asparagus*, Biomolecules, Polyphenolic compound.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# An Ayurvedic Solution to Annihilate Pesticide Residues in Vegetables

# Ringzin Lamo

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### **ABSTRACT**

Pesticides are frequently and extensively used in agriculture to protect crops from pests and manage insect-borne diseases and to boost crop yields in order to produce a vast amount of food to feed the growing global population as well as. Excessive use of pesticides causes environmental contamination and an excessive buildup of pesticide residues in vegetables, both of which have long been of grave concern. Long-term harmful effects as well as short-term negative impacts on human health have all been linked to accumulated pesticide residues in so called fresh vegetables. The concept of *Garavisha*, which foresees negative outcomes from the use of various foods laced with toxins or chemicals, is very common nowadays. It is a collection of many compounds that can enter the body by a variety of routes, including food, beverages, cosmetics, and other items. When the accumulated quantity is sufficient to cause an illness, it may result in a variety of illnesses. Pesticide residues in the different consumable vegetables perhaps constitute Garavisha and this pesticide residue must be stopped before intake if you don't want them to become harmful. Several purifying techniques (*Shodhana Sanskara*) are stated in Ayurveda to detoxify various poisoned or polluted items, including Prakshalana (Washing), *Mardana* (Pounding), *Bhavana* (Levigation), *Swedana* (Boiling), and *Bharjana* etc. One of the *shodhana* techniques called *pakshalana* refers to cleaning or properly washing a substance. In Ayurveda, certain drugs like *Sirisa*, *Haridra* etc. are mentioned which nullify or degrade the impurities or toxic chemicals. In this paper an attempt was made to estimate the concentration of the pesticide residues before and after washing in different media.

Keywords: Pesticide, Garavisha, Shodhana samskara, Haridra, Sirisa.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

Assessing the influence of salicylic acid on gas exchange and photochemical efficiency of Valeriana wallichii DC syn. jatamansi Jones under the influence of drought stress

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## **ABSTRACT**

In recent days there are many incidences of er ratic climatic events worldwide. These changes negatively affect plant growth, development and economical yield. The changes in the plant growth patterns are the results of various physiological and biochemical reactions. In current research, Valeriana wallichii is studied for the effect of salicylic acid on gas exchange and photochemical efficiency under drought stress. Valeriana wallichii is a temperate perennial herb commonly known as Indian valerian or Tagar. The plant is valued for essential oil obtained from roots, recognized in world trade for its utility in pharma and cosmetics. The interaction between environment and genetics of plant initiate a number of physiological and metabolic activities resulting in synthesis of bioactive compounds. Interruption in any of the processes due to the alteration in external environment directly affects the synthesis of these medicinally important bioactive constituents. Study is carried out with four levels of water availability (100%, 75%, 50% and 25%FC) and four concentrations of salicylic acid (1, 0.75, 0.50 and 0.25mM). A significant effect of drought was observed for physiological and yield traits under study. During severe stress photosynthesis rate (P<sub>n</sub>), transpiration rate (T<sub>n</sub>), stomatal conductance (q<sub>e</sub>), carboxylation efficiency (CE), ratio of internal to ambient CO<sub>2</sub> (C/C<sub>2</sub>), maximum photochemical efficiency (F./F.,), water use efficiency (WUE), relative water content (RWC) and dry yield decreases whereas, % conductivity and electron transport flux/ reaction centre of PS II (ET<sub>e</sub>/RC) increases significantly. It was also observed that salicylic acid (SA) at various drought level efficiently moderates the impact of drought stress. Under severe water stress, SA at 1mM and 0.50mM concentration efficiently reduces the effect of drought by increasing WUE, intrinsic water use efficiency (JWUE), g., CE, transpiration rate (T.) and dry root yield. At moderate to mild drought stress, 0.75mM and 0.50mM SA concentration effectively improves gas exchange parameters, photochemical efficiency and yield traits under observation. Consequently, from the current study it is evident that SA as an elicitor efficiently improves the efficiency of gas exchange parameters, photochemical efficiency and yield by moderating stress owing to water deficit conditions. Thus, foliar application of SA might be useful in improving yield efficiency of medicinal plant under moderate to severe drought stress condition.

**Keywords:** drought stress, physiological trait, photochemical efficiency, Tagar, salicylic acid.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# **Supply Chain Challenges in Pharma Industry**

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## **ABSTRACT**

**Background:** Ayurvedic classics have given scientific descriptions of the drugs. In those classical texts, where root bark of big plants has been described and suggested for the preparation of therapeutic formulations. The possibility of the sacrifice of the plant after the collection of the root bark cannot be overruled.

**Objectives:** Therefore, possibilities for the use of some other plant part in place of root bark must be explored for the sustainable utilization of natural resources.

**Methodology:** So, an attempt should be made towards substitution of root bark with stem bark which will be a big step towards plant conservation.

**Observation:** Only a few studies are found that investigate the challenges faced in the supply chain of crude drugs. So study must be oriented toward the exploration of the sustainable utilization of natural resources for the pharma industry.

**Conclusion**: The issue becomes more serious when unskilled persons are deployed for the collection of crude drugs. With the increasing demand and imposition of the wildlife protection act a huge gap has been created between the demand and supply of crude drugs.

**Keywords:** Ayurveda, Crude drugs, Sustainable utilization, Substitution.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### Assessment of bijamrita and organic manures on seed germination growth and yield of Foxglove *Digitalis purpurea* L.

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#### **ABSTRACT**

Plants had been used for treating countless ailments in various systems of medicine for a long time. Having varied agroclimatic conditions India has rich medicinal flora. Foxglove or tilpushpi, botanically known as Digitalis purpurea L. is one of the medicinally and economically important plant species (cardiac glycosides) used in life-saving medicines and also as ornamental plant (purple and white coloured flowers). Present study was carried out aiming to improve seed germination, plant growth and yield without leaving any adverse impact on soil and surrounding. Seed germination traits were assessed with different concentrations of bijamrita in petri-dish under 25°C temperatures. It was found that, percent germination, speed of germination was highest in 75% concentration and peak value and seedling vigor index-I were found highest in 100% concentration whereas, seedling vigor index-II was highest in 87.5%. For field experiment different organic manures were used as solo and in combination with each other and performance were compared with the recommended dosage of fertilizers and plant grown without fertilizer. The experiment was layout in RBD having twelve treatments with three replications each. Vermicompost individually and in combination with mineral fertilizers and other manures showed significant effect on growth and yield traits. It was observed that 100% dosage of vermicompost significantly increases the number of leaves (10.88 and 31.88) and leaf length (13.42 and 24.04cm) during both seasons respectively. It also increases the leaf dry yield (351.57g/plot) during second season of plant growth. Whereas in combination of vermicompost and litter compost in 1:1 enhances the leaf fresh weight (139.98 and 456.10 g/plot) during both seasons respectively and leaf dry weight during first season of plant growth. Moreover, it was observed that vermicompost in combination with the farmyard manure increases the leaf area (63.64 and 67.16cm2) during both seasons. Leaf width (8.34 and 9.61cm) was found enhanced by the application of farmyard manure. The results obtained reflected that higher concentration of bijamrita i.e. 75%, 87.5% and 100% were found best for major germination traits. It also showed superiority of organic manure over the mineral fer tilizers significantly for the major yield attributing traits. So, from this experiment it can be concluded that higher concentration of bijamrita increases the germination % as well as helps in the healthy growth of seedlings. Also, organic manures can successfully replace mineral fertilizers without adversely affecting the growth and yield of crop. They not only enhance the growth, yield and quality of plants but also show positive effect on soil health without any residual effect unlike mineral fertilizers.

Keywords: Bijamrita, Organic manures, Seed germination, Foxglove.



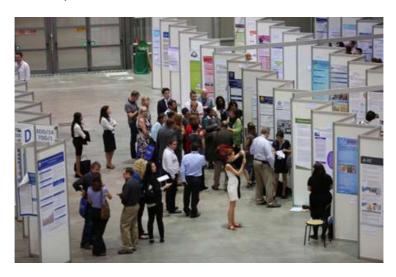








# poster presentations



# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### COMBATING MULTI-DRUG RESISTANCE BACTERIA WITH NATURALLY OCCURRING SECONDARY METABOLITES

#### Aayush Aseem and Garima Chouhan\*

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#### **ABSTRACT**

For several decades across the world antibiotics have been the sole source to fight against different kinds of bacteria. However, their indiscriminate and improper usage has led to emergence of microbial strains that exhibit antimicrobial resistance to not only one but multiple antibiotics. Such strains are classified as Multi-dr ug Resistant (MDR) strains. MDR strains are not only tougher to treat, they also enhance the risk of patient mortality and morbidity rates worldwide along with the cost of treatment. Patients harbouring MDR strains require administration of more advanced antibiotics which lead to quite significant side-effects. Because of all these facts, MDR is now recognized as a public health issue, that requires immediate attention for development of new drugs that can efficiently combat these resilient microbes. Secondary metabolites from different natural resources hold a promising potential in this regard. Natural resources especially plants are enriched with such compounds that can be employed to kill MDR strains with minimal toxicity on host. In this context, we present the current scenario of MDR, its impact on global health, and potential of naturally occurring secondary metabolites in this fight.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ASSESSMENT OF PHYSICO-CHEMICAL PARAMETERS OF WATER OF SOME SELECTED PONDS OF VARANASI (SOUTH CONSTITUENCY), UTTAR PRADESH, INDIA

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#### **ABSTRACT**

The present research was conducted to assess the physico-chemical parameters of 4 ponds viz. 1. Maa Mandakini Kund, 2. Machodari Pokhara 3. Pisach Mochan Kund, 4. Kapildhara Kund for drinking, bathing, irrigation and fish culture. The parameters including Colour, Odour, Temperature, Turbidity, pH, T.D.S., Dissolved Oxygen (D.O.), Acidity and Alkalinity. The standard methods of APHA 1995 were followed for the analysis of physico-chemical parameters. Colour visualised by eyes, odour smelt by nose, mercury thermometer, secchi disk, TDS meter, pH meter used for temperature, turbidity, TDS, and pH respectively. Winkler's method and titration methods used to analysed D.O., acidity and alkalinity respectively. The obtained values of the parameters were temperature 17-23°C, turbidity 31-36 cm, pH 7.6-8.8, T.D.S. 108-364 ppm, Dissolved Oxygen 7.92-10.47mg/l, Acidity 10-22 mg/l, Alkalinity 58-74 mg/l. All the parameters were compared with the water quality standards by as per BIS specifications (IS 10500-2012) (Second Revision). The temperature were lower due to cold weather, turbidity, pH, T.D.S., D.O., Alkalinity were fluctuated moderately, but in desirable condition, however, acidity is higher than the standard level. Results of physico-chemical parameters of four ponds at Varanasi as studied in the present investigation, shows that water quality is acceptable for irrigation and fish culture. However, proper treatment is essential before using it for drinking and bathing such as immersions of idol, worship material should be stopped, removal of floating debris from surface and removal of sediments from bottom of pond, activated carbon filtration, distillation, ion exchange, reverse osmosis, UV radiation etc., are some methods and techniques to improve quality of water.

**Keywords:** Heavy metal; pollution; fresh water bodies, planktons; physicochemical.













# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### EFFECTS OF FICUS BENGHALENSIS LATEX BASED COMBINATORIAL FORMULATIONS ON VARIOUS BIO-MOLECULES IN ODONTOTERMES OBESUS, THE INDIAN WHITE TERMITE

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Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur-273009.

#### **ABSTRACT**

In present investigation various bioassays were conducted to evaluate the alteration in levels of certain bio-molecules such as glycogen, protein, amino acid, DNA, RNA and lipids. For this purpose worker termites were treated with sublethal dose 40% and 80% of 24 hrs LD50 values and observations were taken at 4 hrs interval up to 24 hrs. Crude latex and its combinatorial mixtures, like S-MLT-A, B-MLT-A, C-MLT-A, CU-MLT-A, AQ-MLT significantly altered level of bio-molecules in *Odontotermes obesus*, this effect was found time and dose dependent. Reduction or increase in bio-molecules was calculated by using corresponding control. Maximum decrease in glycogen level was observed at 16 h when termites were treated with 80% of LD $_{s_0}$  of *Ficus benghalensis* aqueous extract i.e. 56.88% at 16 h of treatment. A similar dose caused very slight decrease in lipid contents at 4 h of treatment but it was found further significantly (p>0.05) decreased in other successive treatments. 40% and 80% of LD $_{s_0}$  of C-MLT-B mixture caused significant (p>0.05) decrease in DNA and RNA level at 16 h treatment. The level of DNA and RNA level was recorded 83.90%, 90.18% and 85.42% and 74.05% respectively. Similarly total proteins were also found to be decreased with 40% and 80% of LD $_{s_0}$  of C-MLT-B mixture i.e. 71.47% and 66.45% respectively. All these alterations found in levels of various bio-molecules confirm the action of latex ingredients on worker termites that was antifeedant or deterrent types. These ingredients can be used to control not only termites but also other phytophagous insects in eco-friendly manner.

**Keywords:** Ficus benghalensis; Odontotermes obesus; latexes; Termiticides.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# INTERVENTION OF NEUTRACEUTICAL COMPOUNDS AS AN ALTERNATIVE OVER PHARMACEUTICALS USAGE IN PROMOTING OVERALL HEALTH AND TREATING LIFESTYLE DISORDERS: A LITERARY REVIEW

#### Abhishek Sharma and Rakesh Kumar Thamman

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#### **ABSTRACT**

Due to Sedentary lifestyle and impact of Westernization humans have become more susceptible to diseases. Due to this the immunity of humans is decreasing day by day impacting the overall well- being and general health. Recently the world has witnessed a major outbreak in the form of Covid 19 which had impacted the millions of lives worldwide, the reason being lack of immunity. The world has seen the power of herbal Neutraceutics in the pandemic which ultimately gained the popularity and won the faith of millions of people across the world. Contrary to Neutraceuticals the conventional Pharmaceuticals are disease specific while Neutraceuticals promote the overall wellbeing by enhancing the immunity. Intervention of Neutraceuticals restores the normal physiology of body by making chemical or molecular changes at the cellular level which ultimately helps in enhancing immunity and makes body resistant to fight ailments.

**Objective:** To promote the usage of Neutraceuticals over contemporary medicines as Recent Studies have proved that the former are more potent in treating lifestyle disorders and enhancing the overall immunity while having least or minimal side effects in the body as compared to the cotemperary Pharmaceutical drugs.

Material and Method: Reviewed from various databases, books, websites and various journals.

**Results:** The mechanism of action of Neutraceuticals has been thoroughly researched and adequately stated as to how they are beneficial in treating lifestyle problems and increasing immunity.

**Conclusion:** As various studies have proved that Neutraceuticals are more effective as compared to contemporary Pharmaceuticals because these works on the holistic approach in treating and preventing the diseases contrary to modern medicines which are disease specific. Intervention of Neutraceuticals are gaining worldwide polularity as these are equally potent in treating and preventing the ailments. More extensive research is required in this area to explore the hidden facts which may prove to be a boon to the society.

**Keywords:** Neutraceuticals, Pharmaceuticals, immunity, lifestyle disorders.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### IDENTIFYING COMMON SOURCES OF CARBONACEOUS AEROSOLS AND METALS AT TWO SELECTED SITES IN NORTH BIHAR

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#### **ABSTRACT**

Carbonaceous aerosols play an important role in various atmospheric process including climate change. Organic carbon (OC) and Elemental carbon (EC) possess both direct and indirect radiative forcing. During fuel combustion process, different metals are also emitted which are inhaled or deposited onto the ground along with BC and OC. In order to identify common sources of carbonaceous aerosols and metals, this study was carried out at two sites of north Bihar i.e., i). Saharsa (suburban) and ii). Outskirts of Purnia (rural). The mean concentration of OC was recorded as  $37.58 \pm 33.99 \,\mu\text{g/m}^3$  and  $49.34 \pm 54.79 \,\mu\text{g/m}^3$  respectively at Saharsa and Purnia sites. The mean concentration of EC was recorded as  $29.54 \pm 41.48 \,\mu\text{g/m}^3$  and  $21.55 \pm 38.85 \,\mu\text{g/m}^3$  respectively at Saharsa and Purnia sites. These values indicated a large range of concentration variation of OC and EC. The OC/EC ratios which are used to understand the source and transformation processes of carbonaceous aerosols indicated the dominance of biomass burning at Purnia site. Calculations showed that OC represented around 20.3% and 13.2% fractions of fine particulate matter (fpm) whereas EC represented around 0.6% and 6.4% fraction of fpm at Saharsa and Purnia, respectively. The mean fraction of fpm contributed by metals was estimated around 9.9% and 12.7% at Saharsa and Purnia, respectively. The mean concentrations of metals followed the order: Ca > Al > Fe > Mg > Zn > Mn > Cr > Cu at Purnia. Detailed results will be discussed during the conference.

**Keywords**: Carbonaceous aerosol, Organic Carbon, Elemental Carbon, OC/EC ratio, metals.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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#### PESTICIDES IN FOOD CROPS AND HEALTH HAZARDS

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#### **ABSTRACT**

**Background:** Pesticides are toxic substances that are used to kill unwanted pests and prevent them from attacking crops. Overuse of these pesticides is probable in developing countries due to fast urbanisation and a constantly growing population. Some of the pesticides which are used in agricultural production remain on food and this results in significant health risks to consumers. Globally, the use of pesticides in food production for pest control to increase yield an improve quality. Pesticide exposure can occur through ingestion, inhalation, or skin contact. Aim: The purpose of this study is to make awareness about the pattern of pesticide use and its health hazards in India.Material and methods: Reviewed from various databases, books, websites, and various journals. Result: Pesticides are a broad category of chemicals that include insecticides, fungicides, herbicides, rodenticides, molluscicides, nematicides, and others. In India, 76% of pesticides are insecticides. As a result, there is less extensive use of fungicides and herbicides. In India, cotton crops account for 45% of all pesticide usage, with paddy and wheat coming in second and third. Among the numerous harmful health consequences linked to chemical pesticides include impacts on the skin, gastrointestinal system, nervous system, respiratory system, reproductive system and endocrine system. Parkinson's disease, asthma, depression, anxiety, ADHD, and several cancers, including leukemia and non-lymphoma, Hodgkin's have all been related to prolonged pesticide exposure. Discussion and conclusion: Pesticides enter the human body either directly or indirectly. Pesticides come into direct contact with humans when used on crops, and they affect the skin, eyes, mouth, and respiratory tract, causing acute reactions such as headache, irritation, vomiting, sneezing, and skin rashes. Insecticides are mostly used in India. In Ayurveda, there are remedialformulations to minimize the harmful effect of pesticides.

**Keywords:** pesticides, crops, health, depression.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ENDOCRINE DISRUPTORS AND EFFECT ON HUMAN REPRODUCTIVE SYSTEM

#### Akansha Srivastava and Sunil Kumar Srivastava

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#### **ABSTRACT**

The endocrine system is a set of glands and the hormones they produce, which help guide the development, growth, reproduction and behavior of animals and humans. Chemicals both natural and home-made can interfere with endocrine glands and their hormones \target tissues. These chemicals are called "endocrine disruptors"/"endocrine disrupting chemicals "(EDCs). It can act in a number of ways in different parts of the body like reduce the production of hormones in endocrine glands ,affect the release of hormones from endocrine glands ,copy or counteract the action of hormones at target tissues ,speed up the metabolism of hormones and so reduce their action .EDCs have affected reproduction in wildlife populations .Aquatic animals are particularly affected ,especially carnivores because they are the top of the food chain where high levels of persistent chemicals build up over time . The effect in seals ,birds and alligators are most likely due to EDCs such as PCBs, dioxins, DDT and other pesticides that contain chlorine .The effects of on marine whelks and snails are due to the use of TBT-tributyltin in anti-fouling paints on boats and ships. However, the fact that high levels of chemicals can impair human health through interferences with the endocrine system raises concerns about the possible harmful effects of mixtures like reductions in male fertility ,abnormalities in male reproductive organs, female reproductive diseases, earlier puberty, declines in the numbers of males born.













### Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE)

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### STUDY OF THE HISTOLOGICAL CHANGES IN CERTAIN TELEOSTEAN FISHES OF INDIA

#### Amit Kumar Tiwari

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#### **ABSTRACT**

The histological structure of all the tissues under study in normal fish are almost the same as other teleosts, but the important changes observed in pesticide induced fishes are depended on concentrations & exposure periods. However, such changes are almost identical & indistinguishable & followed the same course of development. Some impor tant changes in different tissues observed. The histological changes in the liver showed loss of polygonal shape of hepatic cells, loss of boundaries, reduction and/or complete absence of blood cells in blood capillaries, vacuolations within & in between hepatic cells etc. The kidney showed severe renal demage like shrinkage of glomeruli resulting a gap between glomular truft & bowman's capsule, dialation of renal tubules with few tubules became fragmented & suffered necrosis, reduction in haemopoietic cells & deposition of haemotoxylene positive substances etc. The gills showed activated mucus glands, reduction in their number & vacuolation in most of them due to expulsion of their contents curling & fusion of secondary lamellae due to reduction in blood hydrostatic pressure within the pillar-cell system causing displacement of lamellar epithelium & exudation of blood cells, which might be due to continuous contact of pesticide. The ovary consisted of less number of maturing oocytes and more atretic follicles than nor mal fish, indicated lack of proper gonadotrophic stimulation, increase in interfollicular spaces, gradual shrinkage of oocytes, retarded growth and almost arrest of follicular development/recrudessence etc. Whereas the testes showed disorganised testicular lobules followed by pycnosis & vacuolations in all types of spermatogenic cells, a gradual increase in atretic lobules, degeneration of interstitial cells, hypertrophy & cytoplasmic vacuolations. The nucleic acid metabolism might be the cause of testicular degeneration, which is evident by cytonuclearchanges undergone by interstitial cells. However, all the above mentioned changes in the respective tissues are depended on concentration & exposure periods as the changes were guicker in higher than the lower concentrations at specific time.

Keywords: Pesticide, Different tissues, Blood cells, Gonadotrophic stimulation, Nucleic acid metabolism.











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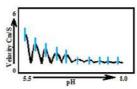
### PROTEINS IN VORTICELLA STALK IN SEARCH OF NOVEL MOLECULAR MEDICINES AGAINST ENDOGENOUSLY ENCOUNTERED PANIC DISEASES

#### Amit Kumar Verma

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#### **ABSTRACT**

Scientific advancements in molecular medicines and their possible positive impacts on public health against endogenously encountered panic diseases can be achieved by turning our mindsets towards novel proteins as *spasmins* and *batonnets* on which contractility of *Vorticella* stalks depend. Triton-X-100 a membrane permeabilizing detergent was used to know endogenous toxic effect of 5 mM of DNFB (dinitro-fluoro-benzene) reagent on *Vorticella* stalks' contraction-dynamics in live-specimens cultured in APW (artificial pond water of concentration: 1 mM NaCl, 1 mM KCl, 1 mM CaCl<sub>2</sub> each of these in equal proportion) at 25 to 30 °C where a positive sensitive effect of DNFB after ten minutes of treatment under microscopic investigations in conjecture with proteins' polymers pCa-binding-kinetics and the rate dependent polymerization-reactions (inter-conversion of G-actins into F-actins and vice-versa) in relations with *Lohmann*, *Heber-weiss*, *Fenton* and Ca<sup>++</sup>-binding ameliorative reaction kinetics was confirmed by biometric-data-observations in terms of a declined velocity profile (from 0 to 1 in Hills' parametric equation) upto 10% was confirmed in terms of mean and standard deviation (S.D.). *Stock* chart at the range of pHs from 5.5 to 8.0 referred blended-eventually-declined-graphic-pattern for the pHs from 5.5 to 7.0 it was of high-sharp-pitch (where N = 4 and S.D. =  $\pm$  0.02) whereas for the pHs from 7.0 to pH 8.0 it was low-blunted-pitch (where N = 4 and S.D. =  $\pm$  0.01) in terms of bio-energetically governed intra-molecular bonds formation resolutions variations at the rate of pCa-binding-kinetics at the sequence level which can be used in search of novel molecular medicines against the endogenously encountered panic diseases.



**Figure1:** Triton-X-100 permeabilized *Vorticella* stalk live-specimens contraction dynamics under DNFB 5 mM concentration gradient after 10 minutes of treatment at 25 to 30 °C.

**Keywords:** Vorticella, stalk, DNFB, Triton X-100, Spasmins, Batonnets.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### TRICLOSAN INDUCED APOPTOSIS IN THE GILLS OF FISH, CYPRINUS CARPIO

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#### **ABSTRACT**

Triclosan is widely used as an antimicrobial agent in varied personal care products in considerable quantities and then discharged to aquatic environments, resulting in potential risk to aquatic organisms. The present study investigated median lethal concentration (96h-LC $_{50}$  value) and on the basis of the 96h LC $_{50}$  value(0.968 mg/L), the fishwere exposed to three different concentrations i.e.,  $1\mu L^{-1} (1/100^{m} \text{ of LC}_{50}), 10\mu L^{-1} (1/100^{m} \text{ of LC}_{50}), 100 \mu L^{-1} (1/10^{m} \text{ of LC}_{50})$  of triclosan for 28 days. This study aimed to assess apoptosis in the gills of *Cyprinus carpio* by flow cytometry using annexin-Pl staining methodand immunolocalization of anti-caspase 3. The results showed a significant decrease (p<0.05) in percentage of live cells in all three exposure concentrations of triclosan as compared to the control. However, there was a significant increase (p<0.05) in percentage of early and late apoptotic cells in all three treated groups of triclosan in a dose dependent manner. Additionally, an increase in caspase 3 positive cells within the cytoplasmparticularly concentrated around the nuclei in the secondary lamellae epithelial cells were observed in all three exposure concentrations of triclosan as compared to the control. In conclusion, our findings revealed that long-term sublethalexposure of triclosan induces activation of caspase 3 which may be through extrinsic or intrinsic pathway, leading to apoptosis in gills of *Cyprinus carpio*. With increasinganthropogenic activity, the study provides convincingevidence for the necessity of a regulated useand safer disposal of triclosan to the environment.

*Keywords*: Triclosan, 96h LC<sub>50</sub>, flow cytometry, immunostaining, caspase 3, *Cyprinus carpio*.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### BIOLOGICAL ACTIVITY OF METHOXYFENOZIDE, AN ECDYSONE HORMONE ANALOGUE ON RICE-MOTH (CORCYRA CEPHALONICA)

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#### **ABSTRACT**

Insect pest management is still a puzzling problem of the world. The rice-moth, *Corcyra cephalonica* is a serious pest of stored cereals and cereal commodities specially rice, gram, sorghum, maize, wheat and milled products. One of the most safe and suitable way for controlling stored cereal insect pests is the application of insect growth regulators (IGRs) that affect the normal growth, metamorphosis and development of insects, without any harm to non-target organisms and environment in eco-friendly way. In addition, insect pests do not develop resistance in their body against IGRs. One of the category of IGRs is ecdysone hormone that affects moulting of the insects. In the present study, when 10 day old 2<sup>nd</sup> instar larvae were exposed to different concentrations i.e. 1, 5, 10, 15, 20 and 25 ppm of methoxyfenozide (an ecdysone hormone analogue), they caused a significant reduction in pupation and adult emergence and a significant enhancement in the larval and pupal death. It was observed that at 20 ppm concentration of methoxyfenozide a ver y poor percentage of pupation took place but all the pupae get perished and hence none of the adults emerge, but at 25 ppm concentration of this ecdysone hormone all the larvae tend to pupate but died in the form of larval-pupal intermediates. Thus 20 and 25 ppm concentrations of methoxyfenozide severely interfere with the normal growth, metamorphosis and development of *C. cephalonica* and hence new generation of pest does not arrive. It deserves mention that application of ecdysone hormone analogue terminates the arrival of the new generation of *C. cephalonica* in particular and lepidopterous pests in general.











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### USES OF SOME TRADITIONAL HERBAL FORMULATIONS AS PATHYA AHARA KALPNA IN VARIOUS DISEASES

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#### **ABSTRACT**

As opposed to treating any disease Ayurveda has stressed the significance of disease prevention and health maintenance. Ayurveda employs *Anupana*, *Aahara*, *Vihaar*, etc. to keep a healthy person's health as well as a key component in the management of diseases in addition to using medications to treat disease. Food is thought to have an impact on both physical and mental wellbeing in Ayurveda. Ayurvedic dietetics, also known as *pathya aahara kalpana*, is an original and unique idea of Ayurveda.

In the ancient codes of Ayurveda Aacharyas defines Ausadh with Aahar as pathya Aahar kalpna which plays an important role in disease prevention. In Chakrdutta samhita Aacharya describe Haritkyadi modak, Satavaryadi ksheeram, Baalbilvadi khad, Mustaksheer are some of the ingenious formulations that can be made at home for the prevention of Kas, Murchha, Pravahika and Vednayukt Aamatisar. In the present paper, a brief description and mode of action of these Ayurvedic formulations is presented.

**Keywords**: Pathya kalpna, Ausadh, Ausadh-Aahara kalpna.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### A REVIEW ON THE MULTI-DIRECTIONAL RESOURCE UTILIZATION PATH OF PHOSPHOGYPSUM: AN INDUSTRIAL WASTE

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#### **ABSTRACT**

Phosphogypsum is a by-product of the phosphate fertilizer industry. It is generally treated by stacking, which not only causes environmental pollution, but also wastes resources. Therefore, the harmless, comprehensive, and high-value utilization of phosphogypsum has attracted more and more scholars around the world. From the perspective of bibliometrics, this work systematically and comprehensively describes the research progress, trends and hot spots of phosphogypsum resource utilization. The visual analysis results demonstrate that the research on the resource utilization of phosphogypsum shows the characteristics of rapid growth. Phosphogypsum contains a large number of impurities, thus leading to the low resource utilization rate, and it can only be stockpiled in large quantities. Phosphogypsum occupies a lot of land and poses a serious pollution threat to the ecological environment. This paper mainly summarizes the existing pretreatment and resource utilization technology of phosphogypsum. The pretreatment mainly includes dry method and wet method. The resource utilization technology mainly includes building materials, chemical raw materials, agriculture, environmental functional materials.

**Keywords:** Phosphogypsum, Environment, Waste, Agriculture.













# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### PHYSIOLOGICAL AND BIOCHEMICAL RESPONSES OF VARIOUS PLANTS TO DIFFERENT WATER DEFICIT CONDITIONS

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<sup>1</sup>Arid Forest Research Institute, Jodhpur, Rajasthan. <sup>2</sup>Forest Research Institute, Dehradun, Uttarakhand.

#### **ABSTRACT**

Global warming causes a number of issues, including increased drought stress around the world. Climate change is expected to increase the frequency of water scarcity, heat stress, and the salinity of the soils. Drought stress is the most common abiotic environmental factor that limits the plant production around the world, particularly in arid and semi-arid regions. Water stress is one of the key factors that affect the distribution of the plants over the planet. Drought stress is a significant factor in reducing plant yield and it affects the physiological and morphological features of the plant both qualitatively and quantitatively. Drought stress tolerance is characterized by slight modifications in growth, physiology, morphology, biochemistry, and productivity. Plants that are under severe water stress limit water loss by adjusting stomatal closure and demonstrating decreased mesophyll conductivity. Using a variety of mechanisms, including osmotic adjustments, decreased cellular expansion, stomatal closure, leaf rolling, and modifications of several critical physiological processes, plants under drought stress can avoid the negative effects of drought. Drought also has positive effects on the formation of secondary metabolites, the buildup of solutes, and enzyme activity, according to numerous studies. A number of effective management techniques can be used to lessen the negative consequences of drought. A further strategy to alleviate the problem of water scarcity would be to cultivate plant species with drought-tolerant genotypes. A suitable watering schedule combined with the use of drought-tolerant species showed a significant increase in the production of secondary metabolites.

**Keywords:** Drought stress, Productivity, Watering schedule, Secondary metabolites.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### CHARACTERIZATION OF RHIZOBIA ISOLATED FROM DIFFERENT LEGUMINOUS PLANTS OF GORAKHPUR

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#### **ABSTRACT**

The *Rhizobium* has immense potential for use in sustainable agriculture as a good source of biofertilizer that aids in soil fertility without the use of chemical fertilisers. Current work was carried out to isolate and characterise *Rhizobium* from rhizosphere nodules sample taken from four different localities of Gorakhpur. A total of 18 isolates named C.T.1,C.T.2,L.A.1,L.A.2,L.A.1,L.A.2,V.F.1,V.F.1, V.F.2, M.P.1, M.P.2, P.L.1, P.L.2, C.J.1, C.J.2, were isolated from various leguminous plants and were further examined for morphological, biochemical and other attributes of *Rhizobium*. All bacterial isolates were found to be Gram negative, fast growing, indol producers and of rod shaped in morphology, positive traits for *Rhizobium* spp. Further these isolates would be analysed for their PGPR activities in the soil viz, effects of synthetic pesticides on nodulating capabilities of *Rhizobium*.

Keywords: Agriculture, Bacterial, Nodulating,











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#### PESTICIDES IN FOOD CROPS AND HEALTH HAZARDS

#### Archana Rao\* and Sunil Kumar Srivastava

Department of Zoology
Deen Dayal Upadhayaya Gorakhpur University, Gorakhpur U.P. India.

#### **ABSTRACT**

Pesticides are an integral part of modern life used to prevent growth of unwanted living organisms. The use of pesticides has increased in past few years. According to an estimate, about 5.6 billion pounds of pesticides are used worldwide per year. There are concerns that pesticides used to control pests on food crops are dangerous to humans and animals who consume those foods. Many food crops in; including fruit and vegetables contains pesticides residues even after being washed or peeled. The industrialization of the agricultural sector has increased the chemical burden on natural ecosystem. Many of pesticides have been associated with health and environmental issues and the agricultural use of certain pesticides has been abandoned. Pesticide toxicity can result from ingestion (by mouth), inhalation(respiratory) or dermal.(exposure through the skin or eyes). Continued exposure to these chemicals causes various diseases like neurological, psychological and behavioral dysfunctions, hormonal disorders, cancer, blood disorders, reproductive system defects and genotoxicity. Pesticides present the only group of chemicals that are intentionally used to the environment with aim to suppress plant and animal pests and to protect agricultural and industrial products. Pesticides can contaminate soil, water and other flora. Pesticides can be toxic to a variety of other organisms in addition to destroying weeds or insects, such as fish, birds, and beneficial insects. However, majority of pesticides are not specifically targeting the pest only and during their application they also affect non-target plants and animals. Ultimately, it cannot be denied that the extensive use of pesticides has negative consequences on the environment. The key to reducing health hazards is promoting practices like Integrated Pest Management, organic farming, biopesticides and crop diversification.

**Keywords:** Biopesticides, Hormonal Disorders, Psychological, Behavioral Dysfunctions.











### Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE)

22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ROLE OF PRANAYAMA AS A SUPPORTIVE THERAPY ON ASTHMA CONTROL

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#### **ABSTRACT**

The prevalence of bronchial asthma is rising on a global scale. It is affected an estimated 262 million people in 2019 and caused 455000 deaths. The air passages in the lungs become narrow due to inflammation and tightening of the muscles around the small airways. This causes asthma symptoms such as cough, wheezing, breathlessness and chest tightness. It is exacerbated by various factors like environmental factors, infections, cold exposure etc. Asthma is a chronic disease, which has a high rate of death. Pranayam are yogic breathing techniques that increase the capacity of lungs. Controlling one's inspiration and expiration is called Pranayam. Shwasa is the inspiration of pran-vayu, Prashwasa is the expiration. Pranayam enhances the body's overall functionality. Regular pranayama practise promotes lung function and nearly all chest wall expansion. Pranayam strengthens the respiratory muscles, allowing for the widest possible expansion and contraction of the chest and lungs as well as the most efficient use of the muscles. Pranayama showed a significant improvement in the vital parameters for the patients of asthma. The person who daily practices Pranayama will not suffer from Vatai vyadhij of lungs like shwasa, kasa, kshaya etc. and he lives longer.

**Methods:** The purpose of this paper is to make awareness on the role of pranayam as a supportive therapy for the patients who are suffering from asthma. There are many studies done to prove the significance of pranayama in the management of Asthma. For making this article we have compiled information from various texts pubmed, web of science, google scholar and various references.

**Result & conclusion:** many articles indicate that pranayam is an indispensable parameter for the management of asthma as well as for the proper control of the problems related with respiratory system.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### IMPACT OF MUTRAVEGA NIGRAHA ON HEALTH W.S.R TO LOWER URINARY TRACT INFECTION

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#### **ABSTRACT**

Sharir is made up of dosh, dhatu and mala. These three are the building blocks of the body. To keep our body healthy one should have equilibrium of dosha and dhatu, in the same way proper and continuous excretion of mala is of equal importance. Acharya Charak has described 13 types of natural urges in the body. Out of these, urge of micturition is commonly seen to be suppressed by most of the individuals. The major causes of suppression of urge of urine is bad life style habits, hectic schedule, heavy working hours, travelling, unavailability of proper facilities of urination and toilets etc. Intentional holding of urine leads to increase in intra-vesicular pressure causing stretching pain in penile/urethral area and bladder region which is very common among females and prolonged hours of voluntary controlling the urge cause greater increase in concentration of urine can be corelated to urinary tract infections. Lower urinary tract infection refers to inflammation of urethra and bladder which produce symptoms like haematuria, painful urination with burning sensation and frequent micturition. Ayurveda focuses on the root cause of this imbalance and recognises the importance of the urinary system. It promotes ongoing care and rejuvenating tonics to ensure strength and vitality in this system over time. The remote control of our health is in our hands. All we need to do is to use it skillfully.

**Keywords**: Mutravega, urinarytract infection, vega, urges.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### ROLE OF SHATKARMA IN DISEASES CAUSED BY ENVIRONMENTAL POLLUTION

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#### **ABSTRACT**

A disease is an aberrant state that adversely affects an organism's entire structure or function and is not brought on by any exterior abnormalities or deformity. Environment refers to everything that is around a person. It is also referred to as the "external environment," and it consists of things like the air, water, soil, noise, sunlight, plants, deserts, rocks, and buildings, among other things. On the other hand, each person has an interior environment that is made up of their bodies, internal systems, and the functioning of those systems. The body keeps the internal and external environments in balance, but sometimes this equilibrium is upset by environmental pollution and sickness is brought on. One of the best ways to resolve these problems and issues is through yoga. The best technique to clear internal bodily obstructions that aid one in fighting off external viruses or bacteria is through the practise of *Satkarma*, one of the many schools of yoga. This review provide the impact of *Satkarmas* based on reliable evidence to combat the environmental causes of disease.

**Keywords:** Yoga, the environment, pollution of the environment and *satkarmas*.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

# TO DECIPHER THE PHYTOCHEMICAL AGENT AND MECHANISM FOR URGINEA INDICA MEDIATED GREEN SYNTHESIS OF AG NANOPARTICLES AND INVESTIGATION OF ITS ANTIBACTERIAL ACTIVITY AGAINST METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS

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#### **ABSTRACT**

Globally, Methicillin-Resistant Staphylococcus aureus bacteraemia is one of the commonest bloodstream infections associated with clinical complications and high mortality. Thence, devising effective and targeted biogenic silver based strategies are in great demand. However, limited insights regarding the biosynthesis methodologies impedes the possible scale up and commercial potentials. We, hereby demonstrate the biosynthesis of Ag nanoparticles using the phytochemical agent extracted and purified from bulb extract of *Urginea indica*. The chemical structure of the phytochemical agent is investigated by various chromatographic and spectroscopic techniques and was found closely relatable to N-ethylacetamide. Ag nanoparticles synthesis by this agent was found to have a strong Surface Plasmon band at 402 nm. X-ray diffraction and transmission electron microscopy further validated the formation of Ag nanoparticles with face-centred cubic structure with a size range of 20 to 30 nm. The biogenic metal nanoparticles have shown potential antibacterial activity against S. S0 aureus and MRSA (within a range of 10 to 50 S10 to 10 S10 S10. The nanoparticles have also shown promising anti-biofim activity against the above mentioned strains. The nanoparticles were expected to induce ROS mediated bactericidal mechamism. Cell viability and S10 infection studies advocate noticable biocompatibility and future clinical potential of the developed nanoparticles against S12 S12 S12 S13 S14 S16 S16 S16 S16 S16 S17 S18 S18 S18 S19 S19











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### STUDY OF THE LETHAL AND SUBLETHAL CONCENTRATIONS OF CERTAIN TELEOSTEAN FISHES OF NORTH BIHAR

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#### **ABSTRACT**

The exposed to lethal and sublethal concentration of an organophosphate, pesticide methyl parathion at different exposure periods showed the following changes. The control fish exhibited normal & natural behavior, but the fish exposed to different lethal & sublethal concentration showed irrate & darting swimming movements, loss of equilibrium. became sluggish, restless & secreted excess mucus on whole body surface including gills, affecting oxygen diffusion pathway. The opercular movement initially increased at 24hr.of exposure in sublethal concentration, possibly to compensate the increased physiological activities & gulping air at the surface may be a protective behaviour or due to more demand of higher oxygen leval during exposure period. The oxygen consumption rate of pesticide induced fishes in both lethal & sublethal concentrations initially increased followed by decline depended on concentrations & exposure period. The haematocrit, haemoglobin & RCB number gradually & significantly decreased in both lethal & sublethal concentrations depended on concentrations & exposure periods, whereas, M.C.H. & M.C.H.C. values did not showed any clear trend as they fluctuated in different concentrations at different hours of exposure but the M.C.H. values were always more than the M.C.H.C. values. The blood glucose content in the fish exposed to lethal & sublethal concentration, but in sublethal concentration, in both lethal and sublethal concentrations depended on exposure periods , also indicating metabolic impair ment in the proper development of gonads due to pesticide action. The total protein content in the blood & the tissues under study were gradually decreased significantly in both lethal & sublethal concentrations depended on exposure periods.

**Keywords**: Opercular, Sublethal, Haematocrit, Haemoglobin.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### A PRELIMINARY STUDY ON PARKIA TIMORIANA (DC.) MERR. MORTALITY IN MANIPUR

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#### **ABSTRACT**

Parkia timoriana (DC.) Merr. belonging to the family, Fabaceae and sub-family, Caesalpinioidae is a leguminous tree yielding edible pods called 'tree bean' which is a delicacy in the north eastern part of India. It is a versatile tree bean with multipurpose uses, including seed pods as nutritious food, and contributes substantially to the rural economy of North East India. Recently large scale mortality of tree bean i.e. Parkia timoriana (DC.) Merr. is reported in Manipur. Mass mortality of this tree species has been a major concern in the hill state Manipur. Keeping this in mind, the survey was conducted to determine the cause of the sudden death of the tree bean. The survey was carried out in different tree beangrowing areas of Manipur in order to study the occurrence of Parkia timoriana (DC.) Merr. mortality. The survey sites included jhum fields, homesteads, and roadside plantations of three districts of Manipur viz. Bishnupur, Chaurachandpur, Senapati. The paper discusses the symptomatology of the Parkia timoriana (DC.) Merr. mortality in the various surveyed sites of Manipur.

**Keywords**: Parkia timoriana (DC.) Merr., mortality, symptomatology and Manipur.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### NANO MATERIALS EMPLOYED FOR BIOPROCESSING OF TOXIC EFFLUENT FROM ALUMINA INDUSTRY

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I.C.F.R.E.- Eco- Rehabilitation Centre, Prayagraj (U.P.)

#### **ABSTRACT**

In the present times, controlling and treating pollution is a massive obstacle for growing industries in developing nations. Aluminium is considered as the green metal in India, due to its numerous benefits to human kind in one way or the other. Unknowingly, the synthesis of such green metal eventually converts into reddish heaps of waste. This waste by-product is typically referred to as bauxite residue. Stockpiling such waste not only increase expenditures, but also raises the risk to the surroundings, contaminate ground water by alkaline seepage by discharging caustic micro dust particles into the atmosphere. Thus, chitosan based nanomaterial have emerged as an asset to overcome the challenges associated with this noxious alkaline substance to detoxify severely contaminated areas. Plant based chitosan has abundant hydroxyl and amino groups which have the highest proficiency to bind heavy metal ions and decontaminate the residual industrial discharge. Chitosan has evolved as a cost-effective, bio- based, biodegradable, and non- toxic polymer. The process of developing plant based chitosanto eradicate the bioavailability of harmful constituents through the process. Therefore, chitosan-based nanomaterials offer sustainable solutions for treating the hazardous by-product. This study provides an insights for utilizing plant based nanomaterials for conventional practices in order to remediate the industrial waste.

**Keywords:** Bio-nanomaterials. Bauxite residue. Chitosan. Remediation. Bio-Nano Composite.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### SOIL QUALITY: A REVIEW FROM NORTH-EAST, INDIA

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#### **ABSTRACT**

The ability of soil to function as a vibrant living system within constraints of land use is the definition of soil health and soil quality. The biological yield of soil is maintained via this function, which also preserves the quality of the immediate environment and public health. Because the soil is a dynamic system, it supports not only the biological products of the soil but also the environment and human well-being. In developing nations, negative impacts on soil health, soil contaminants, and soil loss strategies are becoming less common. However, very little research has been done in the north-eastern states of India on soil quality. Physical, chemical, and biological factors make up soil, and each of these components is essential to the soil's vital operation. Since soil is a multifaceted and dynamic component of the Earth's biosphere that is always changing due to both natural and anthropogenic disruptions, there is a need for continual monitoring of soil quality. The physical, chemical, biological (microbes and enzymes), and chemical (pH, salinity, organic carbon, etc.) properties of the soil are all disturbed by any changes in the soil. From a small plot to the entire country, soil is frequently sampled, analysed, or visually inspected to determine its condition and potential for usage. Due to the diversity and site-specificity of soils, the consequences of historical land use, and exchange between ecosystem services, it is difficult to choose the appropriate soil properties and interpret observations. However, it is impossible to estimate soil quality by looking at just one metric from the physical, chemical, or biological realms. As a result, it is now necessary to create a minimal dataset (MDS) that include physical, chemical, and biological factors in order to evaluate the soil's quality. In terms of definition, assessment methods, indicator selection, and indicator interpretation, this study aims to present numerous physical, chemical, and biological characteristics, combinations of which may be utilised in the establishment of MDS, soil quality, and related concepts. We highlight the most prominent soil quality indicators across a range of land uses in India's north-eastern states, as well as previous efforts and potential future actions for sustainable development.

**Keywords:** Soil quality, MDS, North-east India, sustainable development.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### ROLE OF AHARA VIDHI VIDHANA IN PREVENTION OF AMLAPITTA

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#### **ABSTRACT**

Ahara, Nidra and Brahmcharya are trayopastambha (three sub-pillars) which supports the body itself. Ahara has been placed first which shows that it is the basic requirement of life and plays a crucial role in the nourishment and protection of the beings. It also explains how healthy and proper technique of eating is important for an individual. In today's fast paced life, people are not able to take diet in proper quantity and at proper time. Improper food intake not only influences the equilibrium of doshas but also causes mental ailments. So in order to maintain good health, it is necessary to practice proper Ahara Vidhi Vidhana.

The food of opposite qualities, preserved food, spicy food, eating stale food, eating before digestion of previous food, consuming food without concentration and alongwith mental stress and strain, etc. are the commonest causes of Amlapitta in present lifestyle.

Any disorder involving the GI tract is having a definite relationship with the dietar y methods of intake as well as other dietary habits. Disobeying the rules mentioned in Ahara Vidhi Vidhanais one of the causes of Amlapitta. Hence there is an association between both of them. Byfollowing the Ahara Vidhi Vidhana, the pathogenesis of disease Amlapitta can be prevented.

**Keywords**: Ahara, trayopastambha, Ahara Vidhi Vidhana, Amlapitta.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### AYURVEDA: AN IMPORTANT WAY OF LIFESTYLE

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Maharishi Markandeshwar (Deemed to be university) Mullana-Ambala

#### **ABSTRACT**

Ayurveda is a much underrated practice due to unawareness of Ayurveda scriptural knowledge and the tradition of our ancestors on which their lifestyle was based. With time, there are many modern methods coming into existence that are replacing the Ayurvedic methods of healthcare practices and sustainable way of living. Now, the question arises, "Define Ayurveda and where it's lagging behind in the modern times?" the answer is profound in Ayurveda scriptures describing, it is a science of life with the holistic approach to health and personalized medicines. Ayurveda is a Sanskrit word that defines, 'ayur' means 'life' and 'Vedas' means 'knowledge', an oldest traditional Hindu medical system of medicines that mainly concentrates on diet, herbal treatment and yogic breathing. Ayurveda is a yogic and medical science that's capable of curing many chronic diseases like cancer, diabetes, arthritis, and asthma which are untreatable in modern medicines and becoming a part of mortality rate till now. Ayurveda was originated in south Asian region over 3 millennia ago that has offers extensive insights about food, health and focuses on balancing or alleviating vitiated Doshas of parents with help of panchakarma (earth, air, water, ether, fire) and modulating certain doshas in the progeny with certain drugs, diet and lifestyle modifications. It is very different from biomedicines and modern nutrition that has research evidences in fields of literary, fundamental, drug, pharmaceuticals and clinical research that has great scope to treat wide range of physiological/psychological diseases.

Ayurveda being the oldest medical system, as per the research should convert data information knowledge wisdom, means it should be balanced, comprehensive among literary, experimental, clinical research and even impactful in the field of academics, pharmacy etc. but Ayurveda is lagging in this aspects of disseminate the knowledge gained from the exercises as neither the Ayurvedic teaching changed in last 50 years nor have the textbooks been enriched with new researchers. Ayurveda teaches us the scriptures to categories our body among doshas (vata, pitta, kapha) according to which eat satwik food, rise early at 4-6am with yogic exercises, meditation and spent time of body in natural environment, have proper sleep and cure yourself with Ayurvedic natural treatment, with food and Ayurvedic practices, one can be long lived being independent of modern medicines.

**Key words:** Ayurveda, Breathing meditation, Biomedicines and modern nutrition, Doshas, Panchakarma.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### A REVIEW ON THE ETIOLOGY AND MANAGEMENT OF TYPE II DIABETES MELLITUS WITH DIET

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#### **ABSTRACT**

**Background:** Type 2 diabetes mellitus (T2DM) is one of the most common diseases occurring globally. The etiology of T2DM is complex and is associated with irreversible risk factors such as age, genetic, race, and ethnicity and reversible factors such as diet, physical activity and smoking.

**Objective:** We summarized evidence from prospective studies that examined associations of dietary patterns with type 2 diabetes by considering different methodologic approaches.

**Methods:** Dietary habits and sedentary lifestyle are the major factors for rapidly rising incidence of DM among developing countries. The literature search identified prospective studies that associated dietary patterns with diabetes incidence in nondiabetic and apparently healthy participants.

**Results:** The main purpose of this review was to discuss the role of diet in the etiology of type II Diabetes. Studies have shown that a diet rich in red and processed meat, refined grains, high-fat dairy, eggs, and fried products ("mainly unhealthy") have positive association with diabetes, whereas a diet rich in vegetables, legumes, fruits, poultry, and fish ("mainly healthy") were inversely associated with diabetes. Positive patterns were characterized by high intakes of refined grains, sugar-sweetened soft drinks, and processed meat and were all significantly associated with diabetes risk

**Conclusions:** Since diet has a huge impact on the causation of diabetes, hence health-care providers, health facilities, agencies involved in diabetes care, etc. should encourage patients to understand the importance of diet which may help in disease management, appropriate self-care and better quality of life.

**Keywords:** Type 2 diabetes mellitus, <u>dietary patterns</u>, <u>lifestyle</u>, <u>management</u>.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### IMPACT OF CLIMATE CHANGE ON PHYLLOSCOPUS TYTLERI, A SELECTED RANGE-RESTRICTED BIRD SPECIES OF THE WESTERN HIMALAYAN REGION

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#### **ABSTRACT**

Climate change, an alarming global phenomenon is considered a major threat to biodiversity. It is expected to alter the structure, function and composition of the Himalayan ecosystem which is believed to have an enormously beautiful aggregation of avifaunal species. These species are believed to face habitat loss due to an increase in temperature conditions, making a shift in their habitat. One such Himalayan bird is *Phylloscopustytleri*, which is listed among the range-restricted birds of western Himalayan region. Predicting their distribution and suitable future habitats for them is the need of the hour. To develop management options and conservation policies to adapt to the surrounding changes in these escalating climatic conditions. An early initiative would help to understand the effect of climate change on species distribution. The study aims to develop an understanding of the distribution of selected bird species in the Western Himalayas in the current environment and to predict suitable future habitats for them under projected climate change scenarios. It will be observed whether future climate change and land use would modify the distribution of these species or not. Therefore, the species distribution modelling (SDM) approach using different RCPs will be used to account for different emissions and concentration trajectories. Likewise, the potential distribution of the selected bird species will be found. The models will be developed under the current climatic conditions and then projected onto various future climate change scenarios for different time frames in the future to monitor the changes in the distribution of the species and how the bird species will interact with their existing environment in the coming future. Then accordingly, with the help of results, conservation and management practices will be implemented.

**Keywords:** Habitat, Species Distribution Modelling, Climate change, RCPs (Representative Concentration Pathway).











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### ETIOLOGICAL VARIATION OF BAMBOO BLIGHT IN BAMBUSA TULDA ACROSS AGRO-CLIMATIC ZONES OF ASSAM

#### Geetashri Borah\* and Rajib Kumar Borah

Rain Forest Research Institute, Jorhat, Assam

#### **ABSTRACT**

Bamboo, poor man's timber, belongs to the family, Poaceae and sub-family, Bambusoidae. As more than 1500 uses of bamboo are recorded, it is also regarded as 'emperor' among the grasses. *Bambusa tulda* is one of the five quick-growing species of bamboos prefer red for raising plantations in India. *Bambusa tulda* is considered as the dominant bamboo in Assam, and has various economic uses for the people. Blight is considered one of the major diseases in bamboo, and economic loss due to blight is enormous for the poor who depend on bamboo for their livelihood. The most characteristic feature of the blight is truncated culms showing prominent dieback with the downward progression of the disease. The present study showed certain variation in the symptoms of blight in *Bambusa tulda*, across different agroclimatic zones of Assam, viz. Upper Brahmaputra Valley, Central Brahmaputra Valley, Lower Brahmaputra Valley, Barak Valley, Hill Zone and North Bank Plains. The soil type, weather conditions, and incidence of the disease can contribute to the slight varitions noticed in the etiology. The paper discusses the variations associated with the etiology of blight in *Bambusa tulda* across the agro-climatic zones of Assam.

Keywords: Bambusa tulda, blight, agro-climatic zones, dieback and Assam.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### **NEUTRACEUTICALS AND HERBAL COSMETICS**

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#### **ABSTRACT**

Cosmetics are commercially available products that are used to improve the appearance of the skin. Even though the cosmetic field is closely related to the pharmaceutical or food industry, the expectations of cosmetic product consumers and their needs are completely different. They are more sophisticated and are looking for safe cosmetic products that actually do something beneficial to their skin. Herbal nutraceutical is used as a powerful instrument in maintaining health and to act against nutritionally induced acute and chronic diseases, thereby promoting optimal health, longevity, and quality of life. So the big challenge for the cosmetic industry is to combine these two contradictory needs and to fulfill both requirements. Use of chemical based topical applications extends fast deterioration of skin. This requires immediate and suitable procedure which can not only extend benefits to the skin but also helpful in long duration making your skin look charming. Cosmeceuticals are cosmetic-phar maceutical hybrid products intended to improve the health and beauty of the skin by providing a specific result. These products improve the functioning/texture of the skin by boosting collagen growth by eradicating harmful effects of free radicals, maintains keratin structure in good condition and making the skin healthier. There are numerous herbs available naturally having different uses in cosmetic preparations for skincare, hair care and as antioxidants. Some of the plants commonly used as cosmeceuticals are Aloe vera, Azadirachta indica, Curcuma longa, Coconut oil, Sunflower oil, Rhodiola rosea (Golden root), Daucus carota, Ginkgo biloba, Lawsonia inermis, Camellia sinensis, Acorus calamus, Allium sativum, Alpinia galangal, Avena sativa, Echinacea purpurea, Centella asiatica, Symphytum officinale, Crocus sativus, Vitex negundo, Sesamum indicum, Cicer aritinuma. Cosmetics In present scenario herbal Cosmeceuticals have more demand because they have no side effects.

**Keywords:** Cosmeceuticals, Herbal medicines, Neutraceuticals, Herbal cosmetics.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### QUALITATIVE AND QUANTITATIVE STUDY OF EXTRACTS OF FLOWERING BUDS OF MESUA FERREA LINN BY HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY

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#### **ABSTRACT**

The large to medium-sized *Mesua ferrea* Linn tree, also called Nagakesara in India, may reach heights of 20 to 30 metres and contains very hard wood. From January to March and April to October, the fruiting season runs. The axillary buds feature scales and are spherical, measuring 2mm diagonally. It contains a significant amount of  $\beta$ -sitosterol amides, which are essential in terms of biology. To quantify these marker compounds from *Mesua ferrea* Linn flowering buds, we used high-performance thin-layer chromatography (HPTLC) in conjunction with densitometry in the current investigation. The method was discovered to be reliable. The relative standard deviation (RSD) values of  $\beta$ -sitosterol for intra-day studies ranged from 1.16 to 1.60%, whereas the values for inter-day analyses ranged from 0.68 to 1.77%. The accuracy of the approach was evaluated by carrying out a recovery analysis for the reference compounds at three different levels, and average recoveries were found to be 99.98%. This TLC-densitometric method was found to be precise, particular, sensitive, and simple. It can be used in routine quality control for the simultaneous analysis of sitosterol from *Mesua ferrea* Linn flowering buds.

Keywords: Mesua ferrea Linn; HPTLC; β-sitosterol; Densitometry











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### STUDY OF MEDICINAL PROPERTIES OF HONEY IN VAISHALI DISTRICT OF NORTH BIHAR, INDIA

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#### **ABSTRACT**

Honey is used as medicine from the ancestral time. In India the production of honey increases day to day by it's valuable uses and the medicinal properties. In Vaishali district a lots of people adopt Bee farming for their economic value and due to environment adaptation. Litchi flavoured honey is very much popular in India and other country of the world for it's nutritional value which is farming in Bihar specially in Vaishali district and Muzaffarpur district. Honey had effective nutritional value with medicinal use in cut, burns and wounds are also maintained properly with the help of honey. It is noticed that honey contains Vitamin B6. Vitamin C and Amino Acid that can increase the efficiency of honey. Highperforming antiseptic properties are also present in honey. On the other hand, antibacterial and antifungal characteristics are present in Honey. Antioxidant properties are responsible in the honey. It is noticed that the main nutrients of honey are carbohydrates, riboflavin niacin and amino acids.. The cholesterol level of the human body is also reduced with the help of honey. This factor directly has an impact on maintaining high blood pressure and diabetes-related issues. Antibacterial characteristics are present in honey that can help to relieve cough. High levels of LDL cholesterol are a major risk factor for heart disease. Atherosclerosis or fatty accumulation in the arteries that can lead to heart attacks and strokes is caused by this kind of cholesterol. On the other hand, it is noticed that honey is a beneficial factor for the skin. To create a proper face pack it is important to maintain the involvement of honey and lemon, honey and banana, and honey and milk Surrounding moisture of the body is absorbed properly with the involvement of honey, which is an effective benefit of honey. The honey can play role in maintaining white skin of our body. Honey is conducted with anxiolytic, anti-norciceptive, anti-convulsant and anti-depressant characteristics. It is noticed that the antioxidant status of the brain is also maintained properly with the involvement of honey as neuro-protective and entropic effect is present in honey polyphenols. Along with this, it is noticed that an anticancer role is also present in honey. Multiple cell-signalling aspects of the human body are maintained roper with the help of honey. The anti-cancer activity of honey can play a crucial role in maintaining human breast, cervical, oral and osteo-sarcoma cancer. The immune system of chemo-patients is also maintained properly with the help of honey. In addition, it is noticed that the reproductive system of the human body is also maintained properly with the help of honey. Sperm quality is also improvised properly with the help of honey. The toxic effect on the reproductive tract is maintained properly with the help of honey. Proper colour, flavour and fragrance can increase the authenticity of honey. On the other hand, it is noticed that honey can play a crucial role in maintaining eve disorder. Eve pressure, redness of eve is also reduced and controlled properly with the help of honey. Honey destroy germs that might cause an infection in the eyes and decrease inflammation and discomfort. The honey can play a crucial role in maintaining cardiovascular disease. There are multiple kinds of honey available in the market, and each has its own unique health benefits.











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# THE CORRELATION AMONG BODY WEIGHT, SEDENTARY LIFESTYLE, GENETICS, ENVIRONMENTAL FACTORS, AND THE INCIDENCE OF DIABETES MELLITUS

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# **ABSTRACT**

Diabetes mellitus is a complex metabolic disorder characterized by high blood glucose levels resulting from a defect in insulin secretion, action, or both. The prevalence of diabetes mellitus is increasing worldwide and is closely linked to body weight, sedentary lifestyle, genetics, and environmental factors. Obesity, a major modifiable risk factor for diabetes mellitus, is associated with insulin resistance and beta-cell dysfunction. Genetics also plays a significant role in the development of diabetes mellitus, with studies showing that certain gene mutations can increase an individual's risk of developing the disease. Environmental factors, such as exposure to toxins and pollutants, poor nutrition, and lack of access to healthcare, can also contribute to the development of diabetes mellitus. The association between body weight, sedentary lifestyle, genetics, and environmental factors and the prevalence of diabetes mellitus is complex and multifactorial. Addressing these risk factors through lifestyle modifications, including weight loss, regular physical activity, healthy dietary choices, and reducing exposure to environmental toxins, can significantly reduce the risk of developing diabetes mellitus. In conclusion, the association between body weight, sedentary lifestyle, genetics, and environmental factors and the prevalence of diabetes mellitus highlights the importance of a holistic approach to diabetes prevention and management.

**Keywords:** Diabetes, Obesity, Health, Genetics, Insulin.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# ANTIMICROBIAL ACTIVITIES OF DIFFERENT FRACTIONS FROM TRADITIONAL INDIAN MEDICINAL PLANT CINNAMOMUM

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### **ABSTRACT**

Microbial infections are responsible for one-third of the death rate globally, that accounts for a huge two-third fraction in low-income countries of Asia and South Africa. To prevent the infection caused by microbes antimicrobial drugs have been developed, such as Cephaloporins, Marcolides, and Tetracycline, Either of these drugs are used to treat infections in human body such as urinary tract infection, skin infection, and respiratory tract infection etc. However, use of these antimicrobials is plagued with my side effects (liver and kidney toxicity, gastrointestinal toxicity), allergic responses and drug resistance. Due to the prolonged use and exposure of these drugs, the microbial species have mutated over time, enabling them to be resistant against these drugs, leading to emergence of lethal multi-drug resistant (MDR) strains. Thus, to overcome the drawbacks of commercial antibiotics, secondary metabolites present in traditional plants are been investigated as potential 'drug candidates' due to their natural abilities to fight against infections. Drugs extracted from plants have shown no or minimal side effects in the human body, thus giving them an upper hand over the commercial drugs. Cinnamomum is one such plant that contains many bioactive compounds (alkaloids, flavonoids, tannins, terpenoids, etc.) that have antimicrobial properties. In our present work, we prepared different fractions of cinnamon and tested these fractions against bacteria. We also determined the nature of plant secondary metabolites present in cinnamon fractions and detected the presence of flavonoids, steroids and tannins in our test fractions. Our results indicate that secondary metabolites present in our cinnamon extracts hold merit as future drug candidates against pathogenic microorganisms.











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# REPURPOSING OF FDA-APPROVED DRUGS AGAINST HUMAN EPIDERMAL GROWTH FACTOR RECEPTOR-2 FOR THE TREATMENT OF BREAST CANCER: A COMPUTATIONAL STUDY

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<sup>3</sup>Bioinformatics Research Division, Quanta Calculus, Greater Noida, India

### **ABSTRACT**

Increasing evidence suggests the crucial role of human epidermal growth factor receptor-2 (HER2) in breast cancer (BC) development and progression indicating that HER2 inhibition may be a promising target for BC therapy. Here, we screened FDA-approved compounds from the drugs-lib database using a structure-based drug discovery approach that can inhibit BC cell proliferation by targeting HER2. Top four drugs named VX-702, Duoperone, Paliperidone, and Piperaquine have been selected based on their strong binding affinity and molecular interaction profiles. The binding energies for VX-702, Duoperone, Paliperidone, and Piperaquine were obtained between –12.2 and –11.7 Kcal/mol. Each identified drug showed good binding stability with the HER2 in the molecular dynamics simulation and free binding energy calculation experiments, which indicates that the selected drugs can inhibit the function of HER2. Overall, this study suggests that VX-702, Duoperone, Paliperidone, and Piperaquine have potential inhibitory effects on breast cancer cell growth which can be further validated through in vitro and in vivo experiments to develop effective drugs for BC therapy.

Keywords: Breast Cancer, HER2, Structure-based screening, Anti-cancer compounds, Molecular Dynamics.











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# NEW PERCEPTION IN NUTRACEUTICALS AS SUBSTITUTE FOR PHARMACEUTICAL

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### **ABSTRACT**

Nutraceuticals are products derived from food sources that provide both nutrition and medicinal benefits. It may be used to improve health, delay the aging process, prevent chronic diseases, increase life expectancy or support the structure or function of body. The food products used as nutraceutical can be categorized as dietary fibre, prebiotics, probiotics, polyunsaturated fatty acids, antioxidants and other different types of herbal/natural foods. Nutraceuticals can be effectively used by including in the daily diet in an area which shades in the range "beyond the diet, before drugs". Compared to pharmaceuticals, nutraceuticals are potentially safe and can improve health naturally. However, certain nutraceuticals can have side effects such as allergic reactions caused by interactions with other nutraceuticals or therapeutic drugs. In most countries nutraceuticals are taken as part of dietary supplements. Frequency of nutraceuticals use is 50%-70% in various developed countries population and this number is increasing by age.

**Keywords:** Nutraceutical, Pharmaceuticals, Health, Natural.











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### BOTANY AND BOTANICALS IN ENVIRONMENT AND HUMAN HEALTH

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### **ABSTRACT**

Plants are basic of life on earth and their study is essential to protect our future. Botanicals have been used for Centuries by humans to cure and prevent diseases. In recent year uses of synthetic pesticide in agriculture and industrial areas is increasing drastically which causes adverse effects on environment and human health. Botanicals play a very important role to cope of these effects because of their easy availability, biodegradability and less toxicity in environment. Synthetics accumulate in organisms, plants and animals which consumption causes different types of disease like cancer, respiratory, neurological diseases, and oxidative stress. Some plants like Azadirachtin indica, Chrysanthemum, Euphorbia extract or secondary metabolites are toxic to insects but have less toxicity for mammals. The extract of Nerium indicum plant causes decrease in serum Calcium progressively and inorganic phosphate in rats. Treatment of rats with Amla shows a protective role against Nerium. The fruit of Emblica officinalis contain higher amount of ascorbic acid. Higher amount of polyphenols like Gallic acid, ellagic acid, minerals, vitamins, amino acid and flavonoids like rutin and quercetin are also found as micronutrient. In the future in the research about botanical is very necessary for environment and human health.













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# IDENTIFICATION AND TARGETING ORPHAN G-PROTEIN COUPLED RECEPTOR (GPCR) IN MOSQUITO FOR APPLICATION OF HERBAL REPELLENT

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## **ABSTRACT**

Many odorant-binding proteins (OBPs), which are abundant in the agueous lymph surrounding the dendrites of olfactory receptor neurons, are a ubiquitous but poorly known element of the insect olfactory system. Current research has improved our understanding of the molecular networks that control the emergence of pesticide resistance by revealing the expression and role of GPCRs in insecticide resistance. While G-protein-coupled receptors (GPCRs) control signal transduction pathways and are essential to the physiology of insects, their specific involvement in pesticide resistance is yet unknown. GPCR from all the species of the anopheles family serves as an olfactory receptor protein. Literature studies shows that GPCR holds a structurally common fold. Aspartic acid and Serine residues serve to be predominant for performing their function competently. In this study, the amino acid sequence of Orphan GPCR class A from Anopheles darlingi having 326 amino acid residues was extracted. Domain being the independently functional part of a protein, was examined for the protein as well. Evolutionarily conserved residues were analysed and mutation for the residues were examined as well. The percentage of helices and sheets were predicted to examine the secondary structure conformation. Binding sites in the olfactory receptor protein for the ligands was studied. The mutational impact on the protein functionality was also examined. Till date, such in silico study was unexplored and this would serve as a stepping stone to prevent the spread of mosquitoes. This sequence level insight into the GPCR orphan receptor for mosquitoes would shed light for the future research to inhibit the mosquito population through analysis of its binding to certain ligands, specifically to herbal ones.

**Keywords:** GPCR, Anopheles, Binding Sites, Evolutionarily Conserved Residues, Secondary Structure Prediction, herbal mosquito repellent.











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### LIFE STYLE DISORDER – STHAULYA

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### **ABSTRACT**

Ayurveda is the earliest health system established since the beginning of the civilization and having lots of performation for longevity and health. Avoiding such instructions, living with non expenditure of energy and sedentary life creates santarpanianya wadhi. Sthaulva is one of them.

Sthaulya (Obesity) is a metabolic disorder due to vitiation of *Medodhatu* i.e. excessive accumulation of fatty tissue in the body. In *Charak samhi*ta it was counted as one of the Ashtnindit purush.

It is a kapha-medaja vikara with vitiation of Jatharagni and Medodhatvagani. Treatment principles include administration of Guru (heavy) and *Aptarpan upkram* (weight reducing activities).

**Keywords:-** Sthaulya, Obesity, medodhatu, Jatharagni, Medodhatvagani.













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# GLYOPHOSATE EFFECT ON BIOCHEMICAL PARAMETERS OF CATFISH CLARIAS BATRACHUS

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### **ABSTRACT**

The herbicides are used to eradicate certain plant organisms and thereby accumulate in large amounts to the environment. These effects are amplified also through high solubility of many classes of herbicides; magnification of concentrations of herbicides upon entry into the food chain and successive concentration in lipids for higher species in that chain; and persistence of many herbicides and transformation to other harmful metabolites upon residence in soil, water and biota. The freshwater catfish, *Clarias batrachus* was exposed to the Glyphosate as an organo -phosphate herbicide to determine the acute toxicity values for different time periods. The LC50 values obtained in different concentration in 24, 48, 72 and 96 h. The studies relegated that total RBC, Hb, PCV, WBC, Blood Glucose, Plasma Prorein, Blood Urea, Cholestrol, Musal and liver Glycogen and muscle Protein showed fluctuating pattern.

Keywords: LC50; Glyphosate; Biochemical constituents; Catfishes.











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# CITRUS MAXIMA ESSENTIAL OIL BASED COMBINATORIAL FORMULATIONS INDUCED BIOCHEMICAL ALTERATIONS IN ODONTOTERMES OBESUS, THE INDIAN WHITE TERMITE

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## **ABSTRACT**

In present investigation various bio-molecules i.e. glycogen, protein, amino acid, DNA, RNA and lipid were evaluated to determine the anti-termite efficacy of Citrus maxima essential oil based combinatorial formulations against Indian white termite Odontotermes obesus. For this purpose termites were treated topically with 40% and 80% of 24 hr LD50 values of various combinatorial formulations. A significant (p>0.05) alteration was noted in all the above biomolecules at various time intervals. Both dose response and time period was found important in physiological alteration in levels of various bio-molecules. Combinatorial mixtures of Citrus essential oils have shown synergistic activity against termites. For this estimation termites were sacrificed, homogenized and centrifuged and level of various bio-molecules was measured. Maximum decrease in glycogen level was observed at 16 h when termites were treated with 80% of LD50 of S-RET-C combinatorial mixture i.e. 50.25% at 16 h of treatment. Similarly 40% and 80% of LD50 of S-RET-C combinatorial mixture caused significant (p> 0.05) decrease in DNA level at 16 h of treatment i.e. 58.78% and 97.07% in comparison to control. Besides this, both RNA and protein levels were found to be decreased when termites were treated with 40% and 80% of LD50 of S-RET-C combinatorial mixture i.e. 55.42% and 61.24% & 56.48% and 57.28% at 16 h treatment in comparison to control respectively. A significant alteration in bio-molecules was observed by using corresponding control, 80% of B-RET-C combinatorial mixture caused significant (p> 0.05) 50.65% decrease in glycogen level in treated termites in comparison to control at 16 h of treatment. Amino acid level was slightly decreased in C-RET-A, C-RET-B and C-RET-C i.e. 92.25%, 98.16% and 75.63% respectively. The research outcomes of present investigation would help to open sustainable way to termite control in crop field, gardens and houses.

**Keywords:** Odontotermes obesus, Citrus maxima, essential oils, combinatorial formulations, glycogen, protein, amino acid, DNA, RNA and lipid.











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# THE CONCURRENCE OF VISCERAL LEISHMANIASIS AND ACQUIRED IMMUNODEFICIENCY SYNDROME

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### **ABSTRACT**

Visceral leishmaniasis (VL), also known as kala azar, is one of the deadliest form of leishmaniasis. The causative agents are from the species of Leishmania. This tropical disease is caused by parasitic protozoans and can be transmitted in anthroponotic as well as in zoonotic manner by Leishmania donovani and L. infantum. Speaking of the Human immunodeficiency virus (HIV) infection, this Lentivirus affects the body by infecting vital cells of immune system like helper CD4+ T cells, macrophages etc. HIV transmits through bodily fluids such as semen, blood, breast milk etc. HIV infection leads to less count of CD4+ cells in the body which results in deteriorating immunity and leads to acquiring other diseases or infections. VL—HIV coinfection is a major concern that needs to be addressed. The co-infection contributes to both AIDS and VL burden and is pose a huge threat to VL eradication goal of South-East Asia. VL-HIV coinfection patients are seen in Bihar and most infection cases are seen in migrant workers. Both the infections (VL and HIV) suppress the immune system which drastically reduces survival chances of the diseased patients. Currently, liposomal amphotericin B (L-AmB) and miltefosine are choices of treatment for HIV-VL coinfection. However, L-AmB is expensive and miltefosine is teratogenic and susceptible to drug resistance. Thus, newer drugs or vaccines are required to combat this deadly co-infection. Herein, we review the current landscape of HIV-VL co-infection, the available treatment options and recent advances in development of therapeutics to fight HIV-VL co-infection.











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# AVAILABILITY OF SOIL NITROGEN DETERMINES CO2 FERTILIZATION EFFECT ON URBAN FORESTRY SPECIES-BIOCHEMICAL RESPONSE OF NEOLAMARCKIA CADAMBA

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### **ABSTRACT**

Climate change is not a say of tomorrow but today's reality and to meet carbon neutrality targets of Sustainable development goals through forestry systems, study of urban forestry species is important to mitigate climate change. Enhanced CO2 and nutrient-deficient soils are major stress that hamper the biochemical traits of urban forestry species, including climate adaption and potential. This study suggests whether nutrient availability (nitrogen) improves CO2 fertilization effects and biochemical response of urban forestry tree species (*Neolamarckia cadamba*). The plants were grown in nitrogen regimes (Low - N200 Kg N ha-1, medium - N300 Kg N ha-1, and high - N500 Kg N ha-1) within enhanced CO2 concentration ( $800\pm20~\mu$ mol mol-1). Elevated CO2 levels were found to increase plant biomass and alter plant nitrogen metabolism, leading to changes in the production of secondary metabolites, antioxidants, and biochemical response. We reported that biochemical traits were significantly improved under enhanced CO2 concentration and applied nitrogen compared to ambient CO2 concentration and low soil nitrogen availability. We inferred that nutrient (nitrogen) management practices would improve the benefits of rising atmospheric CO2 concentration, which enhances biochemical response (CO2 fertilization effect) of urban forestry species.

**Keywords:** climate change, secondary metabolites, CO2 fertilization.











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# ADVANCEMENTS IN REMOTE SENSING AND GIS TO MITIGATE AIR POLLUTION IN THE STATE OF CHHATTISGARH, INDIA: REVIEW

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### **ABSTRACT**

Remote sensing and GIS play a crucial role in the assessment and management of air pollution and air quality. Remote sensing technologies, such as satellite and aerial imaging, provide vast amounts of data on atmospheric and environmental conditions, including air quality and pollution levels. This data can then be analysed and integrated with other environmental and geographic information using GIS software. Remote sensing technologies can detect various air pollutants, including sulphur dioxide, nitrogen oxides, and particulate matter. These pollutants can have harmful effects on human health and the environment. By analysing satellite images and data, scientists can track the movement of pollutants, identify sources of pollution, and monitor the effects of air quality on surrounding areas. GIS can be used to create maps and visualizations of air pollution and air quality data. This information can be used to identify areas with high levels of pollution and help decision-makers develop targeted mitigation strategies. GIS can also be used to analyse the relationships between air pollution, demographic patterns, and land use practices. One of the main advantages of using remote sensing and GIS in air pollution and air quality management is that they provide a comprehensive and integrated view of the environment. This information can be used to make informed decisions on how to reduce emissions and improve air quality. GIS can be used to identify areas where there is a high risk of air pollution, such as urban areas or areas with heavy industrial activities. This information can then be used to develop mitigation strategies and monitor the effectiveness of these strategies over time. Remote sensing and GIS can also help monitor the effectiveness of air quality regulations and policies. By tracking the emission levels of factories and vehicles, GIS can help governments determine if regulations are being followed and if they are having the intended effect. This information can then be used to make any necessary changes to improve air quality. Remote sensing and GIS play a crucial role in the assessment and management of air pollution and air quality. By providing a comprehensive and integrated view of the environment, these technologies can help decision-makers make informed decisions on how to reduce emissions and improve air quality. In this review paper we aim to highlight the advancements in this field that has occurred in controlling air pollution in the state of Chhattisgarh, India.

**Keywords:** Remote Sensing, GIS, particulate matter, air pollution.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### **NEUTRACEUTICALS: NEW ERA OF MEDICINE AND HEALTH**

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## **ABSTRACT**

Neutraceuticals are a type of food or dietary supplement that is believed to have health benefits beyond basic nutrition. These products are often marketed as a way to improve overall health and wellness, prevent disease, or treat specific health conditions. Neutraceuticals can take many for ms, including pills, capsules, powders, and drinks. Some of the most popular neutraceuticals include vitamins, minerals, herbal supplements, and probiotics. These products are often sold over-the-counter and do not require a prescription. One of the key benefits of neutraceuticals is that they can help fill nutritional gaps in the diet. For example, many people do not get enough vitamin D from their diet or sun exposure, so taking a vitamin D supplement can help ensure they are getting enough of this import ant nutrient. In addition to filling nutritional gaps, some neutraceuticals have been shown to have specific health benefits. For example, omega-3 fatty acids, which are found in fish oil supplements, have been shown to reduce inflammation and improve heart health. Probiotics, which are live bacteria and yeasts that are good for your digestive system, have been shown to improve gut health and boost the immune system However, it is important to note that not all neutraceuticals are created equal. Some products may not contain the ingredients they claim to, or may be contaminated with harmful substances. Overall, neutraceuticals can be a valuable addition to a healthy diet and lifestyle. This analytical study reveals the need, benefits and scope of neutraceuticals in today's era.

Key words: Neutraceuticals, Nutrition, Health, Diet.











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### BIOREMEDIATION: A NATURE FRIENDLY PROCESS FOR HEALTHY LIFE

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### **ABSTRACT**

Bioremediation is a very fruitful and attractive bio-degradation process to either eliminate environmental contaminants or reduce their risks through micro-organisms. It involves cleaning, managing and recovering technique for solving polluted environment through microbial activities and transform organic contaminants, sometimes resulting in complete conversion to inorganic products (mineralization), or alter the transport of inorganic contaminants from soil, water and other environments. Bioremediation depends on several factors, which include but not limited to cost, site characteristics, type and concentration of pollutants. The leading step to a successful bioremediation is site description, which helps create the most suitable and promising bioremediation technique (ex-situ or in-situ). In-situ approaches treat the contamination in place and are classified by the technique for adding stimulating amendments. Ex-situ bioremediation technologies involve excavation of the contaminated materials and treatment in different types of bioreactors. In most cases, naturally-occurring intrinsic bioremediation is sufficient for risk reduction; however, numerous factors can limit the speed of undesirable waste substance degradation such as, competition with in biological agents such as fungi, bacteria and algae, inadequate supply with essential nutrients, uncomfortable external abjotic conditions (aeration, moisture, pH, temperature, etc.), Engineered bioremediation strategies focus on promoting biodegradation and overcoming these limitations. The cultivation of plants can accelerate bioremediation since the rhizosphere provides a favourable environment for microbial proliferation. Such plant-assisted bioremediation is referred to as phytoremediation and can also be accomplished by exploiting plant-endophyte partnerships.

**Key words**: Bioremediation, mineralization, phytoremediation, rhizosphere, plant-endophyte.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### THE DARK SIDE OF FIBRE – A CRITICAL REVIEW

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### **ABSTRACT**

Fiber "has been associated with bloating," "mechanical obstruction of the esophagus and colon," and, in the case of psyllium, "will likely worsen symptoms in an Irritable Bowel Syndrome(IBS) patient," effects "similar to placebo" and "anaphylactic reactions" — an euphemism for a toxic shock few survive. If someone consumes minor quantities of fiber from natural, unprocessed food, there isn't anything wrong with it, because (a) small amounts of natural fiber (which is mostly soluble) will not obstruct your intestines or cause diarrhea, (b) most of it will get fermented in the large intestine, and (c) the remainder will not bulk up the volume of stool high enough to cause any damage from "roughage." But that's not what most of us do or are urged to do. Think about it—just one cup of fiber-fortified cereal contains three times more fiber than the maximum recommended daily dose for fiber laxatives, such as Metamucil (3.0 g up to three times daily). Even that little, just under 12 g of fiber in Metamucil, may cause severe side effects. The intestines are colonized with symbiotic bacteria (normal intestinal flora), which are essential for many health-sustaining functions. But when fiber—soluble as well as insoluble—reaches the lower intestine, the bacteria go wild, ferment everything in sight, and multiply prodigiously. The fermentation is accompanied by lots of gases, just as with yeast-rising dough or aging champagne. The journey of food from the plate to the large intestine—that is, through the mouth, esophagus, stomach, and small intestine—normally takes about 24 hours, depending on what was on that plate. The more insoluble fiber there is in the meal, the longer the trip, because of the bottlenecks in the small intestine, which is an organ nature intended for moving along liquid chyme, not lumps of heavy fiber. Hence high fiber intake, much more than the recommended may prove to be a bargain with the devil.

**Keywords:** Fiber, bloating, roughage, laxatives, fermentation.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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### REVIEW OF A TRADITIONAL HERBAL BODY DEODORANT

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## **ABSTRACT**

Cosmetics are substances that can be applied to the human body for cleaning, beautification, enhancing beauty, and altering the appearance without changing the body's composition or functions. The cosmetics sector is widely dispersed and highly lucrative, and standard maintenance is considerably more vital; people utilize these items. The unspoken reality is that it is rarely completed. Due to that reason, there is a high demand for herbal cosmetics as the usefulness of herbal products as cosmetics has significantly expanded in the personal care industry. But several items on the market go by the label of "herbal cosmetics," but their standards and quality are seriously questioned. V arious studies have been done, and it has been discovered that they contain certain toxins and heavy metals that are bad for human health.

Traditional medicine and *Ayurveda* both mention a variety of herbal remedies that have major cosmetic applications. The ancient *Ayurvedic* text"Kama *Rathnaya*," written by "*Nagabhattacharya*," contains various herbal formulas for cosmetic purposes. This review was done on a herbal powderthat is used to get rid of unpleasant body odor.Ingredients *areDadima*, *Yashtimadhu*, *Lodhra*, *Padmaka*, and *Pichumarda*. *Madhura* rasa, *Snighdhaguna*, *Sheetaveerya*, and *Madhuravipaka* are present in the majority of these herbs. And also contains *krimighna*, *Kushtaghna*, *dahahara* properties. There has also been evidence of anti-viral, anti-bacterial, anti-fungal, and anti-inflammatory activities. To confirm the cosmetic effects of this medication, additional in vitro and in vivo research must be done.

**Keywords:** Cosmetic, body odor, herbal.











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# ROLE OF AMPHIBIANS AND REPTILES TO ECOSYSTEM SERVICES-A REVIEW

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### **ABSTRACT**

Welfare of mankind depends greatly on the services provided by ecosystems. Amphibians as well as reptiles represent high degree of species diversity that are widely distributed throughout the globe and play very prominent roles that ultimately benefit humans. The aim of present study was to identify and describe various ecosystem services provided by amphibians and reptiles and how these diverse groups contribute to human welfare. We have conducted literature review of articles and books from various databases as well as libraries and present them in this paper. Amphibians and reptiles contributed mainly to four types of ecosystem services viz. provisioning, regulating, cultural, and supporting. Various ecosystem services provided by amphibians and reptiles are described elaborately in the present paper. Most available studies reported the use of direct services from reptiles and indirect from amphibians. Although various ecosystem services provided by amphibians and reptiles were identified, most of the studies focused on reptiles as a source of protein and skin whereas Biological pest control and bioturbation were the most widely studied services provided by amphibians. Further study are necessary to explore and understand the ecological functions provided by amphibians and reptiles that are key to ecosystem services for human well-being.

**Keywords:** Amphibians: reptiles: ecosystem services: ecological functions: human well-being.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# INFLUENCE OF JANAPADODHVAMSA IN THE QUALITY OF RAW MEDICINES

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### **ABSTRACT**

Epidemics and pandemics were referred to as Janapadodhvamsa in Ayurveda (situations distress the human populations). Under Aupasargika Rogas, infectious disorders have been considered. Polluted air, water, season, and land are to blame for the widespread development of diseases that result in Janapadodhvamsaja disorders. Unsuitable waste dumping, polluted water supply, air pollution, participation in unwholesome and improper activities, inability to judge calamity, misapprehension of situation, and other such causes harm society's health, leading to the development of Janapadodhwamsaja illnesses. Abnor mal environment brings changes in the quality of medicinal plants and other drugs leading to poor quality of medicines.











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### SCOPE OF AYURVEDIC HERBS IN DIABETES

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### **ABSTRACT**

In Ayurveda, 'Prameha' (Diabetes) is described in a sequential and elaborative way. This is a metabolic disease in which various metabolic errors are present in Dhatus due to deficiency of certain Dhatwagnis. According to WHO, Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose, which leads over time to serious damage to the heart, blood vessels, eyes, kidneys and nerves. Diabetes is mainly due to oxidative stress and increase in reactive oxygen species. Lipid peroxidation is associated with hyperlipidemia. In Ayurveda, the primary focus of pathogenesis in Prameha is vrikka (urinary system) and vapavahanam (adipose tissue). Vitiated Kapha predominant Tridoshaassociated with AbaddhaMedodhatu (Free fatty acids). Informations are gathered from various offline and online sources. Herbal medicines are relatively non-toxic, cheaper and are eco-friendly. In Ayurveda, the application of herbal medicines in human health care has a long history that can be traced back over a million of years. The aim of this presentation is to go through a detailed knowledge about an anti-oxidant action of medicinal plants such as Neem (Azadirachta indica), Karela (Momordica charantia), Babool (Acacia arabica), Vijaysar (Pterocarpus marsupium), Haridra (Curcuma longa), Methi (Trigonella foenum- graecum), Jamun (Eugenia jambolana), and many other herbal medicines that are used clinically in the treatment of Diabetesby increasing the insulin secretion or decreasing the intestinal absorption of glucose, according to the Ayurvedic point of view. It may also create an awareness that they can be used alone or in combination with each other for the medicinal purposes.

**Keywords:** antioxidant, Herbal medicines, Urinary system.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### **ENVIRONMENT BORN DISEASES AND YOGA**

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### **ABSTRACT**

Environment is basic to health promotion. A number of major disease out- breaks caused by environmental hazards have occurred. Each dramatic outbreak has triggered epidemiological and other studies, which provide details about the extent of the exposed population, the numbers initially affected, those with severe long- term effects, and the prevalence of less severe consequences. There are three important categories of infectious diseases sensitive to climate change i.e. water borne diseases, food borne diseases and vector borne diseases. Human exposure to water borne infections occurs by contact with contaminated drinking water, recreational water or food. Water and food borne diseases are linked to the ingestion of pathogens via contaminated water or food, while vector borne diseases are linked to the infections transmitted by arthropods, such as mosquitoes. Climate change and climate variability will, therefore affect the burden to climate- sensitive infectious diseases, particularly water borne and food borne diseases. Hence, it is important for public health interventions to pay particular attention to these diseases. Yoga advocates "Prevention is better than cure." All the Yoga techniques help in prevention of diseases and useful in the management of every kind of disorder or illness. The important Shat- karmas and Pranayama play a vital role in the purification of the body and have manifold, wondrous results in diseases like Bronchial Asthma, Pharyngitis and Dengue. Hence, systematic learning and practice of Yoga Asanas; proper breathing techniques and following simple kriyas can be very helpful to naturally overcome symptoms of these environment borne diseases.

**Keywords:** Environment, diseases, voga, health.











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# INVESTIGATING THE POTENTIAL OF PGPR IN MODULATION OF GROWTH OF GOLDEN SWEET POTATO (IPOMOEA BATATAS) UNDER WATER STRESS

# Nidhi Singh and Kumari Sunita

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## **ABSTRACT**

Rhizobacteria (PGPR) that promote plant growth are regarded as important bio-inoculants that support growth and development. A number of previous studies have reported that PGPR strains assist plants in the alleviation of various abiotic and biotic stresses. Water stress is a major environmental stress that limits crop productivity by affecting plant growth and physiological functions. The purpose of this study was to investigate the potential of PGPR strains, specifically Pseudomonas. Ipomoea batatas, a Golden sweet potato, was grown at various water levels and inoculated with PGPR strains. The results showed variable results in plant growth of Golden Sweet Potato under water stress. Nonetheless, additional research is being done to understand their potential mechanism and the use of these PGPR inoculants as bio-inoculants.

**Keywords:** Abiotic stress, Rhizosphere, water stress, Golden Sweet Potato.











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# EFFECTS OF PURIFIED TICK SALIVA TOXINS ON VARIOUS BIO-MOLECULES IN BLOOD SERUM, LIVER AND MUSCLES OF ALBINO MICE

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### **ABSTRACT**

In the present investigation, in vivo effects of purified tick saliva toxin were evaluated on different bio-molecules in blood serum liver and muscles of albino mice. For this puspose sub lethal dose of Rhipicephalus microplus toxin 40% and 80% of 24h LD50 of the venom were injected in albino mice. In various bioassays, total serum proteins, free amino acids, uric acid, cholesterol, pyruvic acid, serum total lipids, and glucose level was determined at different time periods. In addition, effect of purified tick saliva toxins was observed on rectus abdominis, gastrocenimus, muscle, atria and ventricle of albino mice and muscle glycogen. A significant elevation was observed in blood biomolecular activity in serum, liver and muscles, of albino mice. The venom injected group showed 79.70% decrease in serum protein content 113.15%, 131.25% 114.58 %, 88.13 %, 165.21% 117.33 % and while free amino acid, uric acid, cholesterol, pyruvic acid. total lipid and glucose was increased by respectively. Subsequently In addition, effect of purified tick saliva toxins was observed on rectus abdominis, gastrocenimus muscle, atria and ventricle of albino mice and muscle glycogen. A significant elevation was observed in blood bio-molecular activity in serum, liver and muscles, of albino mice. In liver 69.28% to 67.94% rectus abdominis 80.88% to 82.22% gastrocenimus 85.71% to 66.32% Atria 73.42% 49.09% and in ventricle 76.25% to 69.78%. Results clearly indicate toxic effects of saliva toxins on membrane and muscle cell functions in albino mice. Alterations in biomolecular obstr uct significant physiological pathways and mechanisms in insects which also induce death in them.

**Keywords:** Serum protein, free amino acid, uric acid, cholesterol, pyruvic acid, glucose, liver, rectus abdominis, gastrocenimus, muscle, atria, ventricle.











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# ENDOCRINE DISRUPTORS AND EFFECTS ON HUMAN REPRODUCTIVE SYSTEMS

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### **ABSTRACT**

Chemicals that can interfere with endocrine (or hormonal) systems are known as endocrine disruptors, sometimes known as hormonally active substances, endocrine disruptive chemicals, or endocrine disrupting compounds. These disturbances can result in malignant tumours, birth abnormalities, and further developmental issues. Endocrine disruptors are substances that "interfere with the synthesis, secretion, transport, binding, action, or elimination of natural hormones in the body that are responsible for development, behaviour, fertility, and maintenance of homeostasis (normal cell metabolism)." They are present in a wide variety of consumer and industrial products.

Hormone disruptors have the ability to wreck any function in the body that is regulated by hormones. Endocrine disruptors may specifically be linked to the emergence of cognitive and brain development issues, severe attention deficit disorder, and learning difficulties.

Heavy metals, phytoestrogens, plasticizers, pesticides, pharmacological agents, fungicides, and polychlorinated and polybrominated biphenyls are only a few examples of the diverse group of compounds that make up EDCs. EDCs are therefore pervasive and have been found in a variety of substances, including air, soil, bodily fluids, drinking water, food, breast milk, cosmetics, home goods, electronics, textiles, etc. Consequently, ingestion of food and water as well as inhalation and/or skin contact can all result in postnatal exposure. Prenatal exposure can happen through the placenta, which can have an impact on the development of the foetus or increase the risk of later reproductive health issue.W e should avoid EDCs wash your vegetables thoroughly, or peel it if you can. Purchase basic foods. choose items devoid of perfumes. always wash your hands, avoid using plastics.

**Keywords:** Abnormalties, heavy metals, pesticides, fungicides.











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# AMBIENT AIR QUALITY ASSESSMENT IN MAJOR TRAFFIC JUNCTIONS OF BANGALORE CITY, KARNATAKA

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### **ABSTRACT**

Air quality in Bengaluru city has become a serious environmental problem, because of the combined effects of various pollutants upon the physical and mental health of people and the quality of urban life in general. Urban air pollutants arise from a wide variety of sources although they are mainly due to combustion processes Today, The largest source of pollution in urban areas is the fleet of transportation (motor vehicles) and to a lesser extent industry and household. Bengaluru led to an increase in the vehicular population to about 1.5 million, with an annual growth rate of 7-10%. With the increase in population and the expansion of the city, the problem of connectivity of the populace has arisen. Quite obviously personalized modes of transport have grown at a tremendous rate and two wheelers along with the cars almost comprise 90% of the total registered vehicular population in the city. Two wheelers constitute more than 70% of the total volume, while cars comprise 15%, autos 4% and the remaining 8% includes other vehicles such as buses, vans and tempos. Traffic-generated pollutants include nitrogen oxides (NO2), Oxides of sulfur(SO2), carbon monoxide(CO), volatile organic compounds (VOC), Particulate Matter (PM2.5 and PM10), Ozone 03, Benzene, Polycyclic aromatic hydrocarbons (PAHs), Benzo(a)pyrene (BaP), Arsenic (As), Lead (Pb), Nickel (Ni) and Ammonia (NH3). NAAQS 2009) one day average comparison of PM2.5(103.2 $\pm$ 49.8 $\mu$ g/m3) PM2.5 (63.8 $\pm$ 14.3 $\mu$ g/m3), SO2 (11.9 $\pm$ 2.2 $\mu$ g/m3), NO2 (7.9 $\pm$ 33.1 $\mu$ g/m3) and CO (0.4 $\pm$ 2.2ppm). Were measured and noticed Increasing air pollutants levels especially in traffic hotsoots. A sustainable transportation can reduce the pollution.

**Keywords:** Ambient Air, Air Pollutants, Traffic, Transportation.













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# GOLDEN SWEET POTATO (IPOMOEA BATATAS): A SUSTAINABLE APPROACH TOWARDS VITAMIN- A DEFICIENCY

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### **ABSTRACT**

In underdeveloped Nations Vitamin-A deficiency (VAD) has been identified as a problem for public health. It is a leading cause of blindness, disease, and premature death among children under five and pregnant women. With reference to human consumption, Sweet potato (*Ipomoea batatas*) is one of the most significant food crops in the world. One of its varieties is known as the "golden sweet potato" or "orange-fleshed sweet potato" because of the yellow colour that results from the presence of a significant amount of beta carotene, an influential antioxidant and precursor to vitamin A. They are a good source of fibre, minerals, and carbohydrates. It is also referred to as Poor's man meal because it is one of the socioeconomic food items that is easily accessible to humans at a very low cost. Also, it is in favour of the zero hunger policy of sustainable development goals. It is incredibly rich in vitamin A and may provide a sustainable approach for vitamin a deficiency in humans.

Under the UPCST Project entitled "Study the ageing effect of Golden Sweet Potato (*Ipomoea batatas*) tubers on B-Carotenoids Content: An innovative approach towards Vitamin A Bio fortification."













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# NUTRACEUTICAL ACTIVITY OF VARIOUS HERBAL DRUGS AND THEIR PREPARATIONS

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### **ABSTRACT**

Nutraceuticals are natural bioactive materials that provide demonstrated physiological benefits or reduce the risk of chronic diseases. The association of nutraceuticals with traditional medicine brings the long standing consumers acceptance. It is clearly stated that food, which besides providing nutrition helps to maintain the healthy state and prevents the occurrence of diseases. Food contains several natural components that deliver benefits beyond basic nutrition such as lycopene in tometoes, omega-3 fatty acid in salmon or saponins in soya. Ayurvedic concepts of Hita, Ahita, Satmya, Asatmya, Pathya, Apathya can be correlated to the concepts of nutraceuticals. The concept of "Ajasrik rasayan" (general rejuvenation) deals with food products that can be consumed daily for improving quality of life by offering protection from external and internal stressors. Nutraceuticals are grouped on the basis of chemical constituents (nutrients, herbals, phytochemicals) Probiotic microorganism, Nutraceuticals enzymes, Natural products obtained from plants are beneficial in the treatement of various disorders such as low hb count, low / high bp. abnormal bowel movements etc. The classical text of Avurveda are filled with scattered references of implication of food products in various disease entities. Salix nigra, Parsley, Pippermint, Lavender, Cranberries are some medicinal plants that can be taken as nutraceuticals. Aim of this presentation is to highlight the role of vitamins, aminoacids proteins and essential fatty acids etc that are present in various medicinal plants and their scope as nutraceuticals. It can be used as a connecting link between both the system of medicine. Aharkalpana and rasayana together act as nutraceuticals. These products have been well accepted by consumers in developed and developing countries.

**Keywords:** Nutraceuticals. Aiasrik rasayana. Aharkalpana.











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# SEMI-ANALYTICAL ALGORITHM FOR ESTIMATION OF ABSORPTION BY CHROMOPHORIC DISSOLVED ORGANIC MATTER IN ESTUARINE AND COASTAL WATERS

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### **ABSTRACT**

The chromophoric dissolved organic matter (CDOM) is a valuable of estuarine and coastal water ecosystem health. Remote sensing of CDOM acts as a mechanism to monitor synoptic variability and assess water quality for predicting endemic cholera. However, satellite retrieval of CDOM in nearshore waters is challenging due to independent interactions of other optically active constituents (OACs) such as chlorophyll-a (Chl-a) and suspended matter (TSM) with solar irradiance. To estimate CDOM from these waters, the study developed a semi-analytical algorithm using remote sensing reflectance (Rrs) at three wavelengths against the absorption of CDOM at 440 nm (ACDOM (440)). The basic formula adopted is  $Rrs(\lambda) \alpha b_{\nu}(\lambda)/(a(\lambda)+b_{\nu}(\lambda))$ , means  $1/Rrs(\lambda)$  forms the basis for developing the index  $(1/Rrs(\lambda_1)-1/Rrs(\lambda_2))*Rrs(\lambda_3)$ . The first wavelength  $(\lambda_1)$  was identified through partial differential analysis, wherein the maximum effect of CDOM absorption on Rrs was observed. The second wavelength was identified in such a way that the absorption by Chl-a, TSM and seawater molecules is the same as  $\lambda_1$ . The third wavelength ( $\lambda_2$ ) accounts for the particulate backscattering. A dataset including in-situ from estuaries of Goa, for the period 2013-2022 and global in-situ along with synthesized data were randomly divided into three subsets for wavelength identification, algorithm development and validation. The three wavelength index (1/R<sub>s</sub>(412)-R<sub>s</sub>(490))\*R<sub>s</sub>(560) was regressed against data with CDOM absorption greater than 30% (N=350). This resulted in an algorithm  $ACDOM(440) = 0.01355x^2 + 0.1152x + 0.009649$  with r 2 = 0.82 and RMSE = 0.1086. The validation of the algorithm over the third subset (N = 175) resulted in a coefficient of correlation, r = 0.81 for N = 175, with RMSE = 0.1061











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### PHYTOPLANKTON COMPOSITION IN SEASONAL FRESH WATER PONDS

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### **ABSTRACT**

Phytoplankton are also known as microalgae, which are microscopic plant, buoyant and float in the upper part of the waterbody. It is phototrophic, unicellular, unattached organism. They are the primary food producers of any aquatic ecosystem. Phytoplankton is important in ecosystem as well as an environmental. They have numerous important environmental functions in aquatic with social system. The present study is based on composition of phytoplankton from two freshwater bodies (seasonalpond name as A and B) at the Babasaheb Bhimrao Ambedkar University (B.B.A.U.), Lucknow, Uttar Pradesh during winter season. These ponds revealed occur rence of twenty three species representing seven different algal groups. In ponds out of seven algal group, Chlorophyceaeand Bacillariophyceae were recorded as the dominant groups in pond A and B respectively. Most of the phytoplankton species recorded in this study were registered as pollution indicator species. Above, findings show that the growth of these two species is due to higher level of organic load and availability of essentials nutrients in the water body. Therefore, excessive growth of these species in the aquatic ecosystem will caused algal blooms which are harmful to the most of aquatic organism. So it's resolved that algal species are work as bioindicator species for water pollution and beneficial for other living organisms. So reduction in above algal species not only indicate water pollution but they also alarming threaten to whole food chain in aquatic ecosystem.

**Keywords:** Freshwater, Phytoplankton, Pond, Diversity, Water pollution, Aquatic ecosystem.











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# ASSESSMENT OF CARBON SEQUESTRATION POTENTIAL OF TREE SPECIES IN SAWAI MANSINGH SANCTUARY, RAJASTHAN

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### **ABSTRACT**

Forests not only provides us with resources like food, fodder, timber etc....but by storing more than half of the world's terrestrial carbon they play a significant role in global carbon and regulating biospheric climate. Tropical forests dominate the role of forests in the global carbon flux and stocks, and therefore required for researchers and policy makers to estimate the carbon stock and sequestration potentials. Carbon stock assessment projects helps us to check ability of any particular forest to store carbon or to act as carbon sinks. Carbon stored in aboveground biomass of the trees typically constitutes the largest pool and is followed by below ground biomass and then by litter, soil etc.. Carbon stock potential for a forest is directly affected by deforestation and degradation. Current study was carried out in Sawai Mansingh Sanctuary of southeast Rajasthan. A total 100 quadrates of 100m× 100m were laid randomly for sampling and for estimation of biomass carbon sequestration non- destructive field measurement method was used. All trees species were identified and verified by subject experts and data was collected in form of diameter at breast height. A total 45 tree species were recorded in study area; of which Anogeissus pendula Edgew was most dominant and have highest biomass carbon sequestration.

**Keywords:** biomass, carbon, tropics.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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# TRANSCRIPTOMIC REGULATION OF SALMONELLA TYPHIMURIUM DURING SONOPHOTOCATALYSIS AND THE EFFECT OF STRESS ADAPTATION ON THE ANTIBIOTIC RESISTANCE AND TOLERANCE POST-TREATMENT

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## **ABSTRACT**

Bacterial adaptation to external stress and its consequential evolution to antibiotic resistance (AR) poses a huge risk to the health sector. Although newtechnologies to treat water are emerging, AR and antibiotic tolerance induced by the treatmentand the significance of bacterial adaptation is unclear. Here, we tested the impact of stressadapted Salmonella Typhimurium on the efficacy of visible light-assisted sonophotocatalysis(SPC). We show that bacteria adapted to constant and increasing concentrations of kanamycinand hydrogen peroxide could survive SPC treatment for a longer period compared to that of theunadapted bacteria. Importantly, the selection of AR and antibiotic tolerance after the exposureto SPC were dependent on the initial stress adaptation. Transcriptomic analysis reveals that thehigh expression of flagellar genes in the bacteria subjected to sublethal SPC was counteracted bythe genes associated with stress response and metabolism. Our results suggest that SPC is an efficient technique to inactivate S. Typhimurium in water although the efficacy of the system depends on the prior adaptation of the bacteria to external stress.

**Keywords:** Antibioticresistance, Transcriptome, sonophotocatalysis.













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#### **FOOD AND MOOD**

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## **ABSTRACT**

There has been ongoing debate regarding the impact of food on mood, and vice versa. The relationship between the two is not well-established, and various other factors that play a role in this connection have left scientists and researchers curious. The objective of this review is to present supporting arguments on this matter. When individuals eat food to alleviate their hunger, they can feel a temporary improvement in their mood. Many people have encountered this sensation on multiple occasions. The consumption of Sattvic food, which includes fruits, vegetables, nuts, and other similar items, supplies necessary nutrients to the body and helps maintain a positive mood. The impact of food on hormones has a direct effect on mood, behavior, and cognitive function. The paper covers several other aspects related to this topic. Making appropriate choices in food selection plays a vital role in enhancing one's mood. Having an understanding of how food and mood interact can aid in sustaining positive moods while reducing anxiety and stress levels. This paper presents a scientific examination of the profound connection between food and mood. It delves into the Ayurvedic/Yogic aspects of food, analyzes how various foods impact our mood, and examines the reciprocal relationship between food and mood.

Keywords: Meal, Mood, Psychology, Yogic Practices.











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# THE IMPACT OF VEGETARIAN DIET ON THE NUTRITIONAL STATUS AND FITNESS OF ATHLETES: A REVIEW

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### **ABSTRACT**

With the growth of social media as a platform to share information, vegetarian food habit is becoming more visible and could be becoming more accepted in sports and in the health and fitness industry. However, to date, there appears to be a lack of literature that discusses how to manage vegetarian diets for athletic purposes. The study's primary goal was to identify the nutrient content of vegetarian diet and the importance of vegetarian diet athletes. It's essential to meet energy needs for proper nutrition and peak performance. It was discovered that vegetarian diet contains a wide range of nutrients that have a variety of positive health effects and enhancement in physical performance. Strategic management of food and appropriate supplementation, nutritive vegetarian diet can be designed to achieve the dietary needs of most athletes satisfactorily. There is currently no evidence that vegetarian diets per se are superior to omnivore diets for enhancing athletic training and performance, despite the fact that research strongly supports that a plant-based diet may offer many health benefits to both athletes and non athletes a like. As a result, to comprehend the significance of vegetarian diet empirical research is needed to examine the effects of vegetarian diets in athletic populations however, especially if this movement grows in popularity, to ensure that the health and performance of athletic vegetarian is optimized in accordance with developments in sports nutrition knowledge.

**Keywords:** Vegetarian diets, Athletes, Nutrition.











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# HUMAN HEALTH & DISEASES SINGLE DRUG TREATMENT IN URINARY DISORDERS

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## **ABSTRACT**

Urinary tract infection and other urinary disorders most commonly occurring infections in medical practice despite the extensively available treatment and medicines Caused by fungi, viruses & bacteria like Escherichia coli, *Klebsiella* pneumoniae, and Proteus mirabilis are affecting millions of people. This study aims to ascertain the availability of unexplored single herbal drugs which can be used to reduce the uropathogens and cure the urinary system diseases.

A literary review on the availability of single herbal uses through print and electronic media has been tested for the use in Urinary System disorder for the purpose of improving the quality life of the affected patients. A lot of single drugs are available in different *ayurvedic* text like *Nighantus* which are still unexplored and given in case of disorders related to urinary tract. The urinary tract includes kidneys, <u>ureters</u>, and bladder hence those single drugs are taken here which are acting at this level. In *Ayurveda* it comes under *Mutravahasrota Roga*. Different types of *Mutravaha Rogas are* being explained by different *Acharyas* for which Single drug can be given in the form of diet regimen with a lot of benefits with the reduction of symptoms occurring due to urinary disorders like burning micturition, itching, frequent urination, acute urinary retention and *haematuria* like other symptoms. *Mahakashaya* drugs are also considered for this study with the improvement of life style and diet plan, that can facilitate the action of single herbal drugs and help in curing the disease. Single herb treatment can be an innovative idea in different branch of *ayurveda* which is need of the hour so that people can avail the treatment easily and can have better cure with lesser side effects.











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# EFFECT OF VERMICOMPOST ON GROWTH OF PLANT LINSEED (LINUM USITATISSIMUM)

# Priyadarshini Gautam

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### **ABSTRACT**

Linseed is one of the earliest plants to have been domesticated for extraction of fibres in the mediterranean region and southern Asia. It has now attained prominence as a dual purpose crop as a source of both oil and fibres. Linseed plant is grown as a pure or mixed crop. It grows well in alluvial and black soils and under sub-tropical and temperate climatic conditions. Linseed have no capacity to synthesize nitrogenous fertilizers. When the soil is being amend with vermicompost, plants has shown better growth, germination, length of root and shoot, number and size of leaf, number and weight of fruit as compare to plants grown in plan soil without vermicompost.

In modern days agricultural practices attempts have been made to elucidate the impact of organic amendment of soil on various crop. This has resulted into increase in productivity of farm land is shrinking and feeding mouth is increasing.

**Keywords:** Linseed production, vermicompost, organic food production, modern agriculture practice.











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# ROLE OF SACRED GROVES IN PRESERVATION OF TAXONOMIC DIVERSITY OF ECONOMICALLY BENEFICIAL PLANT SPECIES

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## **ABSTRACT**

Sacred groves as we know are forest patches conserved by ancient people on the name of their respected deities and beliefs. These groves are distributed throughout the country and almost every significant sacred grove studied has justified having most of the diversity of that area. The most impor tant factor that affects the conser vation program is public involvement and sacred groves can be said the most effective method having maximum public involvement as compared to any other method. There are several other methods of conservation and Field gene banks are one of them in which genetic diversity is maintained by growing variety of species in the form of living plants in an open field. It is expected that in ancient times the sacred groves were used to fulfil the same purpose of conser ve and maintain wild genes. To justify this idea An emphasis is made on the basis of sorting of relatives of commercially important plant species reported in the study conducted at Padajhar Mahadev temple sacred grove at Bhainsrorgarh wildlife sanctuary, Rajasthan. And the idea is justified by the Presence of 30 Wild species belonging from 13 families are found taxonomically related with economically beneficial plant species and representing the sacred grove as a germplasm repository for future researches.











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# STUDY OF ARSENIC STATUS IN UTTAR PRADESH AND ISOLATION OF ARSENIC RESISTANT MICROBES FOR BIOREMEDIATION

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### **ABSTRACT**

Arsenic is a prominent environmental contaminant and a class I human carcinogen. In many nations, especially India, prolonged exposure to arsenic poses a serious risk to public health. The most visible physical symptoms of arsenic toxicity over time are skin-related ones, such as hyperkeratosis and skin malignancies. This is due to the increased concentration of keratin in skin, which contains sulfhydryl groups (-SH), and the strong binding of arsenite, a reduced form of arsenic, to SH groups. Aside from causing gene mutations, arsenic exposure can also result in malignancies of other organs, such as the liver, kidney, and bladder. A major global public health issue is arsenic pollution of drinking water. Chronic low-dose exposure to arsenic results in high blood pressure, cardiovascular disease and a variety of malignancies. Arsenic's ability to cause cancer, promote the growth of tumours, or act as a tumor-fighting medication depends on the concentration, length of exposure, and types of cancer cells. Microbes have a variety of strategies for dealing with high arsenic levels, including reduced absorption, methylation, and dissimilatory arsenate respiration. The most popular technique involves converting arsenate to arsenite and then extracting the resultant arsenite using membrane-associated pumps and soluble reductases. Through the biogeochemical cycling of hazardous metals and the cleanup or remediation of ecosystems contaminated with metals, microbial involvement may play a significant role in the environment. Studying how microbial populations react to various metal concentrations is key to the efficacy of these bioremediation procedures and arsenic resistant bacteria can be used as a novel pathway for the bioremediation of arsenic.

**Keywords:** Contaminant, Methylation, Toxicity, Cancer, Bioremediation.











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### ANTIMICROBIAL ACTIVITY OF TRADITIONAL MEDICINAL PLANT FERULA ASAFOETIDA

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#### **ABSTRACT**

Pathogenic microorganisms have been a danger to the human race since their genesis, being a major cause of human mortality and morbidity. Until the discovery of the first true antibiotic penicillin in 1928 and sulfa drugs in the 1930s, besides the toxic arsenic, the only means of fighting infectious diseases were plant extracts of different types. In 2007, WHO estimated that 25% of available drugs are derived from plants used in folk medicine. Besides the long-established clinical use, the plant-derived compounds display good tolerance and acceptance among patients and seem like a credible source of antimicrobial compounds. Further, a major concern for the scientific community is the increasing incidence of antimicrobial resistance amongst pathogenic microbes. To discover the possible antimicrobial compounds that can combat these multi-drug resistant parasites is a huge challenge faced by the scientific fraternity. Till date, an exceptional number of plant secondary metabolites are known to have diverse biological activities which include antifungal, antibacterial, and anticancer activities. Keeping this tremendous potential of plant extracts in mind, the aim of our present study is to investigate antimicrobial activity and nature of plant secondary metabolites present in traditional Indian medicinal plant Ferula asafoetida. The methodology of our work includes preparation of plant fractions by percolation method using two solvents hexane and ethanol, followed by analysis of plant secondary metabolites present in these fractions and evaluation of their antimicrobial potential using disc diffusion assay and calculation of MIC values. In our investigation, we observed potent inhibitory microbicidal activity of F, asafoetida and detected the presence of flavonoids and steroids in the test fractions which might be contributing to the observed antimicrobial activity.

**Keywords:** Antimicrobial, phytochemicals, secondary metabolites, Ferula asafoetida.











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# EFFECT OF JUVENILE HORMONE ANALOGUE PYRIPROXYFEN (AN INSECT GROWTH REGULATOR) ON THE FIRST LARVAL INSTAR OF RICE MOTH, CORCYRA CEPHALONICA STAINT. (LEPIDOPTERA: PYRALIDAE)

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#### **ABSTRACT**

The present investigation reveals the effect of pyriproxyfen, a juvenile hormone analogue (JHA), a class of insect growth regulator (IGR) on the developmental stages of the rice moth Corcyra cephalonica, a serious pest of stored cereals and cereal commodities. 5 day old 1st instar larvae were treated with different concentrations 1, 5, 10, 15, 20 and 25 ppm of pyriproxyfen made in coarsely ground jowar (Sorghum vulgare) mixed with 5% (w/w) yeast powder. Pyriproxyfen, in this study, was observed on the percent pupal mortality and percent adult emergene and on that basis percent larval death and percent pupation were calculated. At comparatively higher concentrations i.e. 20 and 25 ppm incomplete moulting and unsuccessful metamorphosis was observed. As a result at 20 ppm concentrations of pyriproxyfen 5.60  $\pm$  1.57% incomplete pupation took place but all of them died in the form of larval-pupal intermediates. While 25 ppm concentration of this compound also resulted death of the larvae in the form of larval-pupal intermediates. These 2 dose levels i.e. 20 and 25 ppm are fully efficient for the effective control of lepidopterous pests in general and Corcyra cephalonica in particular. Therefore, pyriproxyfen should be considered as potential JHA as a safe and suitable alternative in managing stored cereals and lepidopterous pests.

**Keywords:** pyriproxyfen, Sorghum vulgare, mortality, Corcyra cephalonica.











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## A COMPLEX NATURAL PRODUCT 'PROPOLIS' EXISTENCE IN THE INDIAN SCENARIO

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#### **ABSTRACT**

Propolis is a resinous material collected by bees from various plants. It is used to build the beehive and to seal the cracks in it. Because of this property, propolis is also known as "bee glue." Along with nectar, honeybees collect a variety of plant exudates such as sap, resin, gums, and latex. Honeybees then combine their saliva and wax to form "propolis," a bioactive substance. Propolis is made up of resins and balsams (50-70%), wax (30-50%), pollen (5-10%), and 10% essential oils.

Propolis contains a wide range of other nutrients, including organic and amino acids, vitamins, minerals, and, most importantly, bioflavonoids. Bee Propolis contains the highest concentrations of bioflavonoids for natural defence. Honeybees use propolis as a construction material to close holes in beehives and to keep the colony hygienic. The bee glue or propolis is pivotal in both protecting the colony from outside invasion and spreading infection within it.

Propolis, according to the literature, contains over 150 components, including a significant percentage of flavonoids, which are thought to be responsible for many aspects of its therapeutic activity. Propolis has been used in traditional medicine since 300 BC. It has been demonstrated to have numerous biological activities, including anticarcinogenic, antioxidant, anti-inflammatory, antibiotic, and antifungal properties. Propolis appears to be effective against various tumour cells, suggesting its potential use in the development of new anticancer drugs.

Propolis has drawn the attention of researchers/scientists, beekeepers, and on commercial platforms over the last few decades. Propolis has recently been used in a variety of products, including pills, capsules, toothpaste, mouthwash preparations, face cream, ointments, and lotions globally. However, propolis collection is virtually non-existent among Indian beekeepers primarily owing to a lack of knowledge about the quality and commercial value of indigenous propolis. Considering this, scientific research projects to investigate and raise awareness about the properties of indigenous propolis are required.

**Keywords:** Anticarcinogenic, Honeybees, Indian beekeepers, Propolis, Traditional medicine.











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#### CONTRIBUTIONS OF AYURVEDA IN CHILD HEALTHCARE

#### Pooja Tripathi and Kalpana Patni

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#### **ABSTRACT**

Childhood is considered as the most important phase in life, which determines the quality of health, well-being, learning and behavior across the lifespan. This may be the reason for giving the foremost position for Balacikitsa among Ashtangas (8 branches) of Ayurveda. The regional growth of indigenous medicine gave significant contribution for the development of primary health care Medications like Praakaara yoga, lehana yoga etc were administered in children as a mode of immunization, which helps in the maintenance of health and prevention of disease. In this presentation, an attempt is made to compile the theoretical concepts and unique practices of child development disease in Ayurveda and to convey it's importance. The present paper will also addresses how these effects and waned away from the Mainstream Avurveda in child development disease. Health is defined as a state of equilibrium with one's self (svasthya) but which is inextricably linked to the environment. Ayurvedic principles, such as the tridosa (three humors) theory, provide the relationship between the microcosm and the macrocosm that can be applied in day-to-day practice The epistemic perspective on health and nutrition in Avurveda is very different from that of biomedicine and modern nutrition The presentation briefly reviews the parallels in Ayurveda and biomedicine and draws attention to the need for a deeper engagement with traditional knowledge systems, as Ayurveda, which will enable the prevention of various chronic diseases for such children. The implementation of various dietary, lifestyle, and habitual changes are required, from an early age. This implementation of preventive practices from an early age may result in such children leading healthy, disease-free, more productive lives. Increased side effects, lack of curative treatment for several chronic diseases, high cost of new drugs, microbial resistance and emerging, diseases are some reasons for renewed public interest in complementary and alternative medicines.

**Keywords:** Ayurveda, Balacikitsa, Pediatric, child development, Immunization.











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## CONCEPT OF DINCHARYA AND ITS ROLE IN LIFESTYLE DISORDERS W.S.R. to ESSENTIAL HYPERTENSION

#### Rabiya Idrisee and Kamlesh

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#### **ABSTRACT**

INTRODUCTION & BACKGROUND:- Ayurveda is considered by many scholars to be the oldest healing science. It places great emphasis on prevention of diseases and encourages the maintenance of health through close attention to balance in an individual's life like right thinking, proper diet, healthy lifestyle and use of herbs, etc. Acharya Sushruta has said, "A person is said to be Swastha whose doshas, dhatus, malas and agni are in a state of equilibrium alongwith mental, sensory and spiritual pleasantness." Dincharya is a unique concept of Ayurveda. It is designed as a specialized structural lifestyle regime which comprises of multiple activities for prevention as well as treatment of various diseases as a syndromic approach in which a single measure is able to cur tail more than one disease, especially lifestyle and chronic disorders. Lifestyle diseases are defined as those health problems that react to changes in lifestyle. Erratic lifestyle habits like increased sedentary lifestyle, increasing competition, stress of work, etc. are the main factors leading to lifestyle disorders. Amongst them, hypertension is the most-common in India. It contributes to an estimated 1.6 million deaths annually. An increasing population of elderly people, sedentary lifestyle, obesity associated with urbanisation, and factors like high levels of salt intake, alcohol & tobacco consumption are it's main contributing factors.

AIMS:- To explain dincharya in the light of modern knowledge on the subject and its role in preventive management of lifestyle disorders like hypertension.

METHODS:- Literature review of classical textbooks, journals, magazines and previous research papers.

**DISCUSSION:-** The progression of such diseases can be managed by making some simple changes in the daily habits as per ayurveda viz- exercising, taking adequate dietary measures, etc. By following the dincharya regimen, we can change the modifiable risk factors of life style disorders. However, these changes can be inculcated in our daily routines only after understanding the relation between dincharya & diseases. Thus, creating awareness amongst the public about healthy living habits, i.e., dincharya is definitely the need of time.

**CONCLUSION:-** Ayurveda provides primary, secondary as well as tertiary measures for prevention of various diseases in the form of swasthavritta which includes collection of different routines of the daily life such as dincharya (day regime), ratricharya (night regime), ritucharya (seasonal regime), sadvritta (good Conduct) and achara rasayana (promotive ethical practices). Ayurvedic methods of prevention, especially dincharya is useful in earliest prevention of chronic and lifestyle related diseases.

**Keywords:-** ayurveda, swastha, dosha, dincharya, lifestyle diseases, hypertension











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## ECONOMIC SPREAD OF MAHUA (MADHUCA LONGIFOLIA) PRODUCTS; LIVELIHOOD SUPPORT IN SONBHADRA FOREST DIVISION OF UTTAR PRADESH

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#### **ABSTRACT**

Economy and livelihood are interconnected phenomenon especially for the livelihood of rural and tribal population. One such species that supports rural livelihood in multifaceted ways is Madhuca longifolia, which belongs to family Sapotaceae, commonly known as the Mahua and Butter nut tree, Additionally, Mahua holds a special status among NTFPs providing an important source of seasonal income for the upliftment of forest tribes and rural communities. However, comprehensive economics of Mahua is neglected and less reported. This study focuses on the economic spread of Mahua in Sonebhadra forest division of Uttar Pradesh. The study area was surveyed through household survey with the help of questionnaire with 5% sampling intensity, taking the household as sampling unit. Extensive field surveys were done to collect information form household units. It was observed that the prices of Mahua produce varied according to different parts viz. seed, flower and, leaf. Eventually, products prices also varied accordingly such as Mahua flower rates received a high price in the market followed by seed products and leaves. Since, these products are sold in local market, usually the collection of Mahua flowers accounts between 1-3 quintal of the total har vest by the forest communities. Mahua flowers market price varied from (Rs. 50-70)/kg, seeds (Rs. 35-50)/kg, oil (Rs. 150-200)/litre, liquor (Rs. 40-60)/bottle and, Oilcake (Rs. 20-40)/kg respectively. It was subsequently observed that income generation from Mahua flowers is projected to be more than Mahua seeds. The total income generated in the study area by the people involving rural and tribal population ranged between Rs. 12000/- to 15000/- for Mahua flowers and Rs. 1500/- to 3000/- for Mahua seeds per season per household. This study proposes that Mahua has a significant impact on the livelihood status of tribal and rural people in Sonbhadra forest division and also plays a vital role in social upliftment and household sustainability of this region.

**Keywords:** NTFPs, Economic study, Marketing, Mahua.











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## ROLE OF DIFFERENT HERBS IN THE MANAGEMENT OF HYPERPIGMENTATION

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#### **ABSTRACT**

The different physiological and morphological outlook of the skin endure persistent changes. Several internal and external elements have direct influence on bringing about various skin problems like inflammation, dermatitis, hyperpigmentation, sunburns, skin aging, melanogenesis etc. Irrespective of the gender the yearning for fair skin complexion is becoming a striking concern in a large number of people in current times. The care for skin to overcome this complication has received immense focus in the past few decades. Over this course of time a variety of synthetic skin care essentials has come into limelight. The use of these personal skin care product on a regular basis to achieve fairer skin has become very common, but the effects of these synthetic products on the molecular and microbial diversity of the skin are unhealthy. To prevail over the abundant use of these synthetic skin care products, various scientifically backed, tested & approved natural herbs and phytochemicals can be utilized as a much prudent and safer alternative to achieve healthy and pristine skin. Skin-lightening herbs and phytochemicals pry into the melanogenesis pathway, transfer of melanin or shedding of the dead skin cells which results in decreasing the pigmentation present on the surface of the skin. Herbs like Glycyrrhiza glabra (Liquorice), Silybum marianum, Morus alba, Prunus cerasoides have been proven to be effective for skin-lightening treatments These natural alternatives are gentle and humane towards the skin and have minimum side effects.

**Key words**: Hyperpigmentation, Glycyrrhiza glabra, Panax ginseng, Melanogenesis, Morus alba.











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## DO HEAVY METAL LEVELS IN VEGETABLES AND GRAINS POSE A HEALTH RISK TO INDIAN POPULATION

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#### **ABSTRACT**

Consumption of food items produced in wastewater irrigated areas of Indo-Gangetic plains can be a significant exposure pathway to toxic heavy metals i.e. Ni, Cr, Cd, Cu and Zn. In present study, an attempted was made to quantify the concentrations of heavy metals in soil and their transfer to edible parts of vegetables (i.e., palak; *Beta vulgaris* L., radish; *Raphanus sativus* L., garlic; *Allium sativum* L., cabbage; *Brassica oleracea* L., brinjal; *Solanum melongena* L.) and cereal crops (i.e., paddy; *Oryza sativa* L. and wheat; *Triticum aestivum* L.) frequently grown in wastewater irrigated areas of carpet city of northern India. The results revealed that heavy metals tend to accumulate more in non-edible parts as compared to the edible parts of the tested crops except leafy vegetables e.g. palak and cabbage. The concentrations of Cd and Zn in edible parts of *B. vulgaris* (5.35  $\mu$ g g<sup>-1</sup> dw and 58.41  $\mu$ g g<sup>-1</sup> dw, respectively) and Cr, Cu, and Ni in *T. aestivum* (16.02  $\mu$ g g<sup>-1</sup> dw, 27.97  $\mu$ g g<sup>-1</sup> dw and 40.74  $\mu$ g g<sup>-1</sup> dw, respectively). Daily intake of Cu, Ni, and Cr via consumption of cereal crops was found higher than the vegetables. The health quotient revealed that health of local residents is more linked to vegetables than cereal crops. General public of Indo-Gangetic plains are significantly exposed to Cd and Ni through consumption of vegetables and grains which needs an urgent attention for their control measure in order to reduce health risk associated with the degree of heavy metal contamination in peri-urban ecosystem.

Keywords: Heavy metals, Contamination, Food crops, Daily intake, Health risk.











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## ADVANCEMENTS IN THE FUTURE HORIZON OF HERBAL MEDICATIONS WITH ASSOCIATION OF AYUSH SECTOR

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#### **ABSTRACT**

**Background:** AYUSH offers programs to rejuvenate the body through diet and nutrition. It offers treatment methods to cure many common diseases such as food allergies. However, one should be aware that Ayurvedic nutrition is not a "magic bullet" system but requires the full participation of the patient to succeed.

**Objectives:** To contribute to the discovery and authentication of herbal products with scientific information, with aims of enhancing their commercial value and improving penetration of international markets.

**Methodology:** A review based study. Information pertaining to this study was primarily obtained from various governmental documents in the concerned domain. Ayuveda is a holistic science which mainly emphasis on preventive aspect rather than the curative which is a sub theme of it. Many herbal medications proves to be a boon for many acute as well as chronic disorders prevailing globally. Therefore, cautious use of herbal medications under expertised supervision proves to be health promotive. The use of herbal medicinal products and supplements has increased tremendously over the past three decades with not less than 80% of people worldwide relying on them for some part of primary healthcare. Although therapies involving these agents have shown promising potential with the efficacy of a good number of herbal products clearly established, many of them remain untested and their use are either poorly monitored or not even monitored at all. The consequence of this is an inadequate knowledge of their mode of action, potential adverse reactions, contraindications, and interactions with existing orthodox pharmaceuticals and functional foods to promote both safe and rational use of these agents. Since safety continues to be a major issue with the use of herbal remedies, it becomes imperative, therefore, that relevant regulatory authorities put in place appropriate measures to protect public health by ensuring that all herbal medicines are safe and of suitable quality.

Observations: Validations of Herbal drugs, evidence based treatment approach, improvement of quality of drugs, active involvement of public sector and revalidations of clinical trials.

**Conclusion:** With an abysmally deficient health infrastructure the role of AYUSH system in delivering health care services in the rural India is palpable. The grossly deficient health workforces in rural India are hugely replenished by AYUSH doctors and paramedics. Many of the therapeutics are being used in different forms for the management of community health problems which are safe and effective.

**Keywords:** herbal medicines, adverse reactions, monitoring safety, challenges, public health,











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## IMPACT OF HEAVY METALS ON REPRODUCTIVE PHYSIOLOGY OF A MAMMAL

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#### **ABSTRACT**

Some substances are very toxic to different types of organs, including the whole body of the organism. These substances can have negative effects on organisms and, in some cases, be lethal. Heavy metals are a type of substance that occurs naturally in the environment. Heavy metals are present in various forms and affect the various biological systems of an organism, including morphological and physiological effects and other health impairments. The heavy metals can directly enter the animal's body through the contaminated drinking water. The general toxicity of metal ions to mammalian physiology and histology is due to the chemical reaction of the ions with the cellular structure of enzymes. proteins, and cell membrane, which directly affects the liver, kidney, brain, and other body parts like the gonads (testes and ovaries). We are today also concerned with the carcinogenicity of metal substances. Heavy metals are categorised as Cadmium, Lead, Mercury, Arsenic, Chromium, and Magnesium, These heavy metals now cause widespread problems in mammalian reproductive physiology and histology, such as irregular, menstruation cycles, theca cells, and granulosa cells in females and decreased sperm counts and hormonal regulation in males. Heavy metals affect gametogenesis, germ cell loss, sperm dysfunction, sperm motility, viability, and impairment of both testicular stroma. testicular necrosis, testicular edema, and seminiferous tubules in males, and pregnancy and foetus development in females. Heavy metals also cause infertility problems and alter the structure and function of testes and ovaries in male and female mammals. Heavy metals have also been linked to breast cancer, endometriosis, and endometrial cancer in humans. It has also been reported that the toxicity of heavy metals causes spontaneous abortions, placenta growth as well as preterm delivery and atrophy.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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## ANTHROPOGENIC DISTURBANCES AND SPECIAL CASE OF DESTRUCTION OF SAUSSUREA OBVALLATA IN THE MADHYAMAHESHWAR REGION OF WESTERN HIMALAYA IN INDIA

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#### **ABSTRACT**

Anthropogenic disturbances are caused by humans on the natural environment and its ecosystems. These are the primary causes of resource depletion, climate change, biodiversity loss and other problems. We can create several strategies to minimize the detrimental effects of anthropogenic disturbances on the natural environment or its ecosystems by analysing them. In the Madhymaheshwar region of the Rudraprayag district (Uttarakhand), Western Himalaya, India, the study was conducted to analyse the various parameters of anthropogenic pressure and disturbances that negatively affect the forest and grassland ecosystems. Disturbance parameters such as grazing intensities, lopping percentage, disturbance index, density, Total Basal Cover (TBC) of cut stumps were studied by random sampling plots (quadrats). Destruction of Saussurea obvallata was analysed by visiting after specific period of time. On the basis of frequency of disturbances (conspicuously of anthropogenic nature) the studied forest sites were categorised into highly disturbed (HD), moderately disturbed (MD) and least disturbed (LD) classes. Carl-Pearson correlation coefficient was used as a statistical tool to demystify the relationship between different disturbance parameters. On the basis of altitudinal gradient, entire study area was divided into five sites. These sites were fur ther categorised into highly disturbed (HD), moderately disturbed (MD) and least disturbed (LD). Construction of road was found to be the significant source of anthropogenic disturbance along with other anthropogenic disturbances. Belief that Brahma Kamal makes Lord shiva happy (Hindu deity) was found to be most important reason for the destruction of Saussurea obvallata. Within one weak, 500 to 700 flowers were removed from their natural habitat for worship. To minimize the anthropogenic disturbances multiple approaches are required. There must be alternative livelihoods for local communities and efforts must be made to aware them about biodiversity conservation.

**Keywords:** Anthropogenic disturbance, belief, livelihood, biodiversity conservation.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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#### CONCEPT OF NUTRACEUTICALS: NATURAL HEALING

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#### **ABSTRACT**

Nutrition is a fundamental need for our body. The word nutraceutical is made up of two words i.e., nutrient which is nourishing component and pharmaceutical (medical drug). A nutraceutical food holistically acts and promote wellness, prevent diseases and treatment of illness. In book Vaidhyakjeevan written by Acharya Lolimbaraja it's mentioned that if one eats wholesome diet there is no need of medicine, while one eats unwholesome diet then he will encounter disease. Another reference comes from Charak samhita that what we eat is what we become, if we eat healthy our body will become healthy and vice versa. Our Ayurvedic texts mentions a numbers of food products that act as Rasayan i.e., having rejuvenation properties, preventing from diseases and inturn improve quality of life like Chyawanprash, Brahma rasayan, Amalki rasayan etc. In present scenario our health is compromised just because of intake of unhealthy, junk, unbalanced diet eventually leading to numerous diseases such as cardiovasculardiseases, metabolic, chronic diseases. Traditional herbs like tulsi(basil leaves), ginger, garlic consist of antioxidants, immunomodulatory effects, reduces heart diseases, gastrointestinal morbidities etc.COVID-19 pandemic has taught all of us importance of healthy and nutritious diet and enhanced interest in indigenous use of nutraceutical ingredients present in our food and ayurvedic drugs to boost the overall immune system.

**Keywords:** Rasayan, rejuvenation, nutraceutical, nutrition.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### **ENVIRONMENTAL BORN DISEASE AND YOGA**

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#### **ABSTRACT**

Traditions are disappearing as modernization increases. Indigenous knowledge comes into focus as a result of environmental born diseases like skin cancer, respiratory disease, asthma, allergic rhinitis and human immune system is negatively impacted by prolonged exposure to polluted airborne dust particles, and in the case of COVID 19 infection, it may even become overworked. This could have detrimental effects on people's health or even result in death. The exposure to potentially modifiable risks, like as air pollution should be reduced through the prompt adoption of strong laws and yoga. Medical yoga brings the autonomic nervous system into healthy balance by stimulating the parasympathetic nervous system. The sympathetic nervous system, or our "emergency response system" is activated when our body or mind feels threatened or perceives being stressed, whether that be a "positive" or "negative" stress.

Over 300 million individuals worldwide today suffer from asthma. Asthma affects 1% of Indians, compared to 15% of adults and 7% of children, according to reports Up to 10% of kids in the US and Australia suffers from these diseases. Major health concerns in the majority of Western countries, these illnesses are estimated to afflict 5 to 10% of the population. Yoga, a 3,000-year-old tradition, is today viewed in the west as a holistic approach to health and is categorized by the National Institutes of Health as a type of complementary and alternative medicine.

**Keywords:** allergic rhinitis, medical yoga, sympathetic, parasympathetic.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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#### PHTYOCHEMICAL INVESTIGATION, HPTLC FINGERPRINTING, AND CLINICAL ASSESSMENT OF PANCHAVALKALA (A POLYHERBAL AYURVEDIC FORMULATION) FOR DIABETES MANAGEMENT

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#### **ABSTRACT**

Background: Ayurveda holistic approach for the treatment of disease and based on the property of drugs i.e. rasa, guna, virya, vipaka, and doshkarma. Panchavalkala was one of the Ayurvedic formulation which is a combination of five astringent drugs named: Nyagrodha (Ficus bengalenesis Linn.), Udumbara (Ficus glomerata Roxb.), Ashvatha (Ficus religiosa Linn.), Parisha (Thespesia populanea Soland ex correa) and Plaksha (Ficus lacor BuchHam.) and evaluated clinically for diabetes. Panchvalkala had many therapeutic properties like anti-inflammatory, antiseptic, antidiabetic, antioxidant, immune-modulatory, antibacterial, antimicrobial wound healing and astringent properties. The majority of drug of panchvalkala contain kaphapitta samaka properties and are kashay in rasa, ruksha in guna, sita in virya, and katu in vipaka. All the drug of panchvalkal have mutrasangrahana property which helps in the reduction of symptom prabhutamootrata which is considered as the cardinal feature of the disease madhumeha. The current study intends to investigate the phytochemical and HPTLC profile for standardisation as well as the effectiveness of this Panchavalkala anti-diabetic polyherbal Ayurveda formulation in decreasing blood sugar.

**Methods:** The formulation's kwath (Panchvalkala) was made in accordance with the standard procedure outlined in the Ayurvedic Pharmacopoea of India. This was done after preliminary phytochemical screening and HPTLC studies were conducted using a CAMAG HPTLC system outfitted with a Linomat V applicator, TLC scanner, and WIN CATS-4 software. 90 individuals were assessed clinically in accordance with the signs and symptoms of type 2 diabetes mellitus. The blood glucose levels were originally calculated using published techniques and subsequently, after 15 days, on an Sir SundarLal hospital ayurvedic OPD.

**Results:** The Panchvalkala kwath's phytochemical screening revealed the presence of phenol, triterpenoids, flavonoids, tannins, saponins, and carbohydrates. The HPTLC fingerprinting analysis revealed distinct band pattern which will help in proper identification and standardisation of the formulation. The clinical evaluation of Panchavalkala revealed a notable glucose reducing impact.

**Conclusion:** The results scientifically validate the use of Panchvalkala kwath for diabetes management in the traditional medicine and its HPTLC fingerprinting along with phytochemical profiling can be used for its identification and standardization. The resultreveals that Panchavalkala can be a safe, acceptable and effective alternative or adjuvant to the conventional oral hypoglycaemic.

**Keywords:** Panchavalkala; Antidiabetic; Polyherbal Ayurvedic formulation; HPTLC fingerprinting; Clinical evaluation in various civilizations. Their efficacies were proven valid in the chosen population. But a further study is also needed to prove its potency in large population.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### IMPACT OF CHANGING ENVIRONMENT ON ELDERLY PEOPLE'S HEALTH

#### Rupali Shukla and Sarla

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#### **ABSTRACT**

Ayurveda propounds a highly evolved science of life, health and care where concept of ageing and rejuvenation find a prominent place. Acharya Charak said, "A person having sound mind, intellect, physical strength, energy and psychological strength, one who is desirous of attaining benefits in this world and the other world (after death), should try to fulfil three desires. These desires are: Praneshna, Dhaneshna, and Parlokeshna." People of all age groups have a similar tendency to secure their life first along with other needs. Especially in old age as the time passes and person becomes weak, the desire to live a healthy life increases. Aged people gets affected by changing environment very easily as their homeostasis gets disturbed with very little change in their daily activities. So, Promotion of health and thereby preventing the ailments and to relieve from all categories of miseries i.e. physical, mental, intellectual and spiritual is need of the hour. Without health nothing can be achieved and one's life would be a burden on others also. By the physical and functional attributes of tridoshas, they can be conceived as Bio-dynamic forces, and are found in our environment at every moment on every level. When people become aware of these qualities within themselves, they take the first step towards creating a healthy life. Ayurveda assists in identifying these energies in a person's body and shows them how to more fully experience these gifts and gain freedom from their limitations. By working with the body's unique nature, true health can be created

**Keywords:** Ayurveda, ayu, ageing, jara.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### **CLIMATE SMART ORGANIC FARMING IN RICE**

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#### **ABSTRACT**

A field experiment was conducted to study the effect of climate smart organic farming in rice during Pishanam season 2021-22 at Rice Research station, Ambasamudram Tamil Nadu. The experiment was laid out in Randomized Block Design with three replications and seven treatments viz. T1 - Modified SRI with RDF,. T2 - Modified SRI with EFYM @ 750 kg ha-1 + Neem cake @ 250 kg ha-1 + Vermicompost @ 1 t ha-1in two equal splits at Active tillering and Panicle initiation stages + 3% Panchagavya as foliar spray twice (15 days before and after flowering), T3 – Green Manure application @ 6.25 t ha-1 + Vermicompost @ 1t ha-1 + Neem cake @ 250 kg ha-1 + 3% panchagavya as foliar spray twice, T4 - T2 + Alternate Wetting and Drying (AWD) using Field Water Tube (FWT), T5 - T3 + AWD using FWT, T6 -FYM @ 12.5 t ha-1+ RDF (check) and T7 - Green manure grown in situ + 3 % Panchagavya spray (Farmer's practice). Nursery sowing was done with variety CO 52 on 11.11.21. The gross plot size of 6.5 m x 3.5 m was prepared and transplanting was done under SRI method with the spacing of 22.5 x 22.5 cm. Sesbania aculeata, was raised in the main field and in-situ incorporation was done two weeks before transplanting. All the treatments were imposed as per the schedule. The experiments results revealed that T6 - FYM @ 12.5 t ha-1+ RDF (check)FYM @ 12.5 t ha-1+ RDF (check) recorded highest grain yield of 5706kg ha-1 followed by T1 - Modified SRI with RDF with grain yield of 5396.50kg ha-1. Among the organic manure treatments ,T5 -T3 + AWD using FWT registered grain yield of 4141kg ha-1 and the lowest grain yield of 2665.20kg ha-1was recorded in T7 - Green manure grown in situ + 3 % Panchagavya spray (Farmer's practice)











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## GENETIC FACTORS AND ENVIRONMENTAL POLLUTION CONTRIBUTE TO DEPRESSION AND DEAL IT WITH NATUROTHERAPY

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#### **ABSTRACT**

Depression is a psychological, clinical condition that affects the way person thinks or acts. Depression has been mentioned to affect to sadness, passion of stress and forlorn less about situations in person's life. Depression affects physical functioning, mood, gesture, behavior and communication. Utmost clinically depressed individuals generally withdraw from close connections that they might be involved in and at the same time, similar individualities develop poor eating habits and they might indeed stop taking care of themselves in terms of physical appearance, health and work. Unfortunately, no laboratory tests can be carried out to determine whether an existent is clinically depressed. Neurochemistry of depression has been explained using various types of neurotransmitters, neurons and hormones in the body. Neurons are structures set up in the nervous system that are responsible for passing of nerve impulses across the body. Neurotransmitters in the body are responsible for the transmission of nerve impulses in the nervous system, a veritably important functional part that of the body. Norepinephrine, serotonin and dopamine are three of the most important neurotransmitters in the body whose levels are set up to be abnormal in people that suffer from depression. Sleep, food appetite, sexuality and moods are some of the body functions that are influenced by levels of neurotransmitters in the body. This is true that, There is a genetic component to depression, but there's no single gene that can determine whether someone will or will not develop the disorder. While genetics refers to the person's natural makeup, environmental factors of depression relate to how the person's surroundings, parenting, family, and friends have contributed to their depression. Environmental factors are more likely to spark depression in people with a inheritable disposition for this disease. Still, indeed those who do not have a family history of MDD can develop symptoms solely based on environmental factors. Environmental pollutions are also a trigger for individuals' depressive symptoms. It has been found that Ozone and other components of air pollution can contribute to high levels of inflammation in the body, which has been linked to the onset and development of depression. Studies says that, In many patients, mild to moderate depression can be successfully treated with a variety of naturopathic and holistic options, such as dietary changes, dietary supplements, exercise, yoga, pranayama, massage, herbs, and sunlight etc.

**Keywords:** Depression, Yoga, Naturotherapy, Environmental polluation, MDD, Neurotransmitters.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### HERBAL MEDICINE: AN OVER VIEW

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#### **ABSTRACT**

Herbal medicines are popular. They are extensively used in the developing world, where in many places they offer a more widely available and more affordable alternative to pharmaceutical drugs. Increase in herbal medicines popularity brought concerns and fears over the professionalism of practitioners, and quality, efficacy and safety of their treatment methods and products from herbal and natural sources available in the market. Most research has focused on clinical and experimental medicine (safety, efficacy, and mechanism of action) and regulatory issues, to the general neglect of public health dimensions. Public health research must consider social, cultural, political, and economic contexts to maximize the contribution of herbal medicine to health care systems globally. The regulatory framework for herbal medicines and dietary supplements is currently under review. A new system for registration of traditional herbal medicines will ensure that marketed products meet standards for quality and safety. At present, the pharmaceutical quality of many complementary medicines is a cause for concern. Suggestions for herbal medicine standardization are out lined. The scenario and perception of herbal medicine are discussed. The public's belief that herbal and natural products are safer than synthetic medicines can only be ascertained by imposing regulatory standards on these products that should be manufactured using these Good Practices. Implementing standard operating procedures (SOP) leading to Good Agricultural Practice (GAP), Good Laboratory Practice (GLP), Good Supply Practice (GSP) and Good Manufacturing Practice (GMP) for producing these medicinal products from herbal or natural sources. This article presents a systematic review on herbal medicine including historical background, safety, efficacy, quality control, clinical trails, bioavailability, Herb-Drug interactions, Intellectual Property Rights, marketing, and regulatory aspects related to botanical therapeutics.

**Keywords:** Herbal Medicines, Health, Safety, Clinical trials, Marketing.











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## ANTIMICROBIAL STUDY OF ISOLATED COMPOUNDS FROM MURRAYA PANICULATA

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#### **ABSTRACT**

The study is aimed to isolate and identify the antimicrobial compounds present in the hydro-alcoholic extract of the leaf extract of Murraya paniculata. The extract was subjected bio-assay guided fractionation and isolation to isolate and purify the metabolites. The antimicrobial activity of the fractionations and isolated compounds was evaluated using the disc diffusion and microdilution methods. The active fraction was subjected to HPLC chemo profiling and showed two major metabolites, Further, purification efforts led the isolation of two pure compounds from the active fraction of Murraya paniculata, namely SK-2/B and SK-2/C. Both compounds showed significant antimicrobial activity against the tested Acid-fast bacterial strains. The minimum inhibitory concentration (MIC) values tested with mycobacterium smegmatis, m. fortuitum and m. phlei. The study concluded that the hydroalcoholic extract of Murraya paniculata and its isolated compounds exhibited potent antimicrobial activity against several bacterial and fungal strains, suggesting their potential use as natural antimicrobial agents. Further studies are needed to focus on structural determination and to explore their mechanism of action and in vivo efficacy.

**Keywords:** Extract, Hydroalcoholic, Antibacterial, microdilution, HPLC.











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# ROLE OF A NOVEL NATURAL PRODUCT DERIVED CALEBIN A ANALOG AS-18 AS AN ANTICANCER AGENT VIA DISRUPTING CELLULAR REDOX BALANCE IN HUMAN TRIPLE NEGATIVE BREAST CANCER CELL LINE.

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#### **ABSTRACT**

Chemotherapy, radiation therapy, and immunotherapy are now recognised as the most effective methods for treating cancer worldwide, however they do have certain drawbacks due to their toxicity. The use of natural products from plants, animals, and marine organisms and their derivatives for proper targeting of both the cancer cell and cancer stem cell colonies has thus produced remarkable leads for the control of cancer due to their limited cytotoxicity to the normal cell as compared to cancer cells. This is because current therapeutics for the treatment of various types of tumours are toxic, and natural products from plants, animals, and marine organisms have been used for centuries. Around 50% of the medications used for cancer chemoprevention are made from natural sources and their structural derivatives (small molecules). Calebin-A, a naturally occurring curcuminoid analog derived from turmeric root (Curcuma longa) has gained attention due to its tremendous anti-cancer potential. Thus, keeping this in mind an array of Calebin-A analogs were designed and created and were evaluated for their cytotoxic potentials on various murine and human malignant cell lines. One such analog compound AS-18 was effectively opted out as most potent with a high cytotoxic effect against cancer cells specially in Triple-negative breast cancer cell line MDA-MB-231 cell line and less toxicity against normal cell lines. Triple-negative breast cancer (TNBC), is a specific subtype of epithelial breast tumours that are immuno-histochemically negative for the protein expression of the estrogen receptor (ER), the progesterone receptor (PR) and lack over expression/gene amplification of HER2. Our present study established ROS-induced mitochondrial dysfunction and finally apoptosis induction by the lead compound in MDA-MB-231. The inhibition of cell propagation was linked to the data confirming G2/M phase arrest. The mitochondrial dysfunction was confirmed by JC1 and MitoSOX assay along with the change in Bax/Bcl-2 ratio. The lead compound AS-18 suppressed the NRF-2 protein expression thus increasing the free radicals in the tumor cells. The compound AS-18 induced ROS-mediated caspase-dependent apoptosis as the western blot data confirmed caspase activation. The 4T1 injected Balb/C syngeneic tumor model confirmed the augmentation in the inhibitory outcome of the lead compound. This study sums up the mechanistic pathway by which the compound AS-18 mediates its cytotoxic effect in cancer cells. A novel Calebin-A compound AS-18 caused ROS mediated mitochondrial-dependent apoptosis in MDAMB-231 cells. AS-18 was also found to restrict the in-vitro cell migration through its anti-mitotic property. Thus our results cumulatively propose AS-18 as a new chemotherapeutic regime which might be effective to target the deadly aspects of the TNBC.

Keywords: Calebin -A, Apoptosis, ROS, Nrf-2, AS-18, TNBC.











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## CONTROL POTENTIALS OF HYPTISSUAVEOLENS AND WEDELIACHINENSISPLANT EXTRACT AGAINST PLUTELLA XYLOSTELLALARVAE

#### Savita Singh

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#### **ABSTRACT**

Diamondback moth, Plutella xylostella (L.) (Lepidoptera: Plutellidae) is one of the most important insect pests causing severe damage to crucifers worldwide. Chemical methods have failed to control this pest as this has developed resistance to almost all synthetic insecticides available. Hence, alternative sources such as plants can serve as the rich source of secondary bioactive molecules with insecticidal properties. For the past two decades, considerable efforts have been directed toward screening plants (Hyptissuaveolens, Wedeliachinensis)to determine their biological activity against DBM. A laboratory experiment was conducted to investigate the insecticidal activities of Petroleum ether (Pet. Ether), Methanol and Aqueous extract of Hyptissuaveolens, Wedeliachinensis.on instar larvae of the Diamond Back Moth, Plutella xylostella (L.). at four concentration 1000ppm, 2000ppm, 3000ppm, 4000ppm and 5000ppm. Plant secondary metabolites of Hyptissuaveolens Petroleum ether, Methanol and Aqueous extracts of whole plants offered toxicity test on DBM and gaves mortality values (Pet. Ether) 50%, 70%, 90%, 100% in 24, 48, 72 and 96 hours of exposure, (Methanol) 90%, 100% in 24 and 48 hours of exposure, (Aqueous) 60%, 70%, 80%, 100% in 24, 48, 72 and 96 hours of exposure. Wedeliachinensis Petroleum ether, Methanol and Aqueous extracts of whole plants offered toxicity test on DBM and gaves mortality values (Pet. Ether) 40%, 50%, 70% and 80% in 24, 48, 72 and 96 hours of exposure, (Methanol) 60%, 70%, 80% and 90% in 24 48, 72 and 72 hours of exposure, (Aqueous) 60%, 70%, 80% and 100% in 24, 48, 72 and 96 hours of exposure.

**Keywords:** DBM. Wedelia chinensis plant, insecticidal.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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## ELEMENTAL COMPOSITIONS AND RARE EARTH ELEMENT GEOCHEMISTRY OF URBAN ATMOSPHERIC AEROSOLS

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#### **ABSTRACT**

Atmospheric aerosol is one of the major pollutants of urban air. The atmospheric aerosol contains various hazardous elements including rare earth elements. However, the rare earth elements and their chemistry in the urban atmospheric aerosol are rarely evaluated. In this study, we evaluated the elemental compositions and the rare earth elements geochemistry of atmospheric aerosol in an urban area of India. The atmospheric aerosol samples were analyzed using HR-ICPMS. The rare earth elements (REEs) are found in trace quantities with a total concentration ( $\Sigma$ REEs) of 0.97  $\pm$  0.59 ng m-3. REEs distribution pattern indicates a positive anomaly of Eu and Tm. The mean  $\Sigma$ LREEs concentration was 0.76 ng m-3, whereas the mean  $\Sigma$ HREE concentration was 0.21 ng m-3. The La/Sm ratio, a good marker for anthropogenic sources, indicates that REEs might have originated from anthropogenic emissions including industrial and vehicle emissions.

**Keywords:** atmospheric aerosols; rare earth elements; geochemistry.











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#### RENEWABLE ENERGY AND ITS SCOPE

#### Shikha Vishwakarma

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#### **ABSTRACT**

Renewable energy sources are becoming more and more important as the world looks to reduce its reliance on fossil fuels. Renewable energy sources such as solar, wind, and hydropower are increasingly being used to power our lives. This shift away from traditional fossil fuels has many environmental benefits. Furthermore, renewable energy can help reduce the strain on natural resources by providing a sustainable source of power. By using renewable energy sources, we can reduce our dependence on finite resources and protecting the environment from further harm. Governments have a major role to play in promoting the use of renewable energy sources. They can create incentives for businesses and individuals to invest in renewable energy sources, as well as provide subsidies and tax breaks. Additionally, renewable energy sources can help create jobs in the local economy by providing a source of income for those who install and maintain the systems. In addition to these economic benefits, renewable energy sources helps to reduce our reliance on non-renewable resources like oil and gas, which are becoming increasingly expensive and difficult to obtain. In this article, we'll explore the different types of renewable energy sources and discuss their use cases. We'll also look at some of the challenges associated with using these sources in order to understand why they may not be suitable for all applications. By understanding the different types of renewable energy sources and their uses, we can make better decisions about how to best utilize them in our lives.

**Keywords:** Renewable, fossil fuels, sustainable.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### EFFECTS OF VENOM TOXINS/PEPTIDES FROM PAPER WASP ROPALIDIA MARGINATA ON VARIOUS HAEMATOLOGICAL PARAMETERS IN ALBINO MICE

#### Simran Sharma

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#### **ABSTRACT**

In present research study paper wasp Ropalidia marginata Venom toxins were purified. Elution pattern of venom shows presence of low molecular weight toxic peptides in albino mice. Ropalidia marginata toxins/proteins caused significant reduction in red blood cells and increase in blood haemoglobin, mean corpuscular haemoglobin, packed cell volume, total white blood cells and plasma haemoglobin. A significant decrease in erythrocyte numbers in comparison to control. Contrary to this WBCs number was found to be increased. Haemoglobin level was increased. The maximum increase in the packed cell volume (PCV) was obtained. All these effects were time dependent and dose dependent. Hymenopteran insects such as honey bees, wasps and hornets are highly venomous. Their stings are highly painful to humans, as they possess a large amount of toxins mainly peptides. The wasps are hymenopteran insects belonging to genus Vespa. Hornets are giant natural predators they play important role in pollination, natural pest control and biodiversity. Like wasps, hornets are also found almost in all parts of the world. Peptides isolated from the venom of social Wasp Ropalidia marginata (Hymenoptera: Vespidae) show sever haemolytic effects. Wasp venom toxin peptides also showed catalytic activity and form pores in biological membranes. Hornet stings contain a large amount (5%) of acetylcholine and this cause heavy muscular very painful. Wasp venom imposes allergen specific reactions and evokes immune responses with more severe physiological changes. Asian giant hornet (Vespa mandarinia) inflicts venom very quickly and cause human fatalities. Its toxins cause multiple organ failure leading to death. For quick recovery dialysis can be used to remove the toxins from the bloodstream. Wasp venoms contail1n important enzymes i.e. hyaluronidase, phospholipase A2, metalloendopeptidase, etc. Nevertheless, some neurotoxic peptides (e.g., pompilidotoxin and dendrotoxin-like peptide) and proteins (e.g., insulin-like peptide binding protein) appear to be specific to solitary wasp venom. In contrast, several proteins, such as venom allergen 5 protein; venom acid phosphatase, and various phospholipases, appear to be relatively more specific to social wasp venom. Insect venom is a rich source of peptides that could be used for drug design and innovative therapeutic discoveries. The present study evaluated effect of Ropalidia marginata venom toxins on haematological parameters in albino mice.

**Keywords:** Hymenopteran insects, venom toxins, paper wasp, phospholipase A2,Ropalidiamarginata, therapeutic, neurotoxic peptides.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

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#### IN-SILICO SCREENING OF PHTYOCHEMICAL COMPOUNDS FOR FINDING POTENTIAL INHIBITORS OF ALDOSE REDUCTASE AND ALDO-KETO REDUCTASE

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#### **ABSTRACT**

Diabetes mellitus is a most common endocrine disorder, which occurs due to deficiency in insulin secretion or inulin action. The herbal drughas properties like anti-diabetic and antihyperlipidemic etc. Aldose Reductase (EC number 1.1.1.21) and Aldo Keto Reductase (EC number 1.1.1.112) plays an important role in diabetes complications. The inhibitors of AR and AKR1C1 are turn out to be a very interesting targets for new drug discovery, the known inhibitors of these enzymes are LDT and Glibenclamide respectively.

Herbal drug powder was prepared and its phytochemical extraction was done in ethylacetate solvent by "cold extraction method". GCMS analysis of ethylacetate extract was done at Metabolome division, NIPGR Delhi and twelve major compounds were identified. By using PubChem database the CID no and SDF files of these compounds were retrieved. We use TOPKAT of BIOVIA DS 2019 software for insilico analysis in which mutagenicity, toxicity and carcinogenicity test were performed. The known inhibitor of 1USO and 4YVP are LDT and Glibenclamide respectively., were taken as control drug. After that for virtual screening and scoring of compounds Libdock was used. CDOCKER module, CHARMm-based docking method was used to generate highly accurate docked poses. CDOCKER works on molecular dynamics (MD) scheme to dock ligands into a receptor binding site.

By TOPKAT screening test five out of twelve compounds were screened as toxic and carcinogenic in nature. For AR inhibitor the compounds CID519592 and CID6818 showed the best binding in based on Libdock and CDOCKER score and for AKR1C1 inhibitior the compound CID5372684 showed the best result in comparision with control drug LDT and Glibenclamide. In conclusion CID519592, CID6818 and CID5372684 were screened as potential inhibitors of 1USO and 4YVP for managing DM complications.

**Keywords:** TOPKAT, BIOVIA, CDOCKER, Metabolome.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

#### PAX6 AND PUTATIVE MARKERS OF PARKINSON'S DISEASE

#### Soni Kumari and Rajnikant Mishra

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#### **ABSTRACT**

Background: Dopaminergic neurodegeneration in the nigrostriatal area of the brain is a hallmark of Parkinson's disease (PD). The effects of neurodegeneration go far beyond these dopaminergic neurons. Pathogenic protein aggregates that are associated with the gradual degeneration of neurons and the loss of behavioral functions are another feature. F or effective diagnosis and treatment, PD lacks biomarkers. Proteomics is an unbiased qualitative/quantitative approach that can efficiently quantify thousands of proteins from small amounts of complex material. The effect of MPTP (1methyl-4-phenyl-1,2,3,6-tetrahydropyridine) on the brain proteome in MPTP-induced Parkinson's animal model has thus been evaluated. Methods: PD was induced by intra-peritoneal injection of MPTP (20mg/kg body weight) in 4-6 weeks old AKR strain mice for consecutive 21 days. The vehicle control was given regular saline. Further, the brain tissues were selected for the experiments. We applied HRLCMS to analyze alterations of the brain's proteome to better understand the molecular changes associated with PD. In-silico studies were performed to see the protein-protein interaction (http://string.db.org) and gene ontology, pathway enrichment by KEGG. Results: Proteomic studies showed the most affected pathways are associated with mitochondrial dysfunction, oxidative stress, protein misfolding, cytoskeleton dysregulation, and inflammation, ubiquitination of proteins, GABAergic synapse, synaptic activity, proteosomelysosome degradation, autophagy and oxidative stress and cell signaling (Ras, Mapk). Pax6 was expressed in the treatment group suggesting its role in survival of neurons. Further, in-silico studies show the interaction of Pax6 with protein associated with these brain's regulator y mechanism suggesting its direct or indirect association of Pax6 with Parkinson's disease that needs to be studied further. Conclusion: Our findings provide the insight into the proteome of MPTP-induced PD mice brain and the underlying dysregulated pathways arising from the MPTP treatment.

**Keywords:** Neurodegeneration, MPTP, Parkinson disease, in-silico.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## HEPATOPROTECTIVE EFFECT OF HYDROALCOHOLIC EXTRACT OF T. ARJUNA BARK IN CCL4 INDUCED HEPATOTOXICITY IN RATS

#### Sony Upadhyay, Prashant Kumar Singh and Rajiv Shukla

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#### **ABSTRACT**

Hepatic system is the major organ system involved in the metabolism, detoxification and excretion of various endogenous and exogenously administered/ ingested like xenobiotics, pollutants etc. this physiological activity of the liver results in the generation of highly reactive free radicals or reactive oxygen species (ROS), which covalently bonds with membrane lipids causing lipid peroxidation alters the membrane permeability and causes tissues damages. Since the liver involved in various biochemical reactions, it is prone to be attacked by the free radicals and cell necrosis resulting in liver damage. Liver damage always associated with cellular necrosis, increase in tissue lipid peroxidation and depletion in the tissue GSH levels. In addition serum levels of many biochemical markers like SGOT, SGPT, Triglycerides, Cholesterol, Bilirubin, Alkaline phosphate are elevated.

The market for Ayurvedic medicines is estimated to be expanding at 35% annually. Sales of medicinal plants have by nearly USD 151 billion in 2021 in India. Traditional Chinese Medicine users over 5000 plants species; India uses about 9000. According to export, Import Bank, the International market for medicinal plant related trade having a growth rate of the 7-15% per annum. Traditional medicine has serves as a source of alternative medicine, new pharmaceuticals and healthcare products. Medicinal plants are important for pharmacological research and drug development, not only when plant constituents are used directly as therapeutics agents, but also as staring materials for the synthesis of drugs or as models for pharmacologically active compounds. The objective of the study is to evaluate the hepatoprotective activity of the hydroalcoholic extract of T. arjuna bark in CCI4 induced hepatotoxicity in rats.

**Keywords**: Hepatotoxicity, biochemical markers, medicinal plant hydroaclohelic Extracts etc.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## OBSERVATIONS ON NH3 AIR EMISSIONS DURING DIFFERENT STAGES OF CROP HARVESTING AT A RURAL SITE IN HARYANA (INDIA)

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#### **ABSTRACT**

Fertiliser application is a major source of NH3 emissions in air affecting air quality and natural nitrogen biogeochemical cycle. This study was carried out at a rural agricultural site in Jhajjar district of Haryana state. The day-night and seasonal variation of NH3 emissions were measured during different stages of crop harvesting from July 2017 to June 2018 during Kharif and Rabi crop seasons. Results indicated that NH3 concentrations were significantly lower after basal dressing of DAP fertilizers as compared to the concentrations after top dressing of urea. NH3 concentrations were recorded as 1.4 to 45.2, 63.1 to 190.9, 98.9 to 187.5 and 56.8 to 249.5  $\,$  g m - 3 during sowing, fertilizer addition, grain filling stages and crop residue burning respectively, in Kharif season. On the other hand, NH3 concentration ranged from 22.9 to 68.4, 59.4 to 104.71, 26.3 to 56.0, 48.2 to 147.2, and 21.5 to 80.4  $\,$  g m -3 during sowing, crown root initiation (CRI), panicle initiation, grain filling, and maturity crop, respectively, in Rabi season. The average NH3 concentrations during Kharif season (125.3  $\,$  g m -3) were significantly greater than the concentrations during Rabi season (51.8  $\,$  g m -3). However, a reduction in the NH3 values was obser ved in the period between Kharif and R abi seasons, which could be attributed to the scavenging by rain during monsoon season and gas to particle conversion process.

**Keywords:** Atmospheric NH3, Fertilizer addition, Kharif, Rabi.











# Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

## ROLE OF AGADA TANTRA IN OCCUPATIONAL AND ENVIRONMENTAL HEALTH

Sukriti Sharma

#### **ABSTRACT**

In modern era the change in lifestyle increases the risk of different health hazards. Lab oriented markets are on revolutionizing towards more computerization and mechanization, at the same time general awareness about occupational safety and environmental hazards were not spread in the society. Environmental contamination results from the use of pesticides in agriculture fields, development in the number of automobiles, and other factors brought on by expanding industries. These contaminants accumulate in the body of a person and cause severe diseases. Intake of pesticides is another factor that puts human life in danger. They might not be a concern at low concentrations, but as they accumulate in the environment and build up a poisonous concentration in food chains, they may become a problem. The use of chemical drugs, pesticides and industrial pollution are responsible in disease like cancer, skin diseases, allergic diseases and congenital deformity etc.

Ayurveda is an ancient system of Indian Medicine. Agada Tantra is one of the branch of Ayurveda that deals with management of toxicity. If we thoroughly evaluate the Agada tantra principles and the aetiology of diseases like cancer, we can conclude that the diseases are mostly caused due to poisonous compounds that are ingested through food, air, water, medicine, etc. Some of the toxin produces acute symptoms and some produces symptoms after a long time. If we consider *Dooshivisha, Garavisha* and *Viruddhahara* concepts of *Agadatantra,* most of the etiological factors and pathology of these diseases come under these three headings.











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# EVALUATION OF WATER QUALITY AND HYDRO-GEOCHEMISTRY OF SURFACE AND GROUNDWATER, NAGAUR DISTRICT, RAJASTHAN, INDIA

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#### **ABSTRACT**

Present study deals with the analysis of physico-chemical parameters of surface water and groundwater in Nagaur district during august 2020 to July 2021. For the study 60 samples are collected from different sampling sites on monthly as well as quarterly basis. The physico-chemical parameters like temperature, pH, Conductance, Total Dissolve Solids, Total hardness, Turbidity, Fluoride, Nitrate, Chloride and Alkalinity were analyzed. It has been found that the value of certain parameters is higher in pre monsoon season than post monsoon season. Current regulatory practice based on spot samples of water provide data of the required reliability so the purpose of this study is not only verify the quality of ground water and surface water but also compare it with water standards to assure the suitability of various aspects.

**Keywords:** Ground water, Fluoride, Pre monsoon, Post monsoon and water analysis.











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## TERMITICIDAL AND BIOCHEMICAL ACTIVITY OF COMBINATORIAL ESSENTIAL OIL INGREDIENTS OF TAGETES ERECTA ON INDIAN WHITE TERMITE ODONTOTERMES OBESUS

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#### **ABSTRACT**

In present investigation various bio-molecular parameters i.e. glycogen, protein, amino acid, DNA, RNA and lipid were determined for evaluation of anti-termite efficacy of Tagetes erecta essential oil based combinatorial formulations against Indian white termite Odontotermes obesus. For this purpose 40% and 80% of 24 hrs of LD50values of various formulations were provided for treatment of termite workers. Observations were taken at 4 hrs time interval upto 16 hrs to know inhibitory activity of these combinatorial mixtures on termite species Odontotermes obesus. Significant (p>0.05) alterations were observed in the level above mentioned bio-molecules when termites were treated with different combinatorial essential oils ingredients of Tagetes erecta . Combinatorial mixtures of Tagetes erecta essential oils have shown synergistic activity against termites. This study will provide an overall sustainable way to termite control in crop field, gardens and houses. It also suggests use of essential oils as better alternative of synthetic termiticides as these are safer for environmental and human health.

**Keywords:** Termiticidal, Odontotermes, Synthetic.













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# FACILE GREEN SYNTHESIS OF SILVER NANOPARTICLES USING ALOE VERA AND ANDROGRAPHIS PANICULATA PLANT LEAF EXTRACTS AND INVESTIGATION OF ANTIMICROBIAL MECHANISM AND BIOCOMPATIBILITY TOWARDS MAMMALIAN CELLS

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#### **ABSTRACT**

Rapid increases in the infectious diseases along with increase in drug resistant pathogenic microorganisms are considered as major health concern. Hence development of alternative therapeutic procedures like nanoparticle based therapy receiving much attention now a day. Based on this aspect, in the present work we have investigated the antimicrobial efficiency of Ag NPs. Green synthesis protocol was designed for synthesis of Ag NPs. Ag NPs was successfully synthesized using Aloe vera and Andrographis paniculata plant leaf extracts. Morphology of the nanoparticles is investigated using Transmission Electron Microscope (TEM) and found to be cubic and spherical. EDAX study has revealed the presence of Ag elements in nanoparticles. Size distribution of nanoparticles is characterized by using Dynamic Light Scattering (DLS) method. The synthesized nanoparticle has shown antimicrobial property against Candida krusei and Staphylococcus aureus at 100 and 200µg/mL of Ag NPs. Experimental study results antimicrobial activity of nanoparticles due to generation of reactive oxygen species (ROS). Cytotoxicity evaluation confirmed the NPs have maintained highly antimicrobial activity with reduced toxicity against 3T3 primar y mouse fibroblast cells. Obtained results suggest the possible effective use of synthesized nanoparticles in different biomedical applications.











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## MODULATION OF GROWTH AND PRODUCTIVITY OF TRIGONELLA FOENUM-GRAECUM L. USING IRRADIATED SODIUM ALGINATE IN COMBINATION WITH SOIL APPLIED PHOSPHORUS

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#### **ABSTRACT**

Fenugreek (Trigonella foenum-graecum L.) is an annual herbaceous plant of family Fabaceae. The plant is used as medicine, spice and as fodder. The chemical and active constituents of fenugreek include trigonelline, 4-hydroxyisoleucine, galactomannans, polysaccharides, polyphenol compounds, nicotinic acid, niacin, steroidal sapogenins, triterpenoids, alkaloids and lipids. The plant has been extensively used in India and the world because of numerous medicinal properties like anti-diabetic, anti-cholestrolemic, anti-malarial, antioxidant, antipyretic, used in treatment of indigestion and flatulence, galactogogue, immunomodulatory agent and as an anti-allergic. Because of its anti-diabetic constituents like trigonelline and it has been recommended for diabetic patients to take as a vegetable and in other suitable forms. Fenugreek seed contains and about 5.5–7.5% lipids including linolenic (25.0%), linoleic (40.0%), and oleic (14.0%) acids. Fenugreek may serve as an excellent fodder and animal food supplement and can even be grown on marginal lands in profitable way. Sodium alginate is a polysaccharide obtained from brown algae members like Sargasum sp. In its depolymerized form using different techniques like irradiation using Cobalt 60 gamma rays it has proved to be a wonderful plant growth regulator. A pot experiment was carried out to explore the influence of foliarapplied irradiated sodium alginate (ISA) (0. 40. 80 and 120 mg L<sup>-1</sup>) alone and in combination with soil-applied phosphorus (40 kg P ha<sup>-1</sup>) on growth, yield, photosynthetic pigments and active constituents of fenugreek employing the soil deficient in phosphorus. Un-irradiated sodium alginate (UN 40 mg  $L^{-1}$ ) and DDW water were used as control. 80 mg L<sup>-1</sup> of ISA applied with 40 kg P ha<sup>-1</sup> (P40) proved to be the best treatment. It increased seed yield by 131.0%, trigonelline content by 17.84%, trigonelline yield by 174.0%, seed alkaloid content by 32.98% and seed alkaloid yield by 208.64% over the control. Trigonelline content was estimated using HPLC equipment (Model, LC-20AD).Gel permeation chromatography of ISA revealed the formation of low molecular weight fractions which might be responsible for plant growth promotion in this study.











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## ROLE OF DIFFERENT HERBS IN THE MANAGEMENT OF HYPERPIGMENTATION

#### Rahul Seth\* and Umna Zareen

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#### **ABSTRACT**

The different physiological and morphological outlook of the skin endure persistent changes. Several internal and external elements have direct influence on bringing about various skin problems like inflammation, dermatitis, hyperpigmentation, sunburns, skin aging, melanogenesis etc. Irrespective of the gender the yearning for fair skin complexion is becoming a striking concern in a large number of people in current times. The care for skin to overcome this complication has received immense focus in the past few decades. Over this course of time a variety of synthetic skin care essentials has come into limelight. The use of these personal skin care product on a regular basis to achieve fairer skin has become very common, but the effects of these synthetic products on the molecular and microbial diversity of the skin are unhealthy. To prevail over the abundant use of these synthetic skin care products, various scientifically backed, tested & approved natural herbs and phytochemicals can be utilized as a much prudent and safer alternative to achieve healthy and pristine skin. Skin-lightening herbs and phytochemicals pry into the melanogenesis pathway, transfer of melanin or shedding of the dead skin cells which results in decreasing the pigmentation present on the surface of the skin. Herbs like Glycyrrhiza glabra (Liquorice), Silybum marianum, Morus alba, Prunus cerasoides have been proven to be effective for skin-lightening treatments These natural alternatives are gentle and humane towards the skin and have minimum side effects.

**Key words**: Hyperpigmentation, Glycyrrhiza glabra, Panax ginseng, Melanogenesis, Morus alba.











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### TECHNOLOGY TO TREAT WASTEWATER USING BIO-NANOFIBER

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#### **ABSTRACT**

Water is a crucial part of life. Earth is merely a planet wherever life exists. Man will survive while not having food for 30-40 days but cannot live without water even for 3-4 days; we want water for drinking, washing, cooking, agriculture, and industries. Due to increasing population. Manufacturing, Urbanization, Over Exploitation, Improper coming up with, water bodies square measure contaminated by rental Municipal Waste, Sewage, Untreated Waste Water from Industries, Agricultural Runoff, and significant metal pollution, all of those successively end up in loss of variety, quality of water creates environmental stress for groups of people, plants, animals and different organisms. Vrishabhavathi is one such watercourse that is currently becoming the Gutter of Kengeri. To beat this downside, many water treatment strategies like Chemical, Physical, Mechanical, and biological methods were adopted. Oneof the effective, rising technology is engineering science. Here we tend to square measure exploitation Bio-Nanofibers because it is environmentally friendly, have high potency in removing pollutants, have significant metals, are more cost-effective, have the reusable ability, and are considered a higher possibility for treating wastewater. Physico-Chemical Parameters of the Vrishabhayathi river were found to be more than the tolerance limit prescribed by IS:2296,1982 because Industrial pollutants; Domestic waste streamed into the river water. In this study, Plant-basedbio-nanoparticles were found to reduce some of the parameters. Hence it is concluded that bio-nanoparticles are efficient and cost-effective. They can be used as one of the components in water purification along with other treatment methods used in sewage treatment plants.

**Keywords:** Bio-Nanofiber, Urbanization, Water-Exploitation, Water Treatment, Wastewater.











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## ENVIRONMENTAL PHARMACOLOGY: AN APPROACH FOR INNOVATION

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#### **ABSTRACT**

Environmental pharmacology is the knowledge, study and the methods implemented for amalgamating the presence of pharmaceutical products and their metabolites in the environment. Pharmaceutical and house care products and their metabolites gain access to the environment through various means and affect the flora and fauna and modulate the ecosystem. The effect on wildlife, biofilms and human are being studied to gain knowledge of sources and causations. Potential risks of development of acute and chronic toxicity, carcinogenicity, interference with hormone and immune systems and drug resistance are of major concern. They may alter the genome and can affect future generations leaving them vulnerable to disease. There are regulations in good manufacturing practices and disposals which take into account the environmental risks but the knowledge for stakeholders and their implementation is very restricted. Ecopharmacology and ecopharmacovigilance are propagators of green healthcare. A strategy towards human health risk assessment and ecotoxicological hazard evaluation must be developed and risk minimization measures to be sought for and applied.

**Keywords:** Ecopharmacology, Chronic Toxicity, Genome.











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K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### INHIBITING SIRT-2 BY AK-7 MODULATES REDOX STATUS AND INFLAMMATION THROUGH NRF-2 IN EXPERIMENTAL MODEL OF COPD

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#### **ABSTRACT**

Chronic obstructive pulmonary disease (COPD) is characterized by emphysema, gradual reduction in lung function and an irreversible airflow blockage. Sirtuins (SIRT) are evolutionarily conserved NAD+-dependent histone deacetylases involved in regulation of inflammation and oxidative stress. Present work investigates the role of SIRT-2 (inhibition by AK-7) in experimental model of COPD. A mouse model of COPD was established by cigarette smoke (CS) exposure for 2 months. AK-7 (100µg/kg and 200µg/kg body weight) was administered intranasally one hour prior to CS exposure. The study revealed that inhibition of SIRT-2 by AK-7 suppressed free oxide radicals generation (total Reactive Oxygen Species, total oxidant status, myeloperoxidase and nitric oxide) which were exacerbated by CS exposure. SIRT-2 inhibition also modulated antioxidants enzymatic activity (total antioxidant status, superoxide dismutase, Catalase thereby maintaining the redox balance. Damage in lungs due to oxidative stress in COPD mice was marked by lipid peroxidation, TNF- $\alpha$  and IFN- $\gamma$  level and was significantly reversed by SIRT-2 inhibition. Histopathological studies reveal that CS exposure leads to peribronchiolar inflammation and alveolar damage which were reversed and improved by SIRT-2 inhibition. Nrf-2 gene is associated with regulation of oxidative stress, its expression was suppressed in COPD group and was upregulated by SIRT-2 inhibition. SIRT-2 expression elucidates its crucial role in exacerbating COPD as increased expression was found in COPD group and was decreased by AK-7 administration. Present study shows that inhibition of SIRT-2 minimizes COPD severity and mediates protective effects in lungs by reducing oxidative stress and suppressing inflammatory cytokines.

**Keywords**: TNF- $\alpha$ , IFN- $\gamma$ , SIRT-2 inhibition.











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#### **ROLE OF DIFFERENT HERBS ON DIABETES MELLITUS**

Varsha V.1, and S.K. Mandal

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#### **ABSTRACT**

Diabetes Mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels due to insulin resistance or insufficient insulin production. The conventional management of diabetes involves lifestyle modifications, pharmacological interventions, and insulin therapy. However, herbal remedies have also gained attention as potential adjuvant therapies due to their anti-diabetic properties. Several herbs such as Gymnema sylvestre, Cinnamon, Fenugreek, and Bitter melon have demonstrated hypoglycemic effects by increasing insulin secretion and sensitivity, reducing glucose absorption in the intestine, and enhancing glucose uptake in peripheral tissues. Other herbs such as Aloe vera, Garlic, Ginger, and Turmeric possess antioxidant and anti-inflammatory properties that may prevent diabetic complications. Despite the potential benefits of herbal remedies, the lack of standardization, quality control, and reliable clinical evidence limits their widespread use. Therefore, more rigorous clinical trials and standardized manufacturing protocols are required to establish the safety and efficacy of herbal therapies in the management of diabetes mellitus.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### BISPHENOL S EXPOSURE AND UTERINE PHYSIOLOGY: ROLE OF MELATONIN

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#### **ABSTRACT**

Environmental and occupational exposure to bisphenol S (BPS), a commonly used chemical as BPA analog, has been detected in human samples worldwide. BPS is known to induce detrimental effects on human and wild animal health. In the present study, we investigated the negative impact of BPS on uterus and its possible prevention by melatonin. The adult female golden hamster, Mesocricetus auratus were divided into four groups; Group I: Control (vehicle-treated), Group II: Melatonin-treated (3 mg/kg BW/alternative day), Group III: BPS-treated (150 mg/kg BW/day) and Group IV: Melatonin plus BPS-treated (3 mg/kg BW/alternative day & 150 mg/kg BW/day respectively). BPS exposure causes a significant increase in body weight and significant decrease in relative uterine while melatonin administration reversed the effects induced by BPS. Hormonal analyses showed a significant decrease in circulatory estradiol and progesterone level upon BPS exposure. In contrast, melatonin administration to BPS group reverses the effects. The BPS treatment impairs histoarchitecture of uterus as documented by enhanced height of luminal epithelium cells and deformed uterine endometrial glands. BPS led to enhanced oxidative stress while melatonin decreases uterine oxidative load. Melatonin administration improves the uterine histoarchitecture. Therefore, the use of BPS as substitute for BPA may be reassessed, as it has negative effects on female reproductive health. On the other hand, melatonin could be a beneficial agent against BPS induced compromised uterine health.











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### ACTIVATED RICE HUSK: A HIGH-EFFICIENCY AND GREEN ADSORBENT FOR AMINO ACID REMOVAL FROM AQUEOUS SOLUTIONS

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#### **ABSTRACT**

Activated rice husk and corn cob ash are emerging as potential green adsorbents for the removal of various pollutants from aqueous solutions. In this study, the efficacy of these two biomasses as adsorbents for the removal of three amino acids, namely glycine, aspar tic acid, and serine, was investigated. The adsorbents were characterized using various techniques, including Zeta sizer, XRD, TGA, and FESEM to determine their particle size, potential, crystallographic structure, thermal properties, and surface area. The characterization results showed that activated rice husk had a higher surface area and thermal stability compared to corn cob ash. The higher surface area of activated rice husk could be attributed to its porous structure, which enhances its adsorption capacity. The thermal stability of activated rice husk was also found to be higher than that of corn cob ash. The TGA analysis showed that activated rice husk has a higher onset temperature of degradation compared to corn cob ash. The adsorption experiments were performed using a UV spectrophotometer, and the results showed that activated rice husk had a higher adsorption efficiency compared to corn cob ash for all three amino acids. The maximum adsorption capacity was obtained for glycine with activated rice husk, followed by aspartic acid and serine. The Langmuir isotherm model was used to analyse the adsorption data, and the maximum adsorption capacity was found to be 3.31 mg/g for glycine with activated rice husk. The kinetics of adsorption was found to follow the pseudo-second-order model. Overall, the results of this study suggest that activated rice husk is a promising green adsorbent for the removal of amino acids from aqueous solutions.











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### PROTECTIVE EFFECTS OF ETHANOLIC ROOT EXTRACT OF WITHANIA SOMNIFERA IN CYPERMETHRIN INDUCED CHANNA PUNCTATUS

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#### **ABSTRACT**

Cypermethrin (CYP) abroad-spectrumsynthetic pyrethroid frequently used to manage biological vectors and ectoparasites in farmed fish. It is found in the observation the concentration of these pesticides is higher than the permissible limits. There have been numerous reports onadverse effects of CYP on the health of fish and other aquatic organisms. CYP is highly toxic to fish since it has slower metabolization and elimination rate in fish compared to other organisms. Plants have been a vital source of natural compounds and have antioxidant properties. Plant-based remediation would be less expensive, more cost-effective, and environmentally beneficial with no harmful effects. Withaniasomnifera is an important Indian medicinal plant also known as Ashwagandha used to treat numerous health concerns from ancient time due to its active phytoconstituents bearing steroidal and antioxidant properties. The purpose of the current research is to examine any potential ameliorative effects of Withania somnifera root extract on Cypermethrin induced Channa punctatus. Crude ethanolic root extract of Withania somnifera was administered @300mg/kg body weight for 10 days and thereafterhaematological parameters areexamined. The study revealed significant fluctuation in the haematological parameters such as RBC count, WBC count, platelets count, haemoglobin percentage after cypermethrin treatment compared to the control group but after the dietary supplementation of extract, there was significant normalization in their levels. Hencethe present study elucidates the protective efficacy of dietar y supplementation with Withaniasomniferaroot extract against Cypermethrin induced Channa punctatus.

**Keywords:** Withania somnifera. Cypermethrin, Channa punctatus, Antioxidants.











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### SPERMATOGENIC POTENTIAL OF SHUKRAJANANA DRUGS: A ROAD MAP TO MECHANISM OF ACTIONS

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#### **ABSTRACT**

Infertility is a condition of both the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse. In the male reproductive system infertility is most commonly caused by problems in the ejection of semen, absence or low levels of sperm or abnormal shape and movement of the sperm. Ayurvedic herbal drugs has very potential to increase and produce quality of sperm (Shukra). To obtain the good or desirable quality sperm, Ayurveda specifies few of the drugs under the heading of Shukrajanana Mahakashaya. It comprises 10 drugs which helps in generation and helps in maintaining the Shukra dhatu in the body. Jeevaka (Malaxis acuminatum (D. Don) Szlach), Rishabhak (Malaxis muscifera (Lindl.) Kuntze.), Kakoli (Lillum polyphyllum D. Don), Ksheerakakoli (Fritillaria royelei Hook) Mudgaparni (Phaseolus trilobus Alt.), Mashaparni (Teramnus. labialis (Lf) Spreng.), Meda (Polygonum verticillatum Linn), Vruddharuha (Argerio speclose wild.), Jatila (Nardostachys jatamansi (D.Don) DC), Kulinga. (Botanical name) are Shukrajana drugs. Most of these drugs are Snighda,Guru in Guna, Madhura rasa, Madhura Vipaka, and Sheetha Veerya, having similar properties to Shukra. On the basis of literature review, this paper will be compiled and presented to understand the mechanism of action of these drugs in treating male infertility.

**Keywords:** Male infertility, Shukra, Sperm, Shukrajanana Mahakashaya, Jeevaka, Rishabhak.











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### HERBAL ALTERNATIVE OVER ALLOPATHIC MEDICINE FOR CONSTIPATION

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#### **ABSTRACT**

Alternative medicine has revitalized its growing public interest in recent time due to unequivalence of patients and healthcare professionals. There are various side effect of allopathic or modern medicine lack of complete exemption from chronic diseases high cost of new drugs and emerging new diseases. Hence people have become more dependent on other alternative option herb over allopathic herb like triphala, senna, haritaki, aragwadha, kutki, etc. are seems to be more effective and safer over allopathic or modern medicine in case of constipation, constipation is one of the major gastrointestinal disorder in clinical practice in western countries major portion of population suffer from this disorder, which means constipation is a substantial utilization of healthcare. Pathophysiology of constipation is complex and multifactorial, where aspects like disturbance in colonic transit, genetic predisposition, lifestyle, habits, psychological distress, and many other need to be taken into consideration. Diagnosis of accurate examination, a non-pharmacological approach education of the patient about the importance of lifestyle changes like diet and sport activity state are the first line of therapy. Also some herbs like haritaki there phytochemical possess numerous specific clinical health benefits including antibacterial, antiviral, antifungal. Herbal medicine has grown substinatially over time and encircle several millennia of therapeutic system. However due to the lack of well-designed clinical trials, the effectiveness and adverse drug reaction of many herbs over a modern medicine are vet difficult to catch.

**Keyword:** Alternative Medicine, Herbs, Haritaki, Aragwadha.











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#### IMPACT OF CLIMATE CHANGE ON MEDICINAL PLANTS

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#### **ABSTRACT**

Restorative plants are profoundly important to human business and the therapeutic plant riches of India is well recognized as interesting and universally wealthy. Thinks about on conceivable impacts of climate alter on therapeutic plants are especially noteworthy due to their esteem inside conventional frameworks of pharmaceutical and as financially valuable plants. There are confirmations that climate alter is causing recognizable impacts on life cycles and conveyance of the plant species. In any case, it is generally hazy around climate alter impacts on auxiliary chemicals generation in plants. Somewhere else this viewpoint has been given reestablished consideration as of late. A require for inquire about to move forward our understanding of these impacts on restorative plants is focused within the show article. An endeavor is being made here to survey the work so for done on this imperative issue with Indian point of view. Therapeutic plants are a differing bunch of plant species which incorporates annuals, biennials, perennials etc. As a rule all parts of these plants are utilized and they develop in all living spaces as well as in all climatic districts. Almost 50,000-70,000 plant species are utilized in conventional and cutting edge drugs all through the world. Still huge species which are unidentified so for within the wild are the potential sources of drugs. They make an fundamental commitment to our wellbeing care; give jobs to tribal and provincial individuals. They are being utilized as crude fabric in businesses. Bulk of the restorative plants is collected from wild which may be a genuine concern beneath climate alter regime

**Keywords:** Impacts of climate, Conservational, Therapeutic plants, Secondary metabolites.











## Scientific Advancement for Sustainable Environment, Herbal Medicines and Impact on Health: An Earth Day Celebration (SASE) 22-23 April, 2023

K.N. Udupa Auditorium, Institute of Medical Sciences, BHU, Varanasi

### In-Vitro Propagation of Ornamental Plants as Catharanthus roseus and Their Pharmaceutical Value

#### Md Sahid Hussain

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#### **ABSTRACT**

Experimental plant Catharanthus roseus which also commonly known as Madagascar periwinkle, is a tropical and subtropical plant belong to the family Apocynaceae. Catharanthus roseus is medicinally important plant which is being widely used for production of anticancerous drugs by pharmaceutical companies due to the presence of vinblastine and vincristine alkaloids

Due to over exploitation of this plant for pharmaceutical purpose, demand of raw materials of this plant is constantly rising. To meet the growing demand, a large scale multiplication of this plant has become need of present time. Keeping this in view, in present study we used nodal, intermodal portion and shoot tips as explants. Morphogenic effect of various concentrations of cytokinins and auxins added singly or in combination supplemented with MS medium was studied during experimental work.

Somatic embryogenesis was observed on combination of 2, 4-D (1.0mg/l) + Kinetin (1.0mg/l) supplemented with MS medium from internodes explant. By encapsulation of these somatic embryos with gelling agent (Sodium alginate and Calcium chloride), synthetic seeds were formed.

In our study, combination of BAP (0.5 mg/l) + NAA(1.0 mg/l) supplemented with MS medium proved to be optimal for the production of good number of shoots from nodal explant. Different size and different positions (Basal, Middle and Distal) of nodal explants along the stem length of Catharanthus roseus were cultured on MS medium supplemented with BAP (3.0 mg/l).

Best rooting response was obtained on half strength MS medium containing IBA (3.0mg/l). In-vitro grown plantlets were successfully acclimatized and then transferred to field condition. Our efforts are continued to transfer more and healthy In vitro raised plantlets to field condition.











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### ROLE OF DIFFERENT HERBS IN THE MANAGEMENT OF HYPERPIGMENTATION

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#### **ABSTRACT**

The different physiological and morphological outlook of the skin endure persistent changes. Several internal and external elements have direct influence on bringing about various skin problems like inflammation, dermatitis, hyperpigmentation, sunburns, skin aging, melanogenesis etc. Irrespective of the gender the yearning for fair skin complexion is becoming a striking concern in a large number of people in current times. The care for skin to overcome this complication has received immense focus in the past few decades. Over this course of time a variety of synthetic skin care essentials has come into limelight. The use of these personal skin care product on a regular basis to achieve fairer skin has become very common, but the effects of these synthetic products on the molecular and microbial diversity of the skin are unhealthy. To prevail over the abundant use of these synthetic skin care products, various scientifically backed, tested & approved natural herbs and phytochemicals can be utilized as a much prudent and safer alternative to achieve healthy and pristine skin. Skin-lightening herbs and phytochemicals pry into the melanogenesis pathway, transfer of melanin or shedding of the dead skin cells which results in decreasing the pigmentation present on the surface of the skin. Herbs like Glycyrrhiza glabra (Liquorice), Silybum marianum, Morus alba, Prunus cerasoides have been proven to be effective for skin-lightening treatments These natural alternatives are gentle and humane towards the skin and have minimum side effects.

**Keywords:** Hyperpigmentation, Glycyrrhiza glabra, Panax ginseng, Melanogenesis, Morus alba.











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#### β-ENDORPHIN ATTENUATES CHRONIC AIRWAY INFLAMMATION IN TDI INDUCED ALLERGIC ASTHMA BY VIA THE ROS-MAPK/ NF-KB SIGNALING PATHWAY IN MURINE MODEL

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#### **ABSTRACT**

Asthma is an airway condition characterized by chest tightness, bronchiolar constriction, and airway inflammation, together which contributes to breathing difficulties. Endorphin is an endogenous morphine well-known for its role in pain management, but its role as anti-inflammatory in airway illness is still lacking.

**Material methods:** Balb/c mice were intranasally sensitized on day 0, 7 and 14 with 1% TDI and challenged on day 21-54 (every alternate day) with 2.5% TDI.  $\beta$ -Endorphin (5 g/kg body weight) was administered through intranasal route 1 hour before TDI challenge. Intracellular ROS (Reactive oxygen species), Total cell count, Differential cell count and infiltration of inflammatory cells in BALF was observed for inflammation. Role of  $\beta$ -Endorphin as anti-inflammatory property was evaluated in terms of different cytokines level (IL-17A. IL-6, IL-10 and IL-5), histamine level, Ig-E, C-Reactive protein (CRP), Eosinophil peroxidase (EPO) and neutrophil elastase activity. Architectural changes in lungs were analyzed by Haematoxylin and Eosin staining where infiltration of cells recruitment was seen in alveolar spaces and bronchioles thickening is seen. Activation of MAPK (ERK, JNK and p38 MAPK) and NF-<sub>k</sub>B signaling pathway were detected in Endorphin pre-treated group.

**Results:** TDI exposure enhanced the airway inflammatory response significantly. β-Endorphin pre-treatment showing therapeutic role through ROS mediated activation of MAPK (ERK, JNK, p38 MAPK) and downstream NF- B signalling pathways. Oxidative stress appeared to be the key regulator for TDI-induced lung inflammation. These results suggested the molecular mechanism of -Endorphin protects lung inflammation caused by TDI exposure.

**Conclusion:** Our results showed administration of  $\beta$ -endorphin revealing the attenuates airway inflammation.













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