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# NESA NEWSLETTER

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From the Editor's

Dear Readers,

Greetings!!

In June issue of our Newsletter, we recount popular articles from diverse field. I express sincere and huge thank to all the persons who shared articles, without which there wouldn't have been this issue. Please continue sharing such articles and share with your friends also.

I would like to thank President and General Secretary, NESAC, New Delhi, and the Editorial team including Print, Designer and Publication committee for their nonstop support and efforts throughout this edition.

Hope this edition makes an interesting read. Please feel free to offer any suggestions for improvement.

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## World Environment Day “Climate and Environmental Sustainability”

**Date & Time: 03<sup>rd</sup> June 10:30-5:30 pm**

On the occasion of “World Environment Day”, Amity Institute of Environmental Toxicology, Safety and Management" and "Amity Institute of Environmental Sciences" along with "Natural Resources Environmental Sciences" domain, has celebrated “Climate and Environmental Sustainability”, under the aegis of “Global Warming and Climate Change Cluster”, Amity University on June 3, 2022.

*Mother Earth is so generous and effervescent. If only we give her the chance, she will restore everything in absolute abundance and health.*

Nations Environment Programme (UNEP), and held annually since 1973, it has grown to be the largest global platform for environmental outreach. It is celebrated by millions of people across the world.

World Environment Day 2022 is hosted by Sweden. “Only One Earth” is the campaign slogan, with the focus on “Living Sustainably in Harmony with Nature”. The 2022 World Environment Day campaign #OnlyOneEarth calls for collective, transformative action on a global scale to celebrate, protect and restore our planet.

*World Environment Day will keep reminding us of the wrong we did to our environment and the right we need to do to correct it all.*

World Environment Day is celebrated every year to raise global awareness to take positive environmental action to protect nature and the planet Earth.

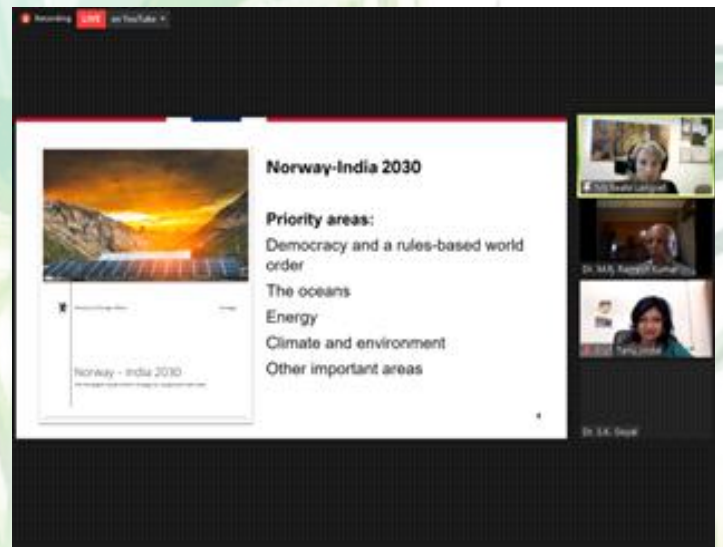
*“What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and one another”.*

The World Environment Day June 05, 2022 theme “Only One Earth” will focus on the need to live sustainably in harmony with nature, and our possibilities for shifting to a greener lifestyle through both policies and individual choices.

*“Only if we understand, we will care. Only if we care, we will help. Only if we help, shall all be saved.”*

Webinar besides learning to students and faculty also provided platform for interaction of various stake holders to bring new





collaborations and intellectual outcomes to achieve our goal of sustainable development to save our Planet.

*“Because we all share this planet earth, we have to learn to live in harmony and peace with each other and with nature. This is not a dream but a necessity.”*

Many eminent dignitaries shared their views; Prof. Tanu Jindal Group Addl. Pro VC (R&D) and Director, AIETSM, ACARS, AIOAS, AIWTM, Amity University, AUUP, spoke on speech related to the theme of the Environment Day, Dr. D.K Bandyopadhyay, Chief Advisor FPO, Chairman, Amity Law School, shared his views on land degradation and management, Dr.





presentation on Climate and Sustainable Development, Dr. Ruplal, Former Professor & Head, Zoology, University of Delhi, focussed on Microbiome Science for Better Human Health, Environment and Society, Dr. Hariharan Chandrashekar, Indian ecological economist, The World of Water (WoW) Action Forum, discussed on The Green Economy and Supply Chain, Prof. Dr. Panuganti CS Dvevara, Director and Head, Amity Centre for Ocean-Atmospheric Science and Technology (ACOAST) & Amity Centre for Environmental Science and Health (ACESH), shared his views on Frontiers in Environmental Health and Climate Change, Ms. Beate Langset, Counsellor for Climate and Environment, Norwegian Embassy in New Delhi, delivered presentation on Climate and the Environment, Dr. M. R. Ramesh Kumar, Ex. Chief Scientist & Head, NIO, shared his thoughts on Climate Change's Impact on the Community, Dr. S. K. Goyal, Sr. Principal Scientist & Head, CSIR, NEERI, enlightened on Biomass to the Boiler- a Positive Step Toward Environmental Sustainability, Dr. Sumit Sharma, Program Officer, United Nations Environment Programme (UNEP), discussed on importance and impact of Climate Change, Biodiversity Loss and Pollution, Prof. M. Krishnan, Vice Chancellor, Central University of Tamil Nadu, gave presentation on Climate Change and Sustainability, Dr. Jayshree Dubey, Assistant Professor, Indian Institute of Forest Management, shared views on Circular Economy and Sustainable Development.

Ajit Kumar Nagpal, Chairman Amity PACIFIC Forum, Chairman Board of Governors, Ritnand Balved Medical Foundation, Chairman & Director General, Amity University Middle East Initiative, enlightened on importance of environmental education, Dr. W. Selvamurthy, President - Amity Science, Technology & Innovation Foundation (ASTIF), DG, ADSI, Chancellor, Amity University Chhattisgarh, discussed on importance of environment day, Dr. Rakesh Kumar, Former Director, CSIR-NEERI, Now at CSIR, Head Quarters, New Delhi, gave very information



हर घर में पेड़ लगे  
और  
हरियाली चारों ओर हो।





## Eco-Friendly Conservation of Natural Resources using Geospatial Technology

Pavan Kumar\* and Manmohan Dobriyal

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Workshop entitled “Eco-Friendly Conservation of Natural Resources using Geospatial Technology” which was started from 18<sup>th</sup> June to 1<sup>st</sup> July 2022. Geospatial assessment supported by the Geographic Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS) caters for compelling techniques of mapping, monitoring, surveying, classification, characterization, and change detection of natural resources. These techniques provide a platform for generating valuable data, creating cartographic products, and performing timely analysis to make sound sustainable development decisions. Remote sensing involves the recording of information distantly without coming in contact with the object using the various electromagnetic spectrum. It employs the use of cameras, lasers, scanners, and specialized sensors that are located on the ground or aerial platforms. The principle geospatial components of a study are derived using various methods such as aerial photographs, satellite imaging, Light Detection and Ranging (LiDAR) data, Unmanned Aerial Systems (UAS)/Drone data, GPS survey, etc., based on the study's objective. The economic, social and cultural viability of any nation is mainly determined by the land and water resources that it has. These natural resources are essential to the economy of a nation since they play a critical role in the provision of employment, they are a source of raw materials for various industries, acts as a source of food and income, medicine as well as energy.

Remote Sensing, a way of understanding and obtaining information of the features on the earth, be it a physical feature or biological feature, without being directly contact or touched with it, is a revolutionary approach. Remote Sensing & GIS in management & conservation of natural resources is being largely used now a day. This technological approach helped to study the past, present and future scenario of existing natural resources in a very small span of time which would have taken years after years if followed in traditional ways. The analysis of historical images



captured by various space platforms mounted with different sensors made possible to predict various phenomenon on earth by studying the type of changes through the decades. GIS based assessment and monitoring of species and its habitat provides a powerful and scientifically approached decision-making support in their conservation efforts. It helps the conservation professionals to identify ecologically fragile and significant areas. The mutilation on environment enhanced by the anthropogenic activities caused many species extinction on earth. Therefore, it is a high time to emphasis on prompt conservation measures with meticulousness, where this technological approach has proved befitting. Moreover, the wildlife and its habitat do not recognize any political boundaries that made by human beings. Furthermore, there are many inaccessible areas, where human reach is hardly possible. In such scenario it is difficult to bring out assessment data that covers large and inaccessible geographical areas with many regulations.

Total 187 Participants from the country had filled the form out of which 25 participants were shortlisted (all Post Graduate and Ph.D students). We also followed each and every protocols of COVID-19 in our campus to make the successfully completion of workshop. The entire event focused on eco-friendly conservation of natural resources of satellite data including application part of forestry, soil, agriculture, climate change etc. After the inaugural session first lecture was started with the basic concepts of natural resource highlighting its importance by Dr. Manmohan Dobriyal. Interns were given theoretical inputs in between the hands on session. They were taught data collection, analysis and applied the data into image processing software. Forest visits in Orcha Wildlife Sanctuary were organized for the participants for practical aspects. The workshop was coordinated and conducted by Dr Pavan Kumar (Workshop Coordinator) and supported by Dr. Manmohan Dobriyal (Course Director), Head Forestry, CoHF, RLBCAU, Jhansi and all forestry faculties who took care of the participants and assured the smooth running of every hospitality given to the participants. We had provided every type of facilities to the participants like essential stationary kits ( including good quality leather Bags, Pen drives, A4 sheets, copies, diaries, pencils, pens, erasers, sharpeners, highlighters, etc.), good & hygienic food, Bisleri water, medical facilities, etc. On the day of closing ceremony of workshop there was distribution of hardcopy





Certificate to the interns & also gave the best trainee award to the best intern among all. There was also a provision of feedback form so that the experience of participants for the workshop could be

known. In the feedback session all the interns expressed their satisfaction of having learnt the application of ergonomics in icon design in a complete different way which involved scientific rigor.





## World Ocean Day “Ocean, Climate Change and Disaster Management”

Date & Time: 08<sup>th</sup> June, 2:00-5:30 pm

On the occasion of “World Ocean Day”, Amity Institute of Oceanography & Atmospheric Sciences and Amity Institute of Environmental, Toxicology, Safety and Management, Amity University has celebrated “Oceans, Climate Change, and Disaster Management”, under the aegis of “Global Warming and Climate Change Cluster”, Amity University on June 8, 2022 along with “Natural Resources Environmental Sciences” domain in association with "National Institute of Disaster Management" (NIDM). Owing to the role of the oceans in our everyday life and inspiring actions to protect and sustainable use of marine resources. The theme of this year's World Ocean Day is “Revitalization: Collective Action for the Ocean”.

Oceans drive global systems that make the Earth habitable for all forms of life. Ocean pollution and climate change are both components of planetary health. The world has witnessed tsunamis, severe droughts, floods, seasonal cyclones and many more water related calamities. The loss of lives, damage to natural environment, poverty, famine, societal imbalance, and other resultant tragedies cannot be discounted. Some of the main natural disasters associated to oceans includes Cyclones and Tsunamis and coastal threats like storms, swelling tides, currents constantly affect coastal processes, where erosion, landslides and flooding can be easily triggered.

India has witnessed some of the recent disasters that have lead to severe impacts. Management of ocean related natural disaster risks is a challenging task and particularly urgent in small-island nations and developing countries with high population densities, which are most affected due to the lack of resources and assets to handle the calamity. Sustainable management for tackling natural ocean disasters is therefore an area of collective interest.

Hence, there was an urgent need to address the knowledge gap by establishing monitoring schemes in the disaster-prone areas. Webinar was important in providing an understanding of future trends in natural ocean disaster, sustainable risk reduction and management. Furthermore, this program aimed at identifying data gaps, developing comprehensive databases, improving ocean disaster management with the help of experts.

Webinar besides learning to students and faculty also provided platform for interaction of various stake holders to bring new collaborations and intellectual outcomes to achieve our goal of sustainable development

Many eminent dignitaries shared their views; **Prof. Tanu Jindal, Group Addl. Pro VC (R&D) and Director, AIETSM, ACARS, AIOAS, AIWTM, Amity University, AUUP** discussed about the theme, ocean disasters and cyclones at national and international level, **Dr. Ajit Kumar Nagpal, Chairman Amity PACIFIC Forum, Chairman Board of Governors, Ritnand Balved Medical Foundation, Chairman & Director General, Amity University Middle East Initiative** - gave his views on partnership with corporate and social sectors of the industry for education, research and innovation through the medium of the national federation of commerce and industry, **Dr. W. Selvamurthy, President - Amity Science, Technology & Innovation Foundation (ASTIF)** - gave his views on how we are a part of the environment and appreciated the efforts of Amity University in caring for the environment, **Dr. Anil Kumar Gupta, Head, ECDRM, NIDM** shared views on Disaster can affect the economy and infrastructure, **Dr. Satheesh C. Shenoj, Former Director, Indian National Centre for Ocean Information Services (INCOIS)** gave presentation on Oceans, Climate Change and its impacts on Society, **Dr. Anoop Mahajan, Scientist F, Indian Institute of Tropical Meteorology (IITM)** delivered informative thought on Science in the high seas: Ship Based Observations In the remote Oceans, **Dr. P.V. Baskar, Scientist E, National Centre for Polar and Ocean Research (NCPOR)** gave views on Global

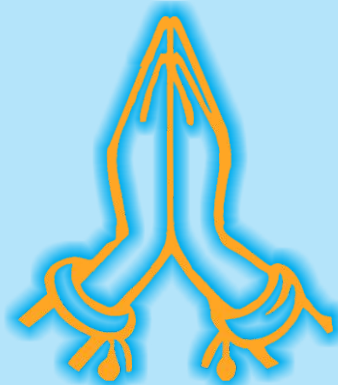






warming and marine biology: changes and future perspectives, **Dr. Samir R. Damare, Principal Scientist, National Institute of Oceanography (NIO)** shared presentation on Application of Bioinformatics in climate change studies, **Dr. G.A Ramadass,**

**Director, National Institute of Ocean Technology (NIOT)** delivered informative session on Ocean: the last frontier World Ocean Day.



**Appeal**

**NESA MEMBERS ARE REQUESTED TO PLEASE SEND ARTICLE FOR THE PUBLICATION IN NESA E-NEWSLETTER AND FOR THE JOURNALS.**



## IMPORTANT DAYS, EVENTS AND FESTIVALS IN THE MONTH OF JUNE 2022

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### 1 June – World Milk Day

Every year on June 1st, the world commemorates World Milk Day to honour the dairy industry's significant contributions to sustainability, economic development, livelihoods, and nutrition.



### 1 June - Global Day of Parents

Every year on June 1st, the World Day of Parents is commemorated. The United Nations General Assembly declared this day in 2012, honouring parents for their unwavering support, sacrifice, and commitment to their children.

### 3 June - World Bicycle Day



The United Nations General Assembly established June 3rd as International World Bicycle Day to honour the bicycle's distinctiveness, longevity, and versatility as a low-cost, ecologically benign, and long-lasting mode of transportation.

### 4 June–International Day of Innocent Children Victims of Aggression

Every year on June 4th, the United Nations (UN) observes the International Day of Innocent Children Victims of Aggression to raise awareness of the children who have been victims of physical, mental, and emotional abuse around the world. On this day, the United Nations reaffirms its commitment to preserve children's rights.

### 5 June-World Environment Day

Every year on June 5th, more than a hundred countries commemorate World Environment Day. The environment is a serious issue that not only impacts people's well-being but also impedes economic development around the world. "Ecosystem Restoration" is the subject of World Environment Day 2021.



### 7 June – World Food Safety Day

On June 7, World Food Safety Day is commemorated to raise awareness about the dangers of polluted food and water to human health. This day also focuses on how to lower the danger of food



poisoning. Food safety is essential for reaching the Sustainable Development Goals.

### 8 June- World Brain Tumour Day

Every year on June 8th, it is commemorated to draw international attention to the plight of people suffering from terrible diseases and the urgent need for greater research. Several activities are being held all around the world to raise awareness about brain tumours.

### 8 June – World Oceans Day

Every year on June 8, World Oceans Day is commemorated to encourage people of all ages to take charge of their own destiny and stop damaging the oceans and other bodies of water. This day was dedicated to raising awareness about the importance of eliminating single-use plastics and taking the steps necessary to effect genuine change.



### 12 June - World Day against Child Labour

The International Labour Organization (ILO) has declared this day to draw attention to the worldwide abolition of child labour, as well as the efforts and actions required to do so. The Sustainable Development Goals (SDGs), which contain a commitment to stop child labour, were endorsed by world leaders in 2015.

### 14 June-World Blood Donor Day

Every year on June 14th, World Blood Donor Day is commemorated to promote awareness about the importance of blood donations around the world and to thank blood donors for their contributions. "Donating blood is an act of solidarity," says this year's slogan. "Join the fight to



save lives."

### 15 June-World Wind Day



creation and growth.

Every year on June 15th, the world celebrates World Wind Day to promote clean energy. It's a day to learn about wind energy, its power, and the potential it offers to alter our energy systems, reduce carbon emissions, and boost job

### 15 June-World Elder Abuse Awareness Day

Every year on June 15th, this day is commemorated to raise awareness about the importance of caring for the elderly. Elder abuse is a worldwide social problem that impacts the health and human rights of millions of senior citizens. The United Nations General Assembly declared the day a global holiday.





**17 June-World Day to Combat Desertification and Drought**



observed to spread awareness about combat desertification and the effects of climate change. It was proclaimed by the United Nations General Assembly in 1994. The day is observed on World Day to Combat Desertification and

**18 June-Autistic Pride Day**

Every year on June 18th, it is commemorated to honour the diversity and limitless possibilities. This is a day for patients with autism and their family or careers to get together. A day dedicated to promoting awareness, acceptance, and self-determination.



**18 June-International Picnic Day**

Every year on June 18, International Picnic Day is observed. This is a day to spend with your loved ones in nature.

**19 June-World Sickle Cell Awareness Day**

Since 2008, World Sickle Cell Awareness Day has been observed every year to raise awareness about Sickle Cell Disease (SCD) and the challenges that sufferers and their families face. The United Nations General Assembly declared this day to be World SCD Day, recognising SCD as a public health concern.

**19 June - World Sauntering Day**



This day is commemorated every year to remind people to slow down and appreciate life as much as possible rather than always running. This day also serves as a reminder to slow down, smell the roses, appreciate the beauty of

nature, look up at the sky, and enjoy life.

**20 June - World Refugee Day (International)**

Every year on June 20th, this day is commemorated to raise awareness about the hardships that refugees endure around the world. World Refugee Day is also an important opportunity for the public to demonstrate their support for families who have been forced to escape their homes.



**3rd Sunday of June - 'World Fathers Day**



Every year on June 20th, this day is commemorated to raise awareness about the hardships that refugees endure around the world. World Refugee Day is also an important opportunity for

the public to demonstrate their support for families who have been forced to escape their homes.

**21 June - World Hydrography Day**

Every year on June 21st, World Hydrography Day is held to raise public awareness about hydrography science. This day is commemorated every year by the International Hydrographic Organization (IHO) and its international members.

**21 June – International Yoga Day**

International Yoga Day is observed on June 21st all over the world to create awareness about the importance of yoga in daily life and to inform people about its advantages. The Ministry of AYUSH in India commemorates International Yoga Day.

**21 June - Summer Solstice**

On June 21, the Summer Solstice is observed. It is India's longest day, with the longest amount of daylight.

**23 June - International Olympic Day**

Every year on June 23rd, the International Olympic Day is commemorated to raise awareness of the value of games in everyday life. Olympic Day is about much more than sports. It is time for the entire world to become involved.

**23 June - United Nations Public Service Day**

The United Nations General Assembly has declared June 23rd as Public Service Day. It emphasises the role of public service in development, honours public employees' efforts, and encourages young people to pursue employment in the public sector.

**26 June - International Day against Drug Abuse and Illicit Trafficking**

Every year on June 26th, this day is commemorated to raise public awareness about the dangers of drugs and to establish a society free of drug misuse. The United Nations General Assembly formed it in order to strengthen global action and cooperation.

**26 June - International Day in Support of Victims of Torture**

On 12 December 1997, the United Nations General Assembly declared June 26 as International Day in Support of Torture Victims in order to end torture and ensure the effective implementation of the Convention against Torture and other cruel, inhuman, or degrading treatment or punishment.

**29 June: National Statistics Day**

On June 29th, the day is commemorated to promote the use of statistics in everyday life. Prof. P C Mahalanobis' birthday is celebrated on this day.

**29 June: International Day of the Tropics**

Every year on June 29th, it is commemorated to raise awareness about conservation measures and to promote the world's tropical regions.

**30 June - World Asteroid Day**

On June 30th, Asteroid Day is observed to promote online education on asteroids. A resolution was voted by the United Nations declaring June 30th as Asteroid Day.





## A Promising Botanical Herb from Bastar: *Curcuma caesia* (Roxb.)

Dhananjay Pandey<sup>1,2</sup> and A.K. Gupta<sup>1</sup>

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**Introduction:** *Curcuma* is a large genus belonging to the family Zingiberaceae, which comprises over 70 species of rhizomatous herbs. *Curcuma* species possess high economic importance due to its putative medicinal properties. *Curcuma caesia* (Roxb.) popularly known as Kali haldi is an important relatively unexplored medicinal plant valued all over the Asia. The plants belonging to this family are rich source as phytochemicals for therapeutic interest. In ethno medicinal practices, the traditional healers use this genus for the treatment of various dreadful ailments.

**Description:** Black turmeric is an uncommon endemic and perennial herb with bluish-black rhizome native to North-East and Central India (Fig. 1). It is a natural triploid plant with reduced growth rate. The rhizomes of the plant are aromatic in nature. The inner part of the rhizome emits a characteristic sweet smell and is bluish-black in colour, due to presence of essential oil.

**Distribution:** The plant originates from India and South-East Asia. It comprises of about 70 species of rhizomatous herbs mostly distributed in South East Asia as wild and cultivated plants. It flourishes well in moist deciduous forest areas with rich humid and clayey soils. In India it is found in Chhattisgarh, Madhya Pradesh, Odisha, Uttar Pradesh and West Bengal. It is also sparsely found in Papi Hills of East Godavari, West Godavari, and Khammam district of Andhra Pradesh.

**Therapeutic Potential:** The plant has tremendous medicinal properties. The main activities of plant extracts have been documented to be antimicrobial, anti-inflammatory, anticancer and antiviral. It possesses antioxidant, anti-tumour, antiasthmatic, anti-inflammatory, hepatoprotective, blood purifier, stomachic and carminative properties. Rhizomes of the plant are used for the cure of sprains and bruises, in the treatment of smooth muscle relaxant activity and are also employed in the preparation of cosmetics. The rhizome possesses high economic value due to its high putative medicinal properties. Externally, it has been used for reducing inflammation and swelling due to bruises, sprains, cuts and wounds. *Curcuma* species have a great ethno medical importance and *Curcuma caesia* (Roxb.) has been used by various tribal communities in treating asthma, leucoderma, tumours, piles, bronchitis.

**Site of sample collection:**



Fig.1: Rhizome sample of *Curcuma caesia* (Roxb.)

Bastar district (19.1071°N, 81.9535°E) is located in southern part of Chhattisgarh. It is surrounded by Bijapur, Dantewada, Kondagaon, Narayanpur and Sukma districts of the state. Bastar district is divided into seven Tehsils viz., Jagdalpur, Bastar, Bakawand, Bastanar, Darbha, Lohandiguda and Tokapal. Bastar, the land of tribals and natural resources, is surrounded with dense forests, hilly mountains, natural caves, waterfalls and streams. The fresh rhizome sample was collected from the nursery and field area within the campus of Shaheed Gundadur College of Agriculture and Research Station, Kumhrawand, Bastar, Jagdalpur after their authentication and identification at department of Agronomy and Horticulture, SGCARS, Bastar, Jagdalpur, Chhattisgarh, India (Fig. 2).

**Drying and grinding of the sample:**



Fig. 2: Map of Bastar district showing sample collection area

The collected plant materials were shade dried at room temperature till it attains a constant weight. After drying the plant extracts were mechanically grinded by grinding machine, made for the laboratory. Exposure to direct sunlight was avoided to prevent the loss of active components. The air dried parts were packed in plastic bags and stored at room temperature till further use (Fig. 3).

**Extraction Procedure:**



Fig. 3: Dried and powdered rhizome sample of *Curcuma caesia* (Roxb.)

The extraction of phytochemicals was performed by soxhlet apparatus (Fig. 4). The preference of extraction mainly depends upon the target lead or bioactive compounds to be extracted. The plant material after shade drying was powdered using a laboratory blender (Remi). The powdered plant sample was packed in a thimble made from thick filter paper, which is placed inside the extraction unit. The soxhlet extractor was placed onto a round bottom flask containing the extraction solvent. The soxhlet was then equipped with a condenser. The solvent is heated to reflux. The solvent vapour travels up a distillation arm and floods into the



chamber housing the thimble. The condenser ensures that solvent vapour cools, and drips back down into the chamber housing the powdered plant material. The thimble was extracted sequentially one after the other in four different solvents viz., chloroform (non-polar), acetone (dipolar) and methanol (polar) and aqueous (polar). The powdered material and the solvent (1:10) was taken and extracted according to their increasing polarity index in the soxhlet apparatus (Tempo). The crude extract obtained was concentrated in an incubator at 40°C until the solvent evaporated completely and later stored at 4°C until use.

#### Fourier Transmission Infa-red (IR) Spectroscopy:



Fig. 4: Soxhlet apparatus for extraction.

FT-IR spectra was recorded for the rhizome solvent extracts of *Curcuma caesia* (Roxb.) with a FT-IR spectrophotometer (Thermo Electron Corporation, Nicolet version-100) at 500-4000  $\text{cm}^{-1}$  wave number range using potassium bromide pellet technique (Fig. 5). The spectrum was plotted as wave number along X-axis versus percentage transmission along Y-axis.

#### Conclusion



Fig. 5: Fourier Transmission Infa-red (IR) Spectroscopy

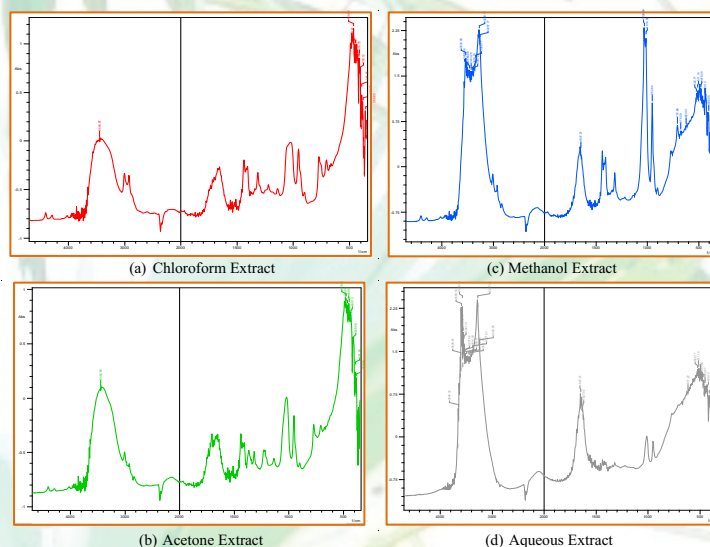


Fig. 6: FT-IR Spectroscopy analysis of *Curcuma caesia* (Roxb.) rhizome solvent extracts

The present investigation is an attempt to study the ethno-medicinal importance and to extract the bioactive compound present in the rhizome of *Curcuma caesia* (Roxb.) conferring immense therapeutic potentiality. The fresh rhizome sample was collected from the sample collection site of SGCARS, Bastar, Jagdalpur, Chhattisgarh, India. The rhizome sample was washed, dried and grinded in the research laboratory and subsequently extracted using four different solvents viz., chloroform, acetone, methanol and aqueous by the soxhlet apparatus and the extracts so obtained were subjected to FT-IR analysis. The result of all the four solvent extracts of *Curcuma caesia* (Roxb.) rhizome revealed that the characteristic peaks showed (O-H stretch, H-bonded), (C-C stretch in ring), (C-C stretch in ring), (C=O stretch), (C-O stretch) and (=C-H bend). The FT-IR spectral analysis of characteristic peaks, frequency, bonding groups and functional groups also revealed that the methanol and aqueous rhizome extracts contains more bioactive compounds as that of acetone and chloroform rhizome extracts (Fig. 6). The above observations clearly revealed that the bioactive compound present in the rhizome extract of *Curcuma caesia* (Roxb.) is polar in nature. Further, investigation of the rhizome extract with sophisticated analytical instruments such as HPLC, UV-Visible spectroscopy, NMR ( $^1\text{H}$  &  $^{13}\text{C}$ ) and ESI-MS data revealed that the polar bioactive compound predominated in the methanol rhizome extract of *Curcuma caesia* (Roxb.) was elucidated to be structurally similar to curcumin which is the lead bioactive compound in the rhizome of *Curcuma caesia* (Roxb.) conferring tremendous therapeutic bio-efficacy. Thus, the above study clearly illustrates the wide clinical applications and significance of *Curcuma caesia* (Roxb.) rhizome to be regarded as a wonder herb for the discovery of vital bioactive compound for better human health in years ahead.

All the readers are requested to share articles related to global, nature, environment, renewable and non-renewable resources, biodiversity and other inter-related topics to publish in the NESAs newsletter. The suggestions for the betterment of the society can be shared with others. Our academy is very old and has more than 2500 life members. We hope that members will contribute more articles and send their suggestions/comments in future.

Editor, NESAs Newsletter



## WORLD YOGA DAY: A CELEBRATION FOR BETTER HEALTH, BODY AND MIND IN UNION WITH NATURE

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Yoga, in the real sense of the term signifies an union or addition to our existing lives; is an ancient health and mental well being practise that has been associated with Indian civilization, society and culture for several thousand years. It is believed to be designed and developed through extensive experimentation by ancient sages and monks in better unification of nature and humanity both internally and externally through dedicated practices. Ancient scriptures, scrolls, brick tablets, handwritten palm leaf manuscripts, various pictures with artistic depiction and architecture of ancient India suggest towards the origin of Yoga from the Vedic Period. However, many scholars seven relates the origin of yoga during the period of the famous Indus Civilization.

Around the globe today yoga is practiced in various forms and continues to grow in popularity in both hemispheres. It is equally popular in developed, developing and under developed nations as an affordable, accessible and easily applicable method of maintaining fitness. But unlike any other traditional and modern fitness programs; yoga secures both positive physical and mental health. Recognizing its universal appeal and accelerated popularity across the planet, the U it's Nations on 11th December 2014, proclaimed June 21 as the International Day of Yoga.

Yoga being a cheap, alternative, traditional system of stretching the body in and around the vertebral column through numerous postures (asanas) and breathing practices (pranayam). This nature based holistic method of staying physically fit and mentally alert is a popular physical exercise across the planet, not just India. Yoga helps in building better immunity, circulation, digestion and properly shaped physique through continuous life long practices. It also helps in focusing the mind, building concentration, helps in adding peace, happiness and quality to human life irrespective of any religious affiliations. With severe pollution of our environment, yoga is an environment friendly, sustainable practise to sustain our life in this over crowded planet.



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**EACH ONE PLANT ONE  
STAY SAFE WEAR MASK**



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