

»» NEWSLETTER ««

# Society for Ethnopharmacology, India

“Globalizing local knowledge and localizing global technologies”



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[sfeindiase@gmail.com](mailto:sfeindiase@gmail.com)

[www.ethnopharmacology.in](http://www.ethnopharmacology.in)

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### Message from the Founder:

Dear Friends,  
Greetings from SFE India  
Wish you and your family a Happy and Prosperous New Year!

It was very nice to meet many of you in the 10th Convention of Society for Ethnopharmacology at CSIR-NEIST, Jorhat, India during November 28-30, 2023. We witnessed a mega convention with the leadership of Dr. G. Narahari Sastry, Director, CSIR-NEIST and Dr. Jatin Kalita, Senior Scientist, CSIR-NEIST & Coordinator, Jorhat Local Chapter, SFE, India. We would like to congratulate team CSIR-NEIST for organizing such a mega event. This pressed us to consider this convention also as an international event in future. I am delighted to inform you that the 11th International Congress of Society for Ethnopharmacology (SFEC 2024), will be organized at CSIR-IIIM, Jammu, India during February 16-18, 2024. I would like to request all the members of SFE to join this mega event and also submit your abstract. Young members can participate for the "SFE-Young Ethnopharmacologist competition and there will be a unique business meet with the leaders in this field at Jammu.

I would like to request all the members to explore the opportunities and exchange their thoughts and scientific accomplishments during the congress, which will definitely enrich our vision on "Globalizing local knowledge and localizing global technologies"

Hope to meet you in Jammu, India.

**Prof. Pulok Kumar Mukherjee**  
Founder, SFE India

### Message from the Editor:

Nutraceuticals, Food supplements, Micronutrients are flooding the market with tall claims. The gullible public is using with or without prescriptions. Physicians are prescribing those products to their patients. In most of the cases without evidence of its safety, quality, and not considering drug- food interactions, drug – drug interactions. Possibility of Drug-food interaction and Drug- Drug interaction is many folds more in case of herbal food products. More research must be carried out to develop evidence of safety of such products. Though the Food Safety & Standard Act and Rules 2011 have prescribed measures for ensuring quality, it is yet to be implemented seriously and uniformly. There is overlapping between drugs and food products creating more confusion in case of applying Drugs and Cosmetics Act and Food Safety and Standard Act. Using these loopholes, a drug is being marketed as food to circumvent the Drugs & Cosmetic Act and price Control. There is an urgent need to resolve these issues to protect the health of the people.

Wishing you all a Merry Christmas and happy New Year!

**Dr. Subhash C Mandal, Editor**

## Join the Upcoming Event

11th International Congress of Society for Ethnopharmacology (SFEC 2024) and International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP) will be organized jointly by the CSIR-Indian Institute of Integrative Medicine (IIIM), Jammu and Society for Ethnopharmacology (SFE) during February 16-18, 2024 at CSIR-IIIM, Jammu. The main theme of this congress is “Ethnopharmacology for Development of Phytopharmaceutical Drugs”. The congress will be focused on several crucial and contemporary issues on the scientific study on traditional medicine based on the medicinal plants and Ethnopharmacology and their role in development of Phytopharmaceuticals. This congress will comprise of a wide range of important scientific sessions including Keynote presentations, plenary talks, special sessions like-Industry meet and oral/poster sessions by the renowned International and National scientists and subject experts. This congress will provide an opportunity for knowledge sharing among researchers, healthcare practitioners, and decision makers interested in the promotion and development of Ethnopharmacology and medicinal plant research. With your research experience and contribution in the field of NPs drug discovery research; we are sure that your presence in this congress will have a positive impact on us.

**SFE INDIA** **CSIR-IIIM** **ISE** **G20 INDIA**

**FIRST CIRCULAR**  
**International Conference on Traditional Medicine & Phytopharmaceuticals (ICTMP)**  
**&**  
**11<sup>th</sup> International Congress of Society for Ethnopharmacology (SFEC 2024)**

**ICTMP-SFEC 2024**  
**JAMMU | February 16<sup>th</sup>- 18<sup>th</sup>, 2024**

**THEME**  
**Ethnopharmacology in Development of Phytopharmaceutical Drugs**

**JOINTLY ORGANISED BY**  
**CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM)**  
**Canal Road, Jammu-180001 (J&K), India**  
**&**  
**Society for Ethnopharmacology (SFE),**  
**Kolkata 700032, India**  
**(SFE-Jammu Chapter)**

FOR MORE INFORMATION & UPDATES:

Register Here | [www.ictmpsfec2024.iiim.res.in](http://www.ictmpsfec2024.iiim.res.in) | [csir-iiim](https://www.linkedin.com/company/csir-iiim) | [www.iiim.res.in](http://www.iiim.res.in) | [csir1iim](https://twitter.com/csir1iim)

## Reports on 10<sup>th</sup> Convention, SFE, India, 2023

The 10th Convention of Society for Ethnopharmacology and National Seminar on “Ethnopharmacology for Bio-economy: The New Paradigm” was held during November 28-30, 2023 at CSIR - North East Institute of Science & Technology (NEIST), Jorhat, Assam, India. The convention was jointly organized by Society for Ethnopharmacology and CSIR-North East Institute of Science & Technology (NEIST), Jorhat, Assam, India.

The convention was inaugurated by Dr. Madhu Dikshit, Former Director, CSIR Central Drug Research Institute, Lucknow, India and Prof. Rabinarayan Acharya, Director General, CCRAS, Ministry of AYUSH, Govt. of India, New Delhi in the presence of Prof. Pulok K Mukherjee Founder, Society for Ethnopharmacology, India & Director, IBSD, Imphal, Manipur, Dr. P.K. Mishra, Vice chancellor, Assam Kaziranga University, Dr. C K Katiyar, Vice President, Society for Ethnopharmacology, India, Kolkata & CEO (Technical), Emami Ltd, Kolkata, Mr. Indraneel Das, Vice-President, Society for Ethnopharmacology, India. Dr. Jatin Kalita, Organizing Secretary of the convention delivered the welcome address and Prof. Pulok K Mukherjee briefed about SFE and its activities followed by the brief about the convention by Dr. Narahari Sastry, Director, CSIR-NEIST, Jorhat, India & Chief Patron, 10<sup>th</sup> Convention & EBNP-2023. The Abstract Book of the convention was released by Dr. Madhu Dikshit and other dignitaries present on the dais.

After the inauguration session Dr. Madhu Dikshit delivered the keynote lecture on ‘Unlocking the Potential of Ashwagandha in Healthcare: Ethnopharmacology Insights and Opportunities’. Followed by the lecture of Dr. Dikshit, Prof. Pulok K Mukherjee, Dr Viswajanani J Sattigeri, Head, CSIR-TKDL and Dr Charu Lata, Principal Scientist, CSIR-NIScPR delivered lectures on ‘Ethnopharmacology and Bioeconomy: A blend for therapeutically important bioresources perspectives’, ‘Balancing Protection of Traditional Knowledge – Critical Aspects of People’s Rights and Intellectual Property Rights’ and ‘Documentation, Validation and Communication of Traditional Knowledge’ respectively during the Technical session 1. This session was chaired by Dr. Arun Bandopadhyay, Former Director, CSIR-IICB, Kolkata & Director, Gujrat Biotechnology University, Gandhinagar, Gujrat and Dr. Ratul Saikia, Sr. Principal Scientist, CSIR-NIEST, Jorhat, Assam.

In technical session 2, Dr. Arun Bandopadhyay highlights on ‘Investigating the Potential of *Sonneretia apetala* Fruit Extracts in Mitigating Neutrophil-Driven Lung Emphysema’ followed by Dr Raman Mohan Singh, Director, Pharmacopoeia Commission for Indian Medicine & Homoeopathy (PCIM&H) Ghaziabad, UP, India gave a lecture on ‘Role of Pharmacopoeia Commission for Indian Medicine and Homoeopathy (PCIM&H) for Maintaining Quality of Traditional Medicines in the Country’, Prof. Bibhuti Bhusan Kakoti, HOD of Dept. of Biotechnology and Bioinformatics, Dibrugarh University, Dibrugarh delivered the speech on ‘Exploring Ethnopharmacology for Sustainable Development and Commercialization: Objectives and Potentials’, Dr Sanjay Kumar, Chairman, ASRB, New Delhi & Former Director, CSIR-IHBT, Palampur deliberate his speech on the topic of ‘Ethnopharmacology of High-Altitude Medicinal Plants’. Dr Bishnu Prasad Sarma, Former Principal, Govt. Ayurvedic College, Guwahati, Prof. Pallab Kanti Halder, Director, SNPS, Jadavpur University, Kolkata and Dr Neeta Mahasekar, Director, North Eastern Institute of

Ayurveda and Homeopathy, Shillong spoke on the topic of ‘Rasayan Therapy in Ayurveda’, ‘Diabetes: A global threat may be ameliorate through Traditional Medicine’ and ‘An Ayurveda Perspective about Ethnopharmacology for Bio-economy: The New Paradigm’ respectively. Dr. Subhash C. Mandal, Executive Member of SFE and Dr. Ravindra K Rawal, Scientist, CSIR-NEIST, Jorhat, chaired this session.

Technical Session 3 was conducted at the MS Iyengar Hall and the session was chaired by Mr. Amitava Das, Executive committee member, SFE, India and Dr. Archana M Das, Sr. Principal Scientist, CSIR-NIEST, Jorhat, Assam. In this session Prof. Nirala Ramchiary, JNU, New Delhi spoke on the topic of ‘Bioeconomy, Biopharmacology, and Biosynthesis of Capsaicinoids in Bhut Jolokia’. Dr. Atul Gupta, Senior Scientist, CSIR-CIMAP, Lucknow talked about ‘Structural modifications of natural chromeneprecocene-I isolated from *Ageratum conyzoides* (L.) L. for value addition’. Prof. Rajya Lakshmi Koduru, Vignan Pharmacy College spoke on the topic of ‘Molecular docking analysis of natural flavones on SARS Cov2’. Dr. Heera Ram, Associate Professor, Jai Narain Vyas University, Jodhpur deliberated his speech about ‘Ameliorative efficacy of nafronyl in diabetic retinopathy through interactions with targets enzymes: *in-silico* and *in-vivo* studies’. Dr Pankaj Bharali, Scientist, CSIR-NEIST spoke on the topic of ‘North East India: A Bioprospecting Frontier at the Crossroads of Traditional Knowledge and Modern Medicine’. Dr Y. Rajasekhar, Scientist D, IBSD, Imphal gave a lecture on ‘Indo-Burma Biodiversity Hotspots: A Treasure Trove for Biofumigants but Safe to Mammals’. Dr. Snigdha Hazarika, Lakhimpur College of Veterinary Science, AAU, Joyhing, North-Lakhimpur gave a talk on ‘Pharmacodynamic role of hydro-ethanolic seed extract of *Zanthoxylum armatum* DC to ameliorate *Parammhistomum cervi* of ruminant’ and Ms. Ajum Bagang, Assistant Professor, Dera Natung Government College, Itanagar gave a speech on ‘Medicinal Plants Cultivation and Usage in Home gardens of East Kameng District, Arunachal Pradesh, India’. In the evening cultural program by local artists was organized.

On the second day, four Technical Session was held at the JNB Hall and the MS Iyengar Hall parallelly. The technical session 4 was started with the lecture on ‘Ethnopharmacology: Bridging traditional knowledge and bioeconomy sustainability’ by Dr. Sudesh Kumar Yadav, Director, CSIR-IHBT, Palampur. Followed by the talk of Dr. Debasis Dash, Director, ILS, Bhubaneswar on ‘Decoding Brain Variant Peptides: A Proteogenomic Quest with Quality Control’ and Prof. Ashis K. Mukherjee, Director, Institute of Advanced Study in Science and Technology (IASST) Guwahati, India on ‘Ethnic food as functional food for the global market’- an approach for bio economy of NE India’.

The other eminent speakers present in this session and delivered lectures on various topic related to the theme of the convention was Dr. Sanjeeb K Sahoo, Scientist F, ILS, Bhubaneswar, Dr. Prasenjit Manna, Principal Scientist, CSIR-NEIST, Jorhat, Prof. Sayeed Ahmad, Department of Pharmacognosy and Phytochemistry, Hamdard University, New Delhi, India, Dr. Pramod J Hurkadale, Professor, KLE College of Pharmacy, JNMC, Campus, Belagavi, Dr. Prason Gupta, Principal Scientist, CSIR-IIIM, Jammu, Dr. Robindra Teron, Director, North Eastern Institute of Ayurveda and Folk Medicine, Pasighat, Dr. Pronobesh Chattopadhyaya, Scientist F, DRL, Tezpur, Dr. Prakash R Itankar, Dept. of Pharmaceutical Sciences, RTM Nagpur University, Nagpur, Dr. Rajesh Singh Pawar, Professor and Principal, Truba Institute of Pharmacy, TRUBA Campus, Bhopal, Dr. Shailja Singh, Professor,

Department of Molecular Medicine, Jawaharlal Nehru University, Delhi, Dr. Paras Sharma, Associate Professor & Head, Food Technology, Mizoram University, Aizwal, Dr. Lokesh Deb, Scientist, IBSD, Imphal, Dr. Mohan Lal, Principal Scientist, CSIR-NEIST, Jorhat, Dr. Sweety Nath Barbhuiya, Assistant Professor, Patharkandi College, Patharkandi, Dr. Saikat Haldar, Senior Scientist, CSIR-NEIST, Jorhat, Dr. Indira Sarangthem, Scientist E, IBSD, Imphal, Dr. Liza Handique, Assistant Professor, JB College, Jorhat, Dr. Pardeep Bharadwaj, Scientist E, IBSD, Imphal, Dr. Evanylla Kharlyngdoh, Scientist, IBSD, Meghalaya, Dr. Anjana Singha Naorem, Associate professor, Department of Zoology, Cotton University, Guwahati, Dr. P. S. Srikanth, Scientist, Rain Forest Research Institute, Jorhat. Dr. Debasis Dash, Director, ILS, Bhubaneswar, Prof. Alok Pal Jain, Head and Professor, Sir Atma Ram Institute of Pharmacy and Technology, Jabalpur, Dr. S. B. Wann, Sr. Principal Scientist, CSIR-NEIST, Jorhat, Dr. Amit Kar, Project scientist, IBSD, Imphal and other dignitaries chaired the technical sessions on day 2. There was another session entitled “Young Ethnopharmacologist Competition” where 15 delegates presented their research work by oral presentation.

On the last day of the convention technical Session 8 was conducted at the Dr. JNB Auditorium. Prof. K. Mruthunjaya, Coordinator, SFE Mysuru local chapter & Department of Pharmacognosy, JSS College of Pharmacy, Mysuru, India spoke on the topic of ‘Leaves of *Syzigiumcumini* as a potential therapy for Thrombocytopenia’. Prof. Rajesh Jesudasan, Dean, School of Pharmacy, Assam Kaziranga University, Jorhat gave his speech on ‘Alarming rise of anaemia among women and children in North East India’, Dr. Nanaocha Sharma, Scientist E, IBSD, Imphal gave his lecture on ‘Bioresources of NER for human health’, Dr. J. K. Shukla, Scientist E, IBSD, Shillong spoke on the topic of ‘*Gaultheria fragrantissima*: Agrotechnology & post- harvest value addition to boon rural bio-economy in Meghalaya, Northeastern region of India’. Dr. Mantu Bhuyan, Sr Principal Scientist, CSIR-NEIST, Dr. Madhuchandra Lahan, Associate Professor, The Assam Kaziranga University, Jorhat, Assam, Dr. Shahid Rasool, Senior Principal Scientist, CSIR-IIIM, Kashmir Centre, Dr. S.N. Manjula, Professor, Dept. of Pharmacology, JSS College of Pharmacy, JSS Academy of Higher Education and Research, Mysuru, Dr. Anilkumar Adimulapu School of Pharmacy, The Assam Kaziranga University, Jorhat also delivered lectures during the session.

Technical Session 9 was held in the same day at the MSYENGAR HALL. The session was started with the speech of Prof. Potsangbam Kumar Singh, Manipur University Canchipur, Imphal on the topic of ‘Traditional knowledge System of folk medicinal plants practiced by the Meitei community of Manipur state north eastern India: A Review’. Dr. Sushil Kumar Chaudhary, Scientist, IBSD, Imphal delivered his talk about ‘Comparative GC-MS analysis, antioxidant and antidiabetic activities of Indian bay leaf (*Cinnamomum tamala* (Buch.-Ham.) T. Nees &Eberm.) oil collected from diverse locations in Meghalaya’. Dr. Dharmeswar Barhoi, Assistant Professor, Royal Global University, Guwahati gave his speech about ‘Assessment of the protective effect of *Moringa oleifera* seeds against arsenic-induced mutagenicity in Zebrafish (*Danio rerio*)’. Mr. Debasish Dutta, Manager, BioNEST, CSIR-NEIST, spoke on the topic of ‘Protection and promotion of Traditional Knowledge for community development in Assam’, whereas Dr. Hriday Jyoti Mahanta, Scientist, CSIR-NEIST, discussed on ‘Artificial Intelligence and Machine Learning in Harnessing Traditional

Wisdom'and Dr. Vadakkemuriyil Divya Nair, Central University of Himachal Pradesh, Kangra, HP spoke on 'Authentication of the market samples of *Rauvolfia serpentina* using plastid based molecular marker'. On the 2<sup>nd</sup> and 3<sup>rd</sup> day poster presentation sessions were organized and approximately 200 posters were present by the participants during these sessions.

During the convention a traditional healer's meet cum exhibition of traditional medicine was organized on 30<sup>th</sup> November, 2023. Several healers joined the session as well as the exhibition as a panelist and shared their valuable knowledge on traditional and folklore medicine practices. Dr. Mantu Bhuyan, Dr. Prakash R Itankar, and Dr. Rituraj Konwar, Principal Scientist, CSIR-NEIST, Jorhat was the moderators of this session. More than 40 traditional healers from north eastern region of India were participated in this program and exhibited their medicinal practices and showcase several ethnomedicine. Dr. Krishna Kanta Nath, Dharma Kowar, Matul Dutta, Tarun Bora, Zahir Ahmed, Satindar S Marwaha, Bipin Saikia and many more healers shared their knowledge and highlighted the impact of bioeconomy by employing ethnopharmacology.

The conference was ended up with valedictory program along with the prize distribution of best presenter during young ethnopharmacologist competition and poster presentation session. Out of Fifteen participants five were selected as best Young Ethnopharmacologist based on their presentation and research outcome and five presenters were selected for best poster presentation. In the valedictory program, special recognition was made by SFE-India & CSIR - North East Institute of Science & Technology (NEIST), Jorhat to the organizers to recognize their services for the promotion of Ethnopharmacology in India. Thus, the 10<sup>th</sup> convention of the society was very successful in every aspect with an abundant attendance of students, researchers, academicians, scientists, healthcare professionals, traditional healers throughout the country.



Inauguration of SFE 10<sup>th</sup> Convention



Release of Abstract Book during the Inauguration of SFE 10<sup>th</sup> Convention



Felicitiation of CSIR-NIEST Jorhat team for organizing SFE 10<sup>th</sup> Convention



SFE Local Chapters coordinators, SFE executive members and CSIR-NIEST Jorhat organizing committee during SFE 10<sup>th</sup> Convention



Prof. Pulok K Mukherjee delivering speech during inauguration session of SFE 10<sup>th</sup> Convention



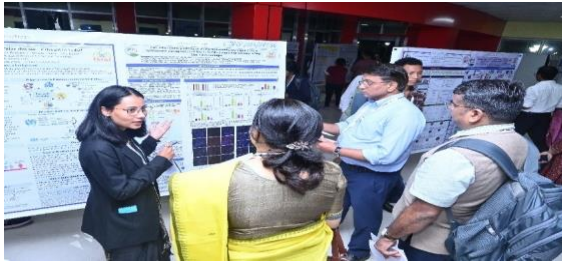
Participants and delegates during the SFE 10<sup>th</sup> Convention



Technical Session of SFE 10<sup>th</sup> Convention



Presentation during Young Ethnopharmacologist Competition of SFE 10<sup>th</sup> Convention



Poster presentation session of SFE 10<sup>th</sup> Convention



Ethnopharmacology Conclave session of SFE 10<sup>th</sup> Convention



Valedictory sessions of SFE 10<sup>th</sup> Convention



Cultural program of SFE 10<sup>th</sup> Convention



Participants and delegates of SFE 10<sup>th</sup> Convention



# Harmonizing Heritage: Overcoming Challenges in Herbal Medicine through Ethnopharmacological Insights

Gaurav

Hamdard laboratories (India), Ghaziabad, Uttar Pradesh

Email id - gautamgaurav878@gmail.com

## Introduction

Herbal medicine, rooted in traditional practices and local wisdom, has been a crucial component of healthcare systems worldwide for centuries. The integration of plants into therapeutic regimens has been based on ethnopharmacology, which explores the traditional knowledge of different cultures regarding the use of medicinal plants. While herbal medicine presents promising avenues for healthcare, it also encounters several challenges that need to be addressed for its effective integration into modern healthcare systems (Gaurav et al., 2023).

## Challenges in Herbal Medicine

**Standardization and Quality Control:** One of the primary challenges facing herbal medicine is the lack of standardized processes and quality control measures. Unlike pharmaceutical drugs, herbal remedies often involve the use of plant extracts with varying concentrations of active compounds. Standardization becomes essential to ensure consistent therapeutic effects and minimize potential side effects. The variability in growing conditions, harvesting methods, and storage can affect the chemical composition of herbal products. Establishing standardized protocols for cultivation, extraction, and quality testing is critical for the reliability and safety of herbal medicines (Gaurav et al., 2022; Salar et al., 2023).

**Lack of Scientific Validation:** While traditional knowledge has guided the use of herbal medicine for generations, there is a need for rigorous scientific validation to establish the safety and efficacy of these remedies. Ethnopharmacology plays a crucial role in providing insights into traditional uses, but translating this knowledge into scientifically validated evidence requires extensive research. Limited funding for herbal medicine research, coupled with the complex nature of plant-derived compounds, poses a significant obstacle. Bridging the gap between traditional wisdom and scientific validation is essential for the wider acceptance of herbal medicine in mainstream healthcare (Gaurav, 2022; Gautam, 2022).

**Cultural and Regulatory Hurdles:** Herbal medicine often faces challenges related to cultural differences and regulatory frameworks. In many cases, traditional knowledge is deeply rooted in specific cultural practices, making it challenging to generalize herbal remedies across diverse populations. Regulatory bodies struggle to establish comprehensive guidelines for herbal medicines due to the vast array of plants used and the lack of standardized testing procedures. The coexistence of traditional and modern medicine further complicates regulatory frameworks, requiring a delicate balance between preserving cultural heritage and ensuring public safety (Gaurav, 2022; Gaurav et al., 2022).

**Sustainability Concerns:** The increasing demand for medicinal plants has raised concerns about the sustainability of herbal medicine practices. Overharvesting, habitat destruction, and improper cultivation techniques can lead to the depletion of plant species and ecological imbalances. Sustainable harvesting practices and cultivation methods need to be prioritized to ensure the long-term availability of medicinal plants (Ahmad et al., 2021; Zahiruddin et al., 2020). Moreover, the exploitation of traditional knowledge without fair compensation to local communities raises ethical concerns. Collaborative efforts involving scientists, policymakers, and local communities are necessary to develop sustainable practices that balance healthcare needs with environmental

conservation (Gaurav, 2022; Gaurav et al., 2023; Gautam et al., 2023; Khan et al., 2021).

## **Ethnopharmacology in Addressing Challenges**

**Integration of Traditional Knowledge and Scientific Research:** Ethnopharmacology serves as a bridge between traditional knowledge and scientific research. By documenting and analysing the traditional uses of medicinal plants, ethnopharmacologists provide a foundation for further scientific exploration. This integration facilitates the identification of bioactive compounds, their mechanisms of action, and potential therapeutic applications. Collaboration between traditional healers and researchers is crucial to ensure that scientific investigations respect and build upon the rich heritage of traditional medicine (Gautam et al., 2023; Salar et al., 2023).

**Development of Standardized Protocols:** Ethnopharmacological studies contribute to the development of standardized protocols for the cultivation, harvesting, and processing of medicinal plants. By understanding the factors influencing the variability of plant-derived compounds, researchers can establish guidelines to ensure consistency in herbal preparations. Standardization not only enhances the reproducibility of therapeutic effects but also facilitates quality control measures, addressing concerns related to the purity and safety of herbal medicines (Basist et al., 2022; Gautam et al., 2021).

**Community Engagement and Empowerment:** Ethnopharmacology emphasizes community engagement and empowerment, recognizing the role of local communities as custodians of traditional knowledge. Collaborative research efforts involving local practitioners and communities contribute to a more holistic understanding of herbal medicine. Empowering local communities through fair compensation for traditional knowledge and sustainable harvesting practices ensures the preservation of medicinal plant resources while respecting cultural diversity (Insaf et al., 2022; Khan et al., 2024; Zahiruddin et al., 2021).

**Education and Advocacy:** Ethnopharmacology plays a crucial role in educating both healthcare professionals and the general public about the benefits and challenges of herbal medicine. By fostering awareness, researchers can promote the responsible use of traditional remedies and advocate for their integration into modern healthcare systems. Education also extends to policymakers, encouraging the development of supportive regulatory frameworks that balance the cultural significance of herbal medicine with safety and efficacy standards (Ali et al., 2023; Ekbbal et al., 2023; Salar et al., 2023).

## **Conclusion**

Herbal medicine, guided by ethnopharmacological insights, holds immense potential as a valuable component of healthcare. However, addressing the challenges it faces requires a multidimensional approach. Standardization, scientific validation, cultural sensitivity, and sustainability are integral aspects that need careful consideration. Ethnopharmacology emerges as a crucial discipline in navigating these challenges, facilitating the integration of traditional knowledge with contemporary scientific advancements. As we move forward, collaborative efforts between communities, researchers, and policymakers are essential to unlock the full potential of herbal medicine, providing safe and effective healthcare options for diverse populations.

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## Identification of novel bioactivity of naturally occurring ITCs to development as nanoformulation and its assessment in different *in vivo* disease models

V Badireenath Konkimalla\*, Sanjima Pal, Ashish Kr Sahoo, Prakash Haloi, Siva Lokesh Bolla

National Institute of Science Education and Research (NISER), HBNI, Jatni, Odisha, India  
Email id - badireenath@niser.ac.in

Natural isothiocyanates (ITCs) are sulfur-containing bioactive phytochemicals from cruciferous vegetables. The isothiocyanate group ( $-N=C=S$ ) is attributed to its wide-range bioactivity (chemopreventive, antioxidant, and anti-inflammatory effects). We were eager to identify unexplored bioactivity from the ITCs, so we started our research by exploring it in Sulforaphane (SFN) and Phenethyl isothiocyanate (PEITC). We traversed through putting our efforts into establishing the proof-of-principle for its bioactivity in animal models. Finally, we improved its efficacy by fabricating it into a suitable drug delivery system (liposomal drug delivery, thermosensitive-injectable hydrogel, and BSA-loaded nanoparticulate systems) that were assessed in different animal models (rheumatoid arthritis and subcutaneous infection models).

I. Identification of novel bioactivity of ITCs and attempts to improve its efficacy using a nanotechnology approach. Given below is a brief outline of our work (journey) carried out on ITCs discussed in stages:

a. Phenotypic and functional switching of SFN in collagen-induced cell-based model ITCs are popularly known for their hormetic activity, with functionally different activities at different concentrations—their anti-cancer activities are well-studied at cytotoxic doses, and a few report their biological activity at sub-toxic doses. [1] From a cell-based collagen-induced autoimmune model, the sub-toxic doses of SFN showed profound anti-inflammatory activity. SFN treatment switched the phenotype and function of macrophages from inflammatory M1 to anti-inflammatory M2 type. [2] This initial observation prompted us to establish the proof-of-principle in an animal arthritic model as it has critical clinical applications in autoimmune conditions such as rheumatoid arthritis. While ITCs have a good bioactive role, their undesirable pharmaceutical properties limit nor correlate their translation from *in vitro* observation to *in vivo*. A combinational liposomal of ITCs showed significant suppression of inflammation in the acute model compared to the free form; therefore, we further explored a hydrogel-based drug delivery system (DDS) as an ideal approach for treating chronic conditions (like RA) [3].

b. Formulation and characterization of PEITC-loaded thermosensitive injectable hydrogel. A thermosensitive smart injectable hydrogel DDS loaded with PEITC was injected directly into inflamed joints, forming an *in-situ* gel. Different *in vitro* and *in vivo* assessments were conducted for biocompatibility, pharmacokinetics, max loading of the drug with optimal effect, and toxicity studies. In an FCA-induced RA rat model, the hydrogel released the drug sustainedly, suppressing the chronic inflammatory condition, thereby validating the effect observed in *in vitro* conditions. [4]

c. Fabrication of dual-drug nanoparticles loaded smart hydrogel (MTX and PEITC) to enhance its synergistic activity in RA condition. RA, being a multifactorial systemic autoimmune disease, requires a holistic approach. Our next attempt was to further increase the efficacy of the smart hydrogel system by combining PEITC (as nanoemulsion) with methotrexate (MTX, as nanoparticle) and incorporating it into the alginate hydrogel matrix. An intra-articular injection synergized the anti-inflammatory efficacy, reversed cartilage disruption, improved bone morphology, and reduced the

drawbacks of both drugs in the FCA-induced RA rat model, thereby exhibiting significantly enhanced efficacy [5].

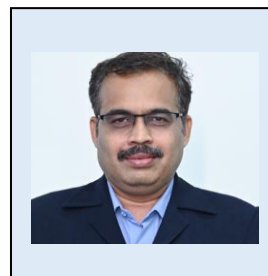
II. Pharmaceutical design approach to fabricate BSA-PEG-loaded PEITC nanoparticles and assessment in subcutaneous infection conditions. The clinical application of PEITC is limited mainly due to its undesirable properties. An optimal PEITC-loaded biocompatible low-toxic nanoparticles (NPs) were prepared using a Box-Behnken design with higher killing efficiency in *S. aureus* than all four bacterial strains. In a subcutaneous *S. aureus*-induced mice infection model, the PEITC NPs decreased the bacterial infection to almost negligible, with approximately 15.2-fold decreased bacterial viability than the free drug. This study has good applicability of PEITC NPs in treating subcutaneous infections [6].

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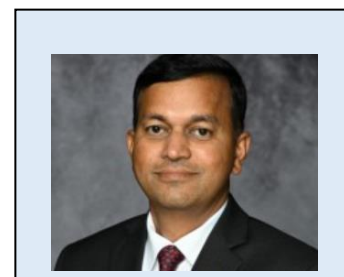
## Achievements and Honours

Heartiest Congratulations to Dr. Akshay Motilal Baheti, Professor, School of Health Sciences and Technology, Dr Vishwanath Karad MIT World Peace University Pune and Member of Pune Local Chapter, for qualifying patent agent examination of 2023



Heartiest Congratulations to Prof. Madhusudan Natvarlal Saraf, Professor, Department of Pharmacology, H K College of Pharmacy, Mumbai and Member of Mumbai Local chapter for awarded with the prestigious Prof. G. P. Srivastava Memorial Award by The Association of Pharmaceutical Teachers of India during 73<sup>rd</sup> Indian Pharmaceutical Congress at Hyderabad, 2023

Heartiest Congratulations to Dr. Nishikant A Raut, Professor, RTMNU, Nagpur and Member of Nagpur Local chapter for received patent (patent no.- 480703) for an invention entitled 'Novel Everted Rat Intestine Apparatus for Evaluation of *Ex-vivo* Permeability of BCS Class I to IV Drugs



Heartiest Congratulations to Dr. Anant Kumar, Research Associate, CSIR-CIMAP, Lucknow and Member of Lucknow Local chapter for received best poster presentation award for the poster entitled as "Hesperidin-rich extract of Citrus limetta prevents obesity induced insulin resistance condition, An *In-vitro*, *In-vivo* study" in conference on 'Drug development and drug delivery' organized by university of Lucknow and controlled release society USA (India Chapter) at University of Lucknow, Lucknow, India

## 10<sup>th</sup> Convention of Society for Ethnopharmacology, India cum National Seminar held at CSIR-NEIST Jorhat

CHRONICLE NEWS SERVICE

**JORHAT:** The 10th Convention of Society for Ethnopharmacology, India cum National Seminar on Ethnopharmacology for Bio-economy: The New Paradigm (EBNP-2023) was held at CSIR-NEIST Jorhat from 28-30 November, 2023. The event was jointly organized by CSIR-North East Institute of Science and Technology (CSIR-NEIST), Jorhat with the Society for Ethnopharmacology, India and saw the conglomeration of a galaxy of eminent scientists and researchers from all across the country. Dr G. Narahari Sastry, Director CSIR-NEIST and Chief Patron of EBNP-2023 delivered the inaugural address. Dr Jatini Kalita, organizing secretary briefed about the seminar. Dr Madhu Dikshit, Former Director, CSIR-Central Drug Research Institute (CSIR-CDRI) delivered the keynote address

on "Unlocking the Potential of Ashwagandha in Healthcare: Ethnopharmacology Insights and Opportunities". Other eminent speakers included Prof. Rabinarayan Acharya, Director General CCRAS, Ministry of AYUSH, Govt. of India, New Delhi, Dr Indraneel Das, Vice-President, Ethnopharmacology Society of India, Prof. Pulok Kumar Mukherjee, Director IBSI, Imphal, Dr P.K. Mishra, Vice Chancellor, Assam Kaziranga University, Dr Viswajit J Sattigeri, Head, CSIR-TKDL among a few from a host of dignitaries. Altogether, there were oral, poster, invited and keynote presentations. The basic idea behind this conference was to present and discuss scientific research in light of traditional knowledge on curing diseases through locally available herbs and organisms which have been practiced by the tribal people and by our forefa-

thers since time immemorial. The research papers presented discussed the findings of the effectiveness of a plethora of traditional knowledge on locally available species of plants and other organisms as medicines to cure present day ailments and the scope to integrate these traditional knowledge bases with modern medicinal practices by developing medicines from locally available natural entities through scientific testing and validation. It may be mentioned that the north east India is a biodiversity hotspot and is well known for traditional medicinal practices which are still must trusted and are in vogue. One of the key attractions in the event was the involvement of traditional healers (in Assamese known as Bez) as participants in an exhibition that added a new dimension to the overall purpose of the conference.

## 10th convention of Society for Ethnopharmacology held

STAFF CORRESPONDENT

**JORHAT, Dec 7:** The 10th convention of the Society for Ethnopharmacology, India and a national seminar on 'Ethnopharmacology for Bio-economy: The New Paradigm', were jointly organized at the Council of Scientific & Industrial Research (CSIR)-North East Institute of Science and Technology (NEIST) at Jorhat a few days ago.

The event was organised

by the CSIR-NEIST in association with the Society for Ethnopharmacology, India, and attended by several scientists and researchers from across the country.

CSIR-NEIST director G. Narahari Sastry delivered the inaugural address, while organising secretary Jatini Kalita gave a brief about the seminar.

Madhu Dikshit, former director of the CSIR-Central Drug Research Institute (CSIR-CDRI), delivered the

keynote address on 'Unlocking the potential of ashwagandha in healthcare: Ethnopharmacology insights and opportunities'.

Other speakers included Rabinarayan Acharya, director general of CCRAS under the Union Ministry of AYUSH, Ethnopharmacology Society of India vice president Indraneel Das, IBSI Imphal director Pulok Kumar Mukherjee, Assam Kaziranga University vice-chancellor PK Mishra, and CSIR-

TKDL head Viswajit J Sattigeri.

The research papers discussed the traditional knowledge on locally available species of plants and other organisms as medicines to cure present-day ailments and the scope to integrate this traditional knowledge with modern medicinal practices by developing medicines from locally available natural entities through scientific testing.

The objective of the conference

was to discuss scientific research in light of traditional knowledge on curing diseases through locally available herbs and organisms, which have been practised by the tribal people since time immemorial. One of the key attractions of the event was the involvement of traditional healers (in Assamese known as Bez) as participants that added a new dimension to the overall purpose of the conference.

গৌৰৱোচ্ছল আবিৰাম যাঁহাৰ ৬০তম বয়



# যোৰহাটত নতুন চিন্তা, নতুন ভাবনাৰে নেইষ্টত নৃতাত্ত্বিক-ঔষধ বিজ্ঞানৰ ৰাষ্ট্ৰীয় আলোচনাচক্ৰ সম্পন্ন

১২ ৰিপ'ৰ্টাৰ, যোৰহাট, ৪ ডিচেম্বৰ : দশহাৰিৰ চিএছআইআৰ-উত্তৰ পূব বিজ্ঞান আৰু প্ৰযুক্তিবিদ্যা প্ৰতিষ্ঠানত যোৰহাটত ৩০ নৱেম্বৰলৈ জৈৱ-অৰ্থনীতিৰ বাবে নৃতাত্ত্বিক ঔষধবিজ্ঞান, নব্য দৰ্শন Ethnopharmacology for Bioeconomy, The New Paradigm শীৰ্ষক এক তিনিদিনীয়া ৰাষ্ট্ৰীয় আলোচনাচক্ৰৰ লগতে ভাৰতৰ তাত্ত্বিক-ঔষধবিজ্ঞান সমিতি (ইএচইটিএছ)ৰ এখন 'ফাৰ্মাক'লজী Society for Ethnopharmacology'ৰ দশম বৰ্ষিক সন্মিলন অনুষ্ঠিত হৈ যায়। 'ধন'ফাৰ্মাক'লজী, যাক অসমীয়াত তাত্ত্বিক-ঔষধবিজ্ঞান বুলি ক'ব পাৰি, যি নাগোষ্ঠীয় লোকসকলে পৰম্পৰাগতভাৱে বিভিন্ন ৰোগৰ নিৰাময়ৰ ঔষধীয় জ্ঞানৰ ব্যৱহাৰক বুজায়। ইয়াৰ মূল উদ্দেশ্য হৈছে

উদ্ভিদসমূহৰ চিকিৎসামূলক ব্যৱহাৰৰ ওপৰত ভিত্তি কৰি ভ্ৰমহীন ঔষধৰ আৱিষ্কাৰ কৰা আৰু পৰম্পৰাগত ঔষধীয় জ্ঞান সংৰক্ষণ কৰা। ২৮ নৱেম্বৰ তাৰিখে নেইষ্টৰ সঞ্চালক ড॰ জি নৰহাৰী শাস্ত্ৰী, জৈৱ-সম্পদ আৰু বন্যজীৱন বিকাশ প্ৰতিষ্ঠান (ISBD), ইন্ডিয়ান সঞ্চালক, অধ্যাপক পুলক কুমাৰ মুৰাৰী, ভাৰত চৰকাৰৰ আয়ুৰ্ব মন্ত্ৰালয়ৰ অধীনস্থ কেন্দ্ৰীয় আয়ুৰ্বেদিক বিজ্ঞান গবেষণা পৰিষদ (CCRAS)ৰ সঞ্চালক প্ৰধান, অধ্যাপক ৰবিনাৰায়ণ আচাৰ্য, অসম কৰ্তৃবিভাগ বিশ্ববিদ্যালয়ৰ উপাচার্য ড॰ পি কে মিশ্ৰ, নৃতাত্ত্বিক-ঔষধবিজ্ঞান সমিতি (Ethnopharmacology Society)ৰ উপাধ্যক্ষ ড॰ ইন্দ্ৰনীল দাস উপস্থিত শুভাৰম্ভ হোৱা আলোচনা চক্ৰত দেশৰ বিভিন্ন প্ৰান্তৰ বিজ্ঞানী, গবেষক গৱেষ্ট্ৰী, অধ্যাপক আৰু বলুৱা

বেজ নৈব্যায়সকলে অংশগ্ৰহণ কৰে। উদ্যোগী অনুষ্ঠানত সকলোকে সন্মোদন কৰি ড॰ জি নৰহাৰী শাস্ত্ৰীয়ে কয় যে এনে ধৰণৰ আলোচনাচক্ৰবোৰে নৃতাত্ত্বিক-ঔষধবিজ্ঞানক বৰ্তমান যুগৰ চিকিৎসা সেৱাৰ বাবে কেনেকৈ উপযুক্ত কৰি ৰাখি সমাজৰ হিত সাধন কৰিব পাৰি, তাৰ বাবে বিজ্ঞানীসকলক চিন্তিত্ব যোৰক যোগাইয়াৰ পাবে। উদ্যোগী সভাত "ৰাষ্ট্ৰসেৱাৰ ক্ষেত্ৰত অংশগ্ৰহণৰ সজ্জনা উন্মোচিত কৰি তোলা। নৃতাত্ত্বিক-ঔষধবিজ্ঞানৰ অগ্ৰদূতি আৰু সন্মোহণ বিষয়ত দুম বলুৱা প্ৰদান কৰি লক্ষ্যোদ্ভিত চিএছআইআৰ- কেন্দ্ৰীয় ঔষধ গৱেষণা প্ৰতিষ্ঠান (CSIR-CDRI)ৰ প্ৰাক্তন সঞ্চালক, ড॰ মধু দিক্ষিতৰে এনে কাৰ্য ক্ৰম হাতত লোৱা বাবে নেইষ্টৰ চুইসী ধনশো কৰে। আলোচনাচক্ৰখনত মুঠতে সবাগ্ৰহণক

৭খন কৰিকম্পী সত্ৰ অনুষ্ঠিত হয়। এই সত্ৰ কেইখনত নৃতাত্ত্বিক ঔষধবিজ্ঞানৰ সৰ্বমুঠ দিন তিনি বিষয়ত দেশৰ বিভিন্ন প্ৰতিষ্ঠানৰ ৭৩ গৰাকী বিশিষ্ট সমল ব্যক্তিয়ে বলুৱা প্ৰদান কৰে। এই আলোচনা চক্ৰৰ লগত সংগতি ৰাখি আয়োজন কৰা বেজ বা কৈয়াসকলৰ সন্মিলন এক অসমৰ ৫০ জনতকৈয়ো অসমীয়া ঔষধগেৰে ৰোগ

চিএছআইআৰ-কেন্দ্ৰীয় ঔষধি আৰু সূৰ্য্য চিএছআইআৰ-কেন্দ্ৰীয় ঔষধি আৰু সূৰ্য্য উদ্ভিদ গৱেষণা প্ৰতিষ্ঠান, লক্ষ্ণৌৰ মুখা বিজ্ঞানী ড॰ বীৰেন্দ্ৰ সিংহে। সন্মিলন অতিৰিক্তভাৱে উপস্থিত থাকে ইন্ডিয়ান জৈৱ-সম্পদ আৰু বন্যজীৱন বিকাশ প্ৰতিষ্ঠানৰ বিজ্ঞানী ড॰ নন্দাশঙ্কা শৰ্মা, আৰু ভাৰতৰ নৃতাত্ত্বিক-ঔষধবিজ্ঞান সমিতিৰ কাৰ্যবাহী সদস্য অমিতাভ জাম



## Seminar on 'Ethnopharmacology for Bio-economy'

**JORHAT, Dec 4:** the 10th Convention of Society for Ethnopharmacology, India-cum-National Seminar on Ethnopharmacology for Bio-economy: The New Paradigm (EBNP-2023) was held at CSIR-NEIST Jorhat from November 28 to November 30. The event was jointly organized by

ence and Technology (CSIR-NEIST), Jorhat with the Society for Ethnopharmacology, India and saw the conglomeration of a galaxy of eminent scientists and researchers from all across the country. Dr G. Narahari Sastry, Director CSIR-NEIST and Chief Patron of EBNP-2023 delivered

Kalita, organizing secretary, briefed about the seminar. Dr Madhu Dikshit, Former Director CSIR-Central Drug Research Institute (CSIR-CDRI) delivered the keynote address on "Unlocking the Potential of Ashwagandha in Healthcare: Ethnopharmacology Insights and Opportuni



## SFE Young Ethnopharmacologist Award, 2024

Society for Ethnopharmacology, India (SFE) would like to recognize the outstanding contributions made by the researchers, scientists and technologists in the area of medicinal plant research and Ethnopharmacology by instituting SFE Best Publication in Ethnopharmacology and Traditional Medicine Research Awards and SFE Young Ethnopharmacologist Award ('Dr. P. K. Debnath Memorial Award'). Nominations are invited for the above mentioning awards of the Society for Ethnopharmacology, India which will be conferred during the 11th International Congress of the Society for Ethnopharmacology (SFEC), organized by the CSIR- Indian Institute of Integrative Medicine, Jammu, India during February 16-18, 2024 at CSIR-IIIM, Jammu, India.

The following criteria should be followed for abstract selection:

- Applicant should have active membership of Society for Ethnopharmacology, India and International Society for Ethnopharmacology.
- The selection will be limited to the registered delegates of the Annual Congress of SFE and their original research paper-based abstract should be accepted for oral presentation.
- Any participants engaged in research in any field of Ethnopharmacology and Medicinal Plants up to the age of 40 years.
- Selection of the participants for the competition will be based on the abstracts which has been submitted by young researchers and accepted for oral presentation in the annual SFE congress.
- This award will confer on the basis of the oral presentation during the congress where the presentation will be judged by the experts from different areas, as decided by SFE.

### **Award Carries:**

Three best young pharmacologists will be awarded: -

- A Memento
- A Certificate
- Complementary registration to join the SFE Congress
- Three tier (3AC) train ticket to join the SFE Congress

### **Selection Committee:**

Representatives from the Executive Committee of SFE -India along with the experts from different field of Ethnopharmacology and medicinal plant research will be a part of the selection committee, as decided by SFE-India. Decision of the committee will be final. The award will be conferred in the valedictory function of the Annual Congress of SFE-India.

**For guideline and proforma please visit**

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[\*\*sfeindiase@gmail.com\*\*](mailto:sfeindiase@gmail.com)/[\*\*sfeindian@gmail.com\*\*](mailto:sfeindian@gmail.com)

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