



# ABSTRACT BOOK

## 2024

A NATIONAL CONFERENCE ON

**"NORTHEAST INDIA'S TRADITIONAL WISDOM: BRIDGING THE PAST AND PRESENT THROUGH KNOWLEDGE SYSTEMS, HEALTH PRACTICES, AGRICULTURE, ART, AND CONSERVATION"**



**Organized by:**

**NEMCARE Group of Institutions, Mirza, Assam**

**In Association with:**

**Research Institute of World's Ancient Traditions  
Cultures and Heritage  
(RIWATCH), Arunachal Pradesh (India)**



**Association of Pharmaceutical Teachers of India  
(APTI), Assam State Branch**



**Venue: Auditorium, NEMCARE Group of Institutions, Santipur,  
Mirza, Kamrup, Assam-781125**

**Date: 23-02-2024 (Friday) and 24-02-2024 (Saturday)**

# স্বাস্থ্য আলোচনী নেমকেয়ার

প্রথম বছর, প্রথম সংখ্যা  
জানুয়ারী, ২০২৪

হেলথ

সূর্য  
সর্বশ্রেষ্ঠ  
চিকিৎসক

কুকুৰে  
কামুৰিলে?  
কি কৰিব?

অংগদান : সমস্যা  
আৰু সজাগতা

National Conference on  
**"Northeast India's Traditional Wisdom: Bridging the Past and Present  
through Knowledge Systems, Health Practices, Agriculture, Art,  
and Conservation"**

# **ABSTRACT BOOK**

**Organized by**



NEMCARE Group of Institutions  
Santipur, Mirza, Kamrup, Assam-781125

**In Association with**



Research Institute of World's Ancient Traditions Cultures and Heritage  
(RIWATCH), Arunachal Pradesh (India), Pin Code - 792110



Association of Pharmaceutical Teachers of India (APTI), Assam State Branch

**Date**

23-02-2023 (Friday) and 24-02-2023 (Saturday)

**Venue**

Auditorium, NEMCARE Group of Institutions, Santipur, Mirza, Kamrup, Assam-781125





RAJ BHAVAN  
GUWAHATI

**Shri Gulab Chand Kataria**



### **MESSAGE**

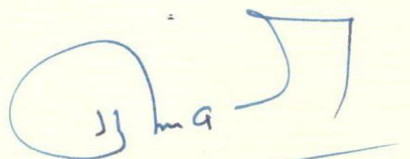
I am glad to learn that NEMCARE Group of Institutions, Mirza in association with the Research Institute of World's Ancient Traditions Cultures and Heritage is organizing a two-day national seminar in Guwahati on 23<sup>th</sup> and 24<sup>th</sup> February, 2024. My heartiest congratulations to the organizers on this occasion.

We are committed to the preservation of the rich culture and heritage of North Eastern Region. We are working to curate our rich heritage and culture - maintenance and restoration of our rich heritage and preserve and promote them for our health and happiness.

I hope the national seminar being held on Northeast India's Traditional Wisdom: Bridging the Past and Present through Knowledge Systems, Health Practices, Agriculture, Art and Conservation will augur well to dwell on our conventional wisdom and find out solutions to deal with different problems of our lives.

I convey my best wishes for resounding success of the seminar. Hope the discussions and decisions help us to set an agenda to use our traditional knowledge system to achieve enduring peace and prosperity.

**Dated: February 19, 2024**

  
**(Gulab Chand Kataria)**

मंत्री  
आयुष मंत्रालय  
एवं पत्तन, पोत परिवहन और जलमार्ग मंत्रालय  
भारत सरकार



सत्यमेव जयते

Minister of Ayush  
and  
Ports, Shipping & Waterways  
Government of India



सर्बानंद सोणोवाल  
SARBANANDA SONOWAL



MESSAGE

At the outset, I extend my heartfelt greetings to all esteemed participants of the Two-Day National Seminar Conference organised by the NEMCARE Group of Institutions in collaboration with the Research Institute of World's Ancient Traditions Cultures and Heritage (RIWATCHI) to be held on February 23-24, 2024 at Santipur, Mirza, Assam.

The theme of the conference, "Northeast India's Traditional Wisdom: Bridging the Past and Present through Knowledge Systems, Health Practices, Agriculture, Art, and Conservation," is not only timely but also crucial in acknowledging and preserving the rich heritage of Northeast India.

Northeast is a treasure house of ancient knowledge and healing practices. This gathering serves as a beacon, illuminating the invaluable traditional knowledge systems that have sustained communities across generations. It provides an unparalleled opportunity for academics, researchers, professionals, and policymakers to come together and engage in insightful discussions, exchange perspectives, and share experiences. The significance of this conference transcends academic discourse. It is a platform for fostering sustainable progress by integrating traditional wisdom into contemporary thought.

I believe this conference will yield substantial results, including advancements in understanding traditional knowledge systems, deepening comprehension of the region's cultural heritage, and fostering collaborations bridging the gap between academia, research, practice, and policymaking.

Let us embrace this opportunity to collectively explore pathways towards sustainable development, environmental conservation, healthcare improvement, and cultural preservation in Northeast India.

My best wishes once again for a fruitful and enriching conference.

(Sarbananda Sonowal)

Place: New Delhi

Date: 21/02/2024



This is a recycled, eco-friendly, zero-chemical paper that saves 40% water, consumes less energy, involves no tree cutting, adds carbon credits thus, reducing climate change & global warming.



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MESSAGE

Traditional knowledge is a living knowledge, which has been transferred from one generation to another orally and informally. Worldwide, it is found in agriculture, scientific or medicinal procedures.

Our Northeast India is the home of a large number of indigenous ethnic groups bestowed with rich traditional knowledge since time immemorial. To the people of Northeast, forests, mountains and rivers are a repository of traditional knowledge and wisdom. As the Northeast is a mosaic of diverse ethnicities, cultural forms, environmentally and life sustaining practices, the local communities possess intangible cultural wealth, immense collective moral and cultural capital. Here traditional knowledge is immensely used not only in farming, irrigation and sustainable practices, but also in the area of medicine and health, which includes medicinal herbs, plants, healing, child delivery procedures and orthopaedic procedure. The ethnic and indigenous communities have preserved these traditional knowledge through oral narratives, cosmological observations, and cultural and ritual practices. This knowledge has been passed on to generations through storytelling, both literal and metaphorical, song and dance as well as rituals.

It gives me immense pleasure that, in association with the Research Institute of World's Ancient Traditions Cultures and Heritage (RIWATCH), the NEMCARE Group of Institutions, Mirza is going to organize a two-day National Conference on 'Northeast India's Traditional Wisdom: Bridging the Past and Present through Knowledge Systems, Health Practices, Agriculture, Art and Conservation' on 23rd & 24th February, 2024. I am sure that this conference will bring forward many new findings relevant to the concerned field. I extend my warm greetings to the organizers and participants and convey my best wishes for the successful conduct of the conference.

(Keshab Mahanta)

**Dr. Numal Momin, MBBS, MD**

**Deputy Speaker**

Assam Legislative Assembly  
Dispur, Guwahati- 781006



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### MESSAGE

*It gives me immense pleasure to know that the NEMCARE Group of Institution, Mirza is going to organize a two-day National Conference on 23<sup>rd</sup> & 24<sup>th</sup> February, 2024 with a significant theme – “Northeast India's Traditional Wisdom : Bridging the past and present through knowledge system, Health Practices, Agriculture, Art and Conservation” which is, indeed a commendable endeavor. To commemorate the occasion, the organizer has also planned to publish a Souvenir, which is also a praiseworthy effort.*

*North-East India consists of eight states represents approximately 8% of country's total geographical area. It is a home to about 225 tribal communities and represents one of the biodiversity hotspots of the world with the richest plant diversity in India. In North East India traditional wisdom and knowledge is not only used in agriculture, farming, irrigation and sustainable practices but also used in allied things such as good germination, ways of increasing yield naturally, water management, soil conservation, protecting crops from pest and diseases to post harvest storage and management as well as health practices also. So, the NER of India is a hub of traditional knowledge, innovation and practices of indigenous and local communities embodying traditional lifestyles. So, the NEMCARE Group of Institution, Mirza has taken a massive and meaningful theme to discuss in its Conference. I am confident that this Conference will bring forward many new findings relevant to the concerned field.*

*I send my heartiest best wishes to all the members of the Organizer as well as the participants and convey my best wishes for a grand success of the two-day National Conference with a hope that the Souvenir going to be published to commemorate the event would be a valued memento for the youth, reader and researcher.*

*Numal Momin.*

**( DR. NUMAL MOMIN )**

*Dated : 20<sup>th</sup> February, 2024*

*Dr. Apurba Talukdar,*

*Chairperson,*

*National Conference 2024*

*NAMECARE Group of Institutions,*

*Mirza, Kamrup (Assam)*





Ref. No.NGI/OFFICIAL/024/178

Date: 21/02/2024

**Message from the Dean of Studies, NEMCARE Group of Institutions, Mirza**

It is with great pleasure that I welcome you all to the National Conference on "Northeast India's Traditional Wisdom: Bridging the Past and Present through Knowledge Systems, Health Practices, Agriculture, Art, and Conservation", organized by NEMCARE Group of Institutions (NGI), Assam in collaboration with Research Institute of World's Ancient Traditions Cultures and Heritage (RIWATCH) Arunachal Pradesh and Association of Pharmaceutical Teachers of India (APTI).

At NGI, we are committed to fostering a rich academic environment that values tradition, innovation, and interdisciplinary collaboration. This conference provides a unique platform for scholars, researchers, practitioners, and policymakers to come together and engage in meaningful dialogues surrounding the traditional knowledge systems of Northeast India.

Northeast India is a treasure trove of diverse cultural heritage, traditional practices, and indigenous wisdom. By exploring topics ranging from biodiversity conservation to indigenous art and craft, we aim to promote a deeper understanding and appreciation of the region's rich cultural tapestry.

As the Dean of Studies, I am proud of NGI's commitment to promoting excellence in education and research. Our institution, nestled amidst the serene and lush greenery of Shantipur, Mirza, Guwahati, provides an ideal setting for nurturing intellectual curiosity and academic growth.

I encourage all participants to actively engage in the conference proceedings, share their insights, and forge new connections that will contribute to the advancement of knowledge and the preservation of Northeast India's cultural heritage.

Wishing you all a fruitful and enriching experience at the conference.

*Warm regards,*

**Dr. Bhargab Jyoti Sahariah**  
Dean of Studies  
NEMCARE Group of Institutions

# Research Institute of World's Ancient Traditions Cultures and Heritage

(An Affiliate Unit of ICCS US)

Khinjili, PO-Roing-792110, Lower Dibang Valley District, Arunachal Pradesh (India)  
email -, [vijayarunachal@gmail.com](mailto:vijayarunachal@gmail.com) Cell : +91 9402963582, 8413070211 Web: [riwatch.in](http://riwatch.in)



## Message

I am glad that NAMCARE Group of Institutes, Guwahati is bringing out an Abstract book of the National Conference on "Northeast India's Traditional Wisdom: Bridging the Past and Present through Traditional Knowledge systems, Health Practices, Agriculture, Art and Conservation". The conference is jointly organized by the NAMCARE and RIWATCH (Research Institute of World's Ancient Traditions Cultures and Heritage) based at Khinjili, Roing, Arunachal Pradesh.

The cultural mosaic of Northeast India is diverse and firmly rooted in their traditions. It is prominently reflected in every aspect of their daily life, whether it is weaving, craftsmanship, worship, health practices and even ethos and taboos. The continuity of these cultural traditions in today's modern world shows its importance in sustainable living.

This conference aims at bringing out the fine components of sustainable practices and conservation through qualitative presentations of learned scholars. I am sure this conference will be of great learning and benefit large number of students and institutions of higher education.

RIWATCH as an Institute of Ancient Traditions has therefore joined hands with NAMCARE to organize this conference. The objective of the RIWATCH is to link vibrant culture with sustainable development and to bring traditional knowledge to academic forefront.

I congratulate the organizers of the conference and NAMCARE for bringing out this abstract book.

A handwritten signature in black ink, appearing to read "Vijay Swami", with a long horizontal line extending to the right.

**Vijay Swami**  
Executive Director  
RIWATCH

**Kamakhya Prasad Tasa**

MEMBER OF PARLIAMENT

Rajya Sabha  
Assam



सत्यमेव जयते

Member

- Standing Committee on Defence
- Consultative Committee on Petroleum & Natural Gas
- Parliamentary Committee on the Welfare of Scheduled Casts & Scheduled Tribes

Date: 20-02-2024

## MESSAGE

It gives me immense pleasure that NEMCARE Group of Institutions, Mirza is going to organize a two-day National Conference on 23rd February to 24th February, 2024 with the theme "Northeast India's Traditional Wisdom: Bridging the past and present through knowledge system, Health Practices, Agriculture, Art, and Conservation".

North East is not only vibrant and diverse in the sphere of art and culture, but it is a unique hub of traditional knowledge. The lifestyle of North Eastern region is imbibed with nature and therefore a large chunk of the traditional wisdom is based on the commodities locally available in the nature. The process of co-habitation with the nature has also provided a positive relationship between human and nature.

I am sure this conference will bring out many lesser known aspects of this topic and also deliberate on the many facets of the already established academic discourse.

I hope, this Conference will provide a platform to the young researchers to actively engage in the field of research and also make important networks for future collaboration.

I wish the Conference all success.

(Kamakhya Prasad Tasa)

## MESSAGE FROM THE CONVENOR

**Dr. Apurba Talukdar**

M. Pharm, PhD, MBA

Associate Professor

NIPS, NEMCARE Group of Institutions



Dear Participants and Respected Colleagues,

As the Convenor of the National Conference on "**Northeast India's Traditional Wisdom: Bridging the Past and Present through Knowledge Systems, Health Practices, Agriculture, Art, and Conservation**", it is my honor to welcome you to this pivotal event. Scheduled for the 23<sup>rd</sup> and 24<sup>th</sup> of February 2024, our conference promises to be a melting pot of diverse ideas and rich cultural exploration.

This abstract book serves as a prelude to the intellectual feast that awaits us during the conference. It encapsulates the essence of our theme, showcasing a myriad of perspectives that delve into Northeast India's traditional wisdom. Each abstract is a testament to the dedication and scholarly rigor of our contributors, who are at the forefront of unraveling the intricate tapestry of knowledge, health practices, agriculture, art, and conservation in this unique region.

Northeast India's rich cultural heritage has long been a source of fascination, and this conference provides a platform to bridge the temporal gap between traditional wisdom and contemporary challenges. The abstracts featured here symbolize the collective effort to ensure that the wisdom of the past continues to guide us into the future.

I express my sincere gratitude to all contributors for their insightful and impactful contributions, laying the groundwork for meaningful discussions during our gathering. As we convene on the 23<sup>rd</sup> and 24<sup>th</sup> of February 2024, let us celebrate the diversity of thought, explore the intersections of tradition and modernity, and collectively chart a course toward a more informed and culturally enriched future.

I eagerly anticipate the intellectual exchanges, collaborations, and discoveries that will undoubtedly mark this conference as a milestone in our shared pursuit of knowledge and cultural understanding.

Thank you for your enthusiasm and dedication to the spirit of Northeast India's traditional wisdom.

Warm regards,



Dr Apurba Talukdar

Convenor, NTHHAC-2024

National Conference on

**"Northeast India's Traditional Wisdom: Bridging the Past and Present through Knowledge Systems, Health Practices, Agriculture, Art, and Conservation"**

**PROGRAM AGENDA**

**Day 1: 23<sup>rd</sup> February 2024**

<b>Time</b>	<b>Program</b>
08.30 AM – 09.00 AM	<b>Registration</b>
09.00 AM – 09.45 AM	<b><u>Inaugural Ceremony</u></b> <b><u>Chief Guest:</u> Dr. Dinesh Baishya, Vice-Chancellor, Krishnaguru Adhyatmik Visvavidyalaya, Krishnaguru Sewashram, Sarthebari, Nasatra, Barpeta-781307</b> <b><u>Special Guest:</u> Sri. Vijay swami, Executive Director, RIWATCH, Arunachal Pradesh</b> <b><u>Guest of Honor:</u> Dr. Hitesh Baruah, Managing Director cum CEO, NEMCARE Group</b> <b><u>Guest of Honor:</u> Dr. Mihir Kr. Baruah, Executive Director, NEMCARE Group</b>
09.45 AM – 10.30 AM	<b><u>Keynote address:</u> Prof. Dipak Jyoti Baruah, MA, MCJ, PH.D. Department of English, Mahapurusha Srimanta Sankaradeva Viswavidyalaya Rupnagar, Guwahati-781037</b>
10.30 AM – 10.45 AM	<b>Tea break</b>
10.45 AM – 11.45 AM	<b><u>Invited Talk:</u> Dr. Pranab Jyoti Das, B.V.Sc., M.V.Sc., PhD Senior Scientist (Animal Genetics and Breeding), Rani, Guwahati, Assam</b>
11.45 AM – 12.45 PM	<b><u>Invited Talk:</u> Sri. Vijay swami, Executive Director, RIWATCH, Arunachal Pradesh</b>
12.45 PM – 01.45 PM	<b>Lunch</b>
02.00 PM – 03.30 PM	Poster Presentations
03.30 PM – 04.30 PM	<b>03.30 – 04.30 PM:</b> Cultural event by Students of NEMCARE Group of Institutions <b>04.00-04.30 PM:</b> Traditional Attire show of Noth East.
04.30 PM – 05.00 PM	<b>High Tea</b>



National Conference on  
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**PROGRAM AGENDA**

**Day 2: 24<sup>th</sup> February 2024**

<b>Time</b>	<b>Program</b>
09.30 AM – 10.30 AM	<b>Invited Talk: Dr. Pankaj Protim Bordoloi</b> , Deputy Director President House Museum, India, Museologist
10.30 AM – 11.30 AM	<b>Invited Talk: Dr. Biswajyoti Bora</b> , BAMS, MD (Ayu), Ph.D HOD, Govt Ayurvedic College, Guwahati, Assam, Pin -781014
11.30 AM – 11.45 AM	<b>Tea break</b>
11.45 AM – 12.45 PM	<b><u>Invited Talk: Dr. Anindita Sharma</u></b> , Director, Indian Weavers Alliance Inc
12.45 PM – 01.45 PM	<b><u>Invited Talk: Mr. Jyoti Khataniar</u></b> , Editor of Manthan, A monthly bilingual magazine and Executive Editor of 12 Baro 18 Utharo (Assamese Magazine).
01.45 PM – 02.45 PM	<b>Lunch</b>
03.00 PM – 04.30 PM	Oral Presentations
04.30 PM – 05.30 PM	<b>Prize distribution and Valedictory function</b> <b><u>Chief Guest: Dr Numal Momin</u></b> , Deputy Speaker, Assam Legislative Assembly <b><u>Guest of Honor: Dr. Pankaj Protim Bordoloi</u></b> , Deputy Director President House Museum, India, Museologist <b><u>Guest of Honor: Col Omkar Singh</u></b> , Registrar, North Eastern Hill University, Umshing Mawkynroh, Shillong 793022
05.30 PM – 06.00 PM	<b>High Tea</b>



## **ADDRESS FROM THE CHIEF GUEST**

**North East India's Traditional Wisdom: Bridging the Past and Present**

**Speech of the Chief Guest at the National Seminar, organized by NEMCARE  
Group of Institutions**

**Dr. Dinesh Baishya**

**Vice Chancellor, Krishnaguru Adhyatmik Visvavidyalaya**

*baishya.dinesh@rediffmail.com*



There are misconceptions among most of the people about indigenous knowledge. On a rather superficial level, this set of people tends to think that knowledge of science and technology is the development of the modern age. Again, there is the popularly held view that people of Indigenous societies were ignorant about knowledge of science and technology. It is also commonly misinterpreted that science and technology developed entirely in the west, the contribution of the East is nil or negligible in this regard.

Until quite recent times the widespread attitude has been that Western science with its powerful analytical tools has little to learn from indigenous knowledge. However, scientists are now learning to look to the past for indigenous knowledge and to perceive that the world is losing an enormous amount of basic research as indigenous people shed their culture and tradition.

In recent decades, much interest has been aroused in the history of science and technology in the great non-European civilisations, especially in China and India. During the past thirty years, historians of science in western countries have tended to reject the sociological theories of the origin of modern science that had a considerable innings earlier in this century. It has been seen that in the recent times Scientists and historians of science and technology are trying to unfold scientifically the forgotten chapter of the history of the intellectual development of the Indian people, namely the cultivation of experimental sciences.

The scientific achievements of the Indians are closely related to their national character, which have left its imprint on all their work. The progress of a nation, viewed in historical perspective, does not always proceed along a continuously advancing straight line.

The history of the Indian peoples, as that of no other peoples on earth, for four thousand years of which more or less accurate data are available, is full of such examples of zigzag advance and arrest of culture. We see clearly that during these four thousand years of India's history, in the few epochs when the country was united under one power, was well governed, and was not subject to foreign yoke, it made rapid advances in all directions. The remarkably rich and large territory of the country and high degree of competence of the people apparently secured the possibility of its rapid progress. Moreover, in fact, when in the fourth century B.C., in the course of its aggressive advance of the East, the Greek civilization reached India; it met resistance from the high Brahmin culture, which was in no way inferior to the Greek civilization.

Royal's *Antiquity of Hindu Medicines* and Ainslie's *Materia Medica of India* are aware that the Arabians were the first to derive their knowledge about medicines and healing art from the medical works of the Hindus. Dietz proves that the late Greek Physicians were acquainted with the medical works of the Hindus. Dr. Green Armitage of Calcutta medical College told

his students that- you are being surprised by the study of our surgery but you don't know that our entire Science of Surgery based on your Sushruta *Samhita*.

Coming to the field of experimental sciences, it is necessary first to note the advancement of the Indians in chemistry and botany. Both these sciences had practical importance as necessary branches of medicine. The Indians regard medicine as the oldest of the sciences and, in all probability, its sources were borrowed from the Babylonians. The Indian medicine organized from the notion that a body remained healthy if there was equilibrium between the three basic secret fluids, which are there in a human and animal body and are controlled by the normal performance of its functions.

Surgery was the most illustrious aspect of ancient Indian medicine. Since olden days, the Indian doctors were renowned for their surgical operations. In plastic surgery, they had achieved such perfection that the European surgery of the nineteenth century had to borrow some methods from them. Comparatively large number of cases of chopping of noses in punishment for various crimes had made it necessary that a nose be created artificially.

### **North East India's Traditional Knowledge:**

It has been observed that apart from the Vedic Hindus, people living in different distant corners of India have also contributed largely towards science and technology in indigenous ways. Ancient Assam, the present North- Eastern India being the neighbouring part of China, the country that greatly contributed towards world of science and technology, has a considerable contribution towards Indigenous form of science and technology. A large amount of indigenous science and technology has been explored from the traditional culture of various ethnic societies of North - East India.

It has been revealed by many studies that Indian indigenous societies have always been a stronghold of scientific temperament. They have experimented, observed, made conclusions by trial and error and evolved their very own indigenous knowledge of science and technology- which, with the passage of time, has blended with the indigenous culture. Thus, every society has its own heritage of knowledge science and technology stored in its traditional wisdom. Indigenous knowledge is still relevant and useful to the modern society.

The search for scientific knowledge in indigenous wisdom is a comparatively a new field of investigation. There are only a few scholars who have undertaken studies in this field. Apparently, no serious attempt seems to have been made so far to study indigenous knowledge system attributed to the traditions and cultures of the various ethnic groups of the Assam and north eastern part of India.

The following disciplines may be covered to describe Indigenous scientific knowledge of ancient India present Assam and North eastern India - Taxonomy, Agricultural and Environmental Science, Human medicine, Veterinary medicine Animal husbandry, Mathematics and Astronomy, Fisheries science, Industries and Crafts, Metallurgy Architecture etc.

### **Taxonomy:**

Taxonomy is one of the oldest arenas of indigenous knowledge. Man has learnt to identify plants and animals, since the day they started the activities of hunting, fishing and gathering in search of food. Man has been analysing the characteristics of plants and animals over the ages and there has been a continuous attempt on the part of the various ethnic group, to give each of the myriad plants and animals, a name- and bring them under an organised



classification. Almost every society had developed their own system of nomenclature and classification of plants and animals.

In ancient India, there was a distinct group of scientists who worked on taxonomy long before the advent of Western taxonomy. They studied the anatomy and morphology along with the behaviour of plants and animals and tried to classify those. It has been observed that those systems of classification were very much nearer to the modern taxonomy.

The oral and written literature of Assam and North East India reflects similar studies in the field of Taxonomy. There are large numbers of riddles, which probably are the result of taxonomical exercises of the indigenous people. In the effort of taxonomical exercise, whenever something appeared enigmatic, the indigenous Assamese taxonomist - in an attempt to compromise - created riddles- which in their turn, not only facilitated the classification of plants and animals, but also, added invaluable gems to the already existent literature.

### **Agriculture:**

Farmers all over the world have developed their own agrarian systems and this has come about within the framework of local possibilities and limitations of ecology within the social, economic and political structure.

There has been a great resurgence of worldwide interest in recent times in analysing indigenous methods of agriculture. This method has encompassed diverse areas, such as - agronomic methods, soil testing and soil classification, pest control and crop-protection techniques, irrigation, meteorology, agro-forestry etc. The early indigenous farmers propagate the knowledge of indigenous agriculture. These elements are stored in the folklore and culture. This knowledge of traditional agriculture needs to be not just documented but also to be encouraged and helped to take its rightful place in the context of modern knowledge

Farmers of Assam and north-eastern part of India traditionally developed many rare varieties of crop plants. Though there is no scientific data on traditional varieties of crop plants grown in all the states of the North East India, yet agricultural scientists have estimated the availability of more than one thousand endemic varieties of rice in this part of the country. A look into those traditional varieties will open the door to discovering many pest and drought resistant varieties.

Indigenous meteorological observations leading towards prediction of rainfall, scarcity of water etc. made by the farmers from the days of yore are found to be useful at this time of modern meteorological studies.

Plant diseases caused by various organisms are managed traditionally by the indigenous methods of pest management. As the modern system of pest, management is not eco-friendly and sustainable, therefore this knowledge has immense importance in the present time.

### **Human Medicine:**

“In ancient India, the only discipline that promises to be fully secular and contains clear potentials of modern understanding of natural science is medicine.” This was the remark made by Prof. D.P. Chattopadhyay, in his book *Science and Society in Ancient India*, to provide argument for establishment of medicinal lore in ancient India as a positive science.

A distinct form of Indigenous medicinal system was prevalent in Assam since the days of yore. A rich body of traditional medical lore has been found in the oral and written form of

literature of Assam. The traditional Assamese system of medical practice is called *bejali chikitsa* or *gharua chikitsa*. *Bejas*, the Assamese physicians applied medicines prepared from local herbs. This system is still living feebly in the traditional societies, which is proved to be a great repository of medical knowledge.

In the past, the Koch and Ahom royalties of Assam had maintained separate medical department under trained officers and physicians to look after and prescribe indigenous medicine for both men and domestic animals. There are many treatises on traditional medicine of Assam. It has been found that the Assamese people traditionally used varieties of cosmetics and sex medicines for beauty care and treatment of sex diseases.

### **Veterinary Medicine and Animal husbandry:**

In ancient India, people had adequate knowledge of the diseases of farm animals and the methods of curing them. The Indigenous people of North-Eastern India particularly of Assam had also developed methods of curing and treating the various ailments afflicting animals. There is valuable traditional lore on diagnosis and treatment of animal diseases. Descriptions of symptoms of diseases of cattle, horses and elephants and prescription of medicines for those are found in many sources of traditional veterinary lore.

The early rulers of Assam particularly the Koch and Ahom kings kept large number of horses and elephants for defence purpose. Consequently, a indigenous science for taking care of horses and elephants has been developed by the people of this region. In the Darrang district of Assam manuscripts on traditional horse lore entitled *Ghora Nidan* has also been found which contains large elements of horse lore and vet medicines. Further under the direct care of the Ahom king Shiva Simha and his wife Ambika Devi a manuscript on indigenous elephant lore with veterinary and elephant husbandry was written, which is known as *Hastividyarnava*. It is an invaluable treatise on elephant lore containing information on classification and nomenclature of elephants, their modes of training, ailments and their treatment.

### **Fishery Technology**

Fish is an essential article of food of the people of North Eastern India. Consequently, fish and fishing play a significant role in the cultural life of the people. It plays a vital role in moulding the minds of the people towards a rich tradition of conservation of rich fish diversity. Over the ages, the people of this region develop a large number of unique indigenous fishery technologies. Fishermen of this region has traditionally gathered some amazing knowledge in fish behaviour. This body of knowledge has immense importance in the study of fish and fishery management. People of North-East India are traditionally using around one hundred varieties of fishing implements. These fishing gears are unique in design and in their methods of operation. It has been observed that the people of this region have a thorough knowledge in the behaviour of the available fish species. Based on this knowledge they have developed various fishing gears suitable for fishing of those species. It is worth mentioning that most of the fishing gears are so designed that it prevents over exploitation and helps in conservation of fish population.

### **Environment Management:**

Over the ages, indigenous people have developed innumerable indigenous knowledge for sustainable development. They have devised ways to produce abundance from the forest without destroying the delicate balance that maintains the ecosystem.

Investigation of the religious and cultural heritage of Indian society reveals that they have, over centuries, provided knowledge of nature and rules of natural resource utilisation. Sacred groves, sacred ponds, sacred patches of grasslands, sacred animals, and others are examples of traditions of conservation backed by religious sanctions. The preservation of biological resources by such traditions is of immense significance.

Northeastern part of India and Assam in particular has a long-standing tradition of rainwater harvesting by different methods. Construction *dongs* (traditional canal system) and tanks for conservation and utilisation of water is glorified technology of water management in Assam.

People of other states of the North-East - Arunachal Pradesh, Nagaland, Meghalaya, etc. have developed various ways for conservation of nature and harvesting of water in the hills and valleys. They not only strategically harvest rain water but also use techniques for conservation of moisture and nutrients.

### **Arithmetic and Astronomy:**

The history of the development of mathematics in India is as old as the civilisation of its people. Vast sacred literature of Hindus contains enough materials of the brilliant mathematical tradition of ancient India.

Arithmetic was an important subject of study in the Indigenous schools of Assam. The man who was the pioneer in the studies of mathematics in Assam is Bakul Kayastha. He was the court intellectual of the royal court of King Naranarayana. The first original Assamese book on arithmetic was written by Bakul Kayastha, The name of this book is *Kitabat Manjari*. The Kayasthas of Assam had developed a kind of arithmetic, in course of time, which is known as *Kaitheli Anka*. The *Kaitheli Anka* is the indigenous form of mathematics in Assam. There are many examples of indigenous form of arithmetical exercises in the oral lore of Assam. These are composed in the form of riddles and jests. There are enough evidences of astronomical studies in early Assam. Indigenous astronomy of Assam made significant progress in the study of stars and planets.

India has been acknowledged as the stronghold of diversified and rich tradition of material culture. North Eastern part of India has always deserved special mention in this aspect. The people of this region have developed many traditional crafts and industries.

### **Industries and Crafts:**

North East India is known for producing special and indigenously developed types of paper, writing ink, painting material and innovative methods to preserve manuscripts and paintings. The idea of laminating paper or book covers is also regarded as an indigenously developed technology of this region.

Since the days of yore, edible salt was manufactured from fresh water brine springs of some areas of North East India. Surprisingly, this technology is still continuing and this salt is used by many of the local people, who consider that this salt has some miraculous medicinal properties.

Many of the natives of North East India have been using lime while chewing betel nut and leaves, since ages. In Assam, edible lime was produced by burning the shells of locally available snails. People of Khasi and Garo hills produced lime from mines from olden times.

Various ethnic groups have developed traditional technology of dyeing fabrics with natural dyes. Natives of this region have identified large number of plants which are used for dyeing purpose.

Traditional culture of entire North East India is regarded as bamboo culture. Bamboo is the main material of all type's traditional arts and crafts. Wood and bamboo are the main raw material for construction of houses and for making modes of conveyance like boats, carts etc.

An elaborate indigenous ivory craft making was a well-established industry of this region. North East especially Assam was famous for ivory products. Ivory wares of Assam have long history of export to many parts of the country since ancient times.

### **Metallurgy:**

India is the first country to develop a sound material culture by using various metals for manufacturing of different materials. People of India had developed various traditional metallurgical technologies. Some of these technologies have been proved the first of its kind in the world history of metallurgy.

The natives of North East India traditionally smelted iron ores and manufactured iron implements. The abundance of iron ore in the Khasi hills, developed a rich iron culture among the Khasis. They have developed a sound technology of iron smelting and works.

Gold was found mixed with the river sands of many rivers of Assam. The Sonowal community (gold washers) and the rupowals (silver washers) examines the sand of *chats* to discover gold and silver flakes in the silts. They have developed a traditional technology for collection of gold and silver flakes from the rivers and at the same time metallurgy of these metals. Manufacturing of gold and silver wares is an ancient profession of the people of Assam and other states of northeast. Use of ornaments in ancient Assam goes back to a very remote period. There were also traditional industries on brass, bell metal, copper and other metals in Assam.

### **Traditional Architecture**

Literary and epigraphic records testify to abundant architectural activity in Assam in the past. In Assam the Kachari, Koch and the Ahom rulers built many secular and religious architectural structures. The traditional Assamese houses are mainly constructed with wood and bamboo. Each type of house is used for different purposes and built in different architectural designs.

There is many oral lore on traditional architecture of Assam. This lore was scientific and useful in construction of houses. Till today, people in rural areas obey the principle of housing, available in this lore.

According to old literature that there were many fortified cities in Assam. Maidam or the burial mounds of the Ahoms had very high standard architectural structures. There was a chief architect in the days of Ahoms who was known as Chang Rung Phukan. Ahom rulers had established strong public works department, which was responsible for construction of roads, embankments, ramparts, tanks, temples, buildings and bridges.

In the first half of Ahom period, bridges over the rivers were made of wood and bamboo. Later the Ahom kings constructed many stone bridges. Of these stone bridges the Namdang stone bridge constructed over the Namdang river in 1703, by Rudra Singha was made by

tunnelling through a massive stone. Surface transports are still plying over this bridge. *Karhal* or Cement was prepared in the days of Ahoms for construction of masonry buildings. This was manufactured by using different ingredients like jiggery, snail lime, stone lime, black gram xon (a kind of plant fibre), fish oil, resin of sal tree etc.

Various tribes of Northeastern India used to build different types of traditional houses. These houses are environment friendly. There are some examples of earth quake resistant houses built by people of northeast region.

### **Importance of studies of Traditional Wisdom:**

Indigenous knowledge, science and technologies are usually spread by the practical demonstration and by oral communication. A particular technology may diffuse to a few neighbours or across the whole region. An innovation may have been developed for the particular ecological conditions where it was originated, by an artisan in a widespread industry.

Because of the fast erosion of indigenous knowledge, it is essential to record as much as possible, before it dies out. Even more important, is the need to inform others that people at the grassroots level are carrying out research today and that they can do it too. The collected data, therefore, requires dissemination, through journals which reaches farmers and artisans. The formalisation of traditional knowledge does appear to lead to institutionalisation, for instance, the 'Ayurvedic' system and the folk medicine. Members of such institutions, though accepted as part of the traditional system, either charge for their services or expect to be recompensed in some way.

### **Supporting Culture:**

A particular culture can be considered as a whole system of knowledge, of a way of understanding the complexity of the natural world so that rules can be laid down which lead to the preservation of that society. Such a culture effectively serves to maintain a production system that serves all its members while not endangering the environment. Culture determines what type of knowledge which is transmitted from one generation to the other, which innovations are to be encouraged, to whom and how the accumulated and new knowledge has to be spread and imposes restrictions on its use.

Sustainability is the moot point in our traditional technology which did not produce unemployment, did not overuse natural resources or pollute the environment. There was no value seen in the possession of an increasing quantity of material products or in a lifestyle that stressed comfort even at the cost of the environment and justice.

The folk knowledge is well known but the support given to innovation is not so visible. Tribal are normally looked down upon and ridiculed by the non-tribal communities. The latter particularly go out of their way to laugh at any tribal who attempts to improve his/her farming or try out any other traditional innovation. Tribal, therefore, are often sceptical and rarely disclose to outsiders of the experiments they undertake, with the result that outsiders think that they lack initiative and imagination as well as scientific curiosity. It is only when they gain confidence that they impart their knowledge to the non-tribal who genuinely desire to learn from them. It then becomes evident that the community support and appreciation for experimentation for what they do grows strong enough to counter the negative forces which the aliens normally projects.

The traditional values which such cultures promote, need to be compared with the values of the Westernised system. If the latter turns out to be different and, perhaps, contradictory, then

the traditional systems could disappear unless the values are promoted, while the Westernised values are deprecated. The latter may itself be responsible for the destruction of much of the traditional systems over the last few centuries.

### **Preservation of the Indigenous Wisdoms:**

There has been a recent increase in awareness, debates and action on the collection of information and preservation of traditional technologies, on the revival of those that have fallen into disuse and on the present-day relevance of traditional technologies compared to those of the West.

The continuing persistence of indigenous knowledge and technology and its revival now is an outcome of the Westernised system being unable to resolve the problems individual farmers or artisans face, since its so-called solutions are too expensive, damage the environment, produce unemployment and have other obvious defects. Further, the people are realising that the alien Westernised system is not interested in reaching them except for further exploitation, and that it is in fact dropping them out of the industrial employment system, particularly after the liberalisation process was begun.

The forest and other natural resources are also essential for the preservation of traditional technology. Knowledge can be lost when the base for its practice degenerates, for instance, when deforestation destroys the plants from which medicines and other products are obtained its leads to disuse of traditional knowledge.

The need of the hour is a mass support to these traditional practitioners by using their products in preference to those produced by unsustainable means. Their existence will be vital to our survival when the non-sustainable Western system reaches its unavoidable limits.

Today vast archives of knowledge and expertise are spilling into oblivion, leaving humanity in danger of losing its past and perhaps jeopardising its future as well. Stored in the memories of elders, healers, midwives, farmers, fishermen and hunters, in the cultures of the indigenous people, is an enormous trove of wisdom. But the indigenous people are dying out by being absorbed into the so-called modern civilisation. With the loss of traditional culture, we are also losing the irreplaceable knowledge stored in it.

Over the ages indigenous people of northeastern India has developed many traditional technologies. The main characteristics of this set of technology are: it is researched and developed by the common people, it uses indigenous and usually low-cost resources, it is of immediate relevance to the people. After a detail study of the traditional technologies of North-East India the realisation should come that - these are not merely sets of techniques handed down from generation to generation. These elements of traditional research and development are socio-culturally relevant and sustainable.

The northeastern part of India, though endowed with a rich cultural heritage, still remains an enigma for many. Such study should help in establishing that the traditional knowledge and practices of the people of this region are reserves of diversified elements of science and technology.

It is hoped that this type of study will contribute to the worldwide efforts to pursue alternatives in the traditional knowledge to evolve sustainable strategies for development.

## **KEYNOTE ADDRESS**

### **Looking Ahead of the Contradiction between Tradition and Modernity:**

*It's Time for a Fresh Drive for Learning from our Indigenous Wisdom*

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The word- 'wisdom' refers to our intuitive capability to gather insights from our experiences. Many of our traditional knowledge are indigenous-wisdom-related knowledge.

The term – 'tradition' can be better understood when we put it against that of 'modernity'. We use to conceptualize modernity as something which provides us with enormous power over nature and something potentially rewarding for growth of our knowledge. To us, modernity also creates newer avenues for our joys and adventures. However, modernity also brings in its wake some worries as it creates newer challenges in terms of our potentiality of managing it in the right direction. We are worried, if it might one day destroy everything we have! The purists, therefore, rue over the fact that modernity has made 'the commodity production' all important, while man has lost control of his social relationships utterly. Well, while the debate over modernity appears to be unending, we also should not ignore the fact that 'Modernity' as a term is also an identifying marker to be understood in terms of human development. The process of modernization in human civilization is crucial for the material prosperity of man. It is instrumental, for example, in producing technology, implements and even attitudes. In an egalitarian society also, it plays a key role, for, by managing modernity in the right direction, such a society can bring about rapid economic progress.

That the lives of people today are generally dependent upon the scientific and technological innovations, this is also termed as "science's colonization" by Simon During in his Introduction to his edited book: *The Cultural Reader* (During 1-30). As today, the contradiction between the tradition and modernity is widening and the indigenous communities<sup>1</sup> everywhere in the world are being obliged to adjust to the disconcertingly new situations and circumstances. Even as these communities are being constrained to remapping their ways of living in such a fresh context, there is need of drawing fresh inspirations by us from the very wisdom reflected by many of their ways of life, rich as they are with their native imagination and intelligence. Such rediscoveries may in turn rejuvenate our own scheme of things in our planning and development and may freshly lead us to realize the imperative of taking cautious approaches towards preservation of their traditional cultural identities. We will thus bring ourselves to knock on the door of our sensibility to admit the very fact that everything in the name of Modernity is not obsolete.

With the surge of modernity, there is a palpable growth of the consumerists' culture and hedonism among the people. Ease, material comforts have, as it were, become objectives

of life for the youth in general. Proliferation of nuclear families has led to individualism, which has impacted a decline to the collective society. In today's economic set up, there is minimal participation of the people as a 'community'. All this has led to a clear void in the collective mode of the ethnic life. T.S Eliot felt that community's culture in its purest form can make life worth living. In his words:

Culture may even be described simply as that which makes life worth living. It includes all the characteristic activities and interests of a people: Derby Day, Henley Regatta, Cowes, the Twelfth of August, a cup final, the dog races, the pin table, the dart board, Wensleydal cheese, boiled cabbage cut into sections, beetroot in vinegar, nineteenth century Gothic churches and the music of Elgar...(qtd.in Sahu 23)

If modernity signifies temporality of the anti-traditional kind, the North-Eastern society too has over the decades developed such a (modern) stereotype. As in case of the other parts of the country, following independence, there was a radical change in all the social and economic contours of the life in the North-East. The changes were palpable everywhere-- in the towns and the villages, in the hills and the plains. Urbanization was rapid and new townships were springing up. Tea plantation, oil exploration, laying of the railway lines had already ushered in many socio-economic changes. Side by side with that, schools and colleges were multiplied. The emergence of the middle class also added a new dimension to this changing spectrum of life in the region [Regarding the emergence of this class, historian Rajen Saikia observes: "The Assamese middle class was the compound product of colonial bureaucracy, English education and tea industry. It is indissoluble. Though the three components played mutually supportive role, the social formation of class was flexible and it was capable of absorbing newer elements..." (Saikia 163)]. A great chunk of these people, unable to resist the marvels of the big wide world, isolated themselves from the traditional order of living. Such a development brought about social and spatial inequalities and added a further dimension to the atmosphere of decline of the traditional properties and values. However, development of the physical kinds also brings in its wake certain positive cultural impacts. For example, the improvement in surface communication has facilitated our villages to become far more accessible and as a result, the indigenous cultures being nurtured by these people are able to capture the imagination of the people living outside the limits of the concerned villages.

At the present juncture, when the tide of contradiction between the tradition and modernity leading to many disconcertingly new situations, has been in its fullest surge, both small and big indigenous communities of the North-East are obliged to adjust to the new circumstances. They now increasingly believe in co-existence with the different time-worlds.

At a time, when at the backdrop of the ruthless market economy, industrialization, urbanization and half-hearted implementation of development projects the modern experience threatens to destroy everything traditional we have, there is need for some strong initiatives for adoption of crucial projects at the community level for preservation of the native cultural properties from being withered away. To say the least, it is the people who should manage modernity to their both material, cultural and spiritual well-being. Traditional knowledge is one of the signifiers about the cultural and spiritual identity of a people. Framing proper mechanisms towards protection of the indigenous traditional knowledge is therefore an important call of the hour.

In the North-East various racial groups are living in close proximity to each other making it a land of great diversity. Here, numerous ethnic tribes living in both the hills and the



plains celebrate various festivals, nurture varied traditions of oral literature, folk dance and music, weave dreams on their looms and live impulsively with all their treasure trove of myth and mythology, religious and magical practices, customs, dialects and languages. Appreciating all this, we can just sum up by saying that the maelstrom of the perpetual disintegration of the traditional cum cultural life of these people should be rather faced with (i) Intensive and extensive case studies (ii) adoption of well thought out strategies and plans for managing modernity (iii) adoption of practical measures for preserving the cultural properties of yore.

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Traditional wisdom passes across time from one generation to another. There is wisdom even when people call or consider Nature as a divine mother or when he sees to different objects and aspects of Nature in terms of divinity or a mythical order. By endowing a personified principle upon all these, they indeed render a supplementary role for themselves in the conservation of the things in nature. So, the traditional wisdom, to a great extent, is based upon a community's responses to the physical world. People look upon Nature with an amount of mixed feelings, with a sense of both awe and amazement (and a sense of indebtedness is also integral to this feeling of amazement). Man amidst the Nature is also a participant and an observer. At times, due to the unpredictability of the Nature's activities, man was constrained to become passive; and yet, to survive or exist, man had to make complex dealings with the external world by way of yielding himself to his own tactics. Perhaps, it was at such circumstances that man had to rely upon his indigenous wisdom, which is the root or the beginning of the traditional wisdom in human civilization.

Traditional wisdom resides in people's memories. People tell stories and traditional wisdom may have its trans-generation through these stories. It has its roots also in the belief – systems and rituals. The practices of the material cultures by the different communities are also gateways to the traditional wisdom and knowledge. The natural resource management developed by the indigenous people around the world too is a testimony to these people's reliance upon their indigenous knowledge cum wisdom. These people are successfully holding to their traditional wisdom or the body of their local knowledge because they find them extremely beneficial and rewarding to their survival. Their wisdom to a great extent connects science beautifully and hence, the exploration and identification of it through multi-disciplinary exercises could be a unique enterprise for the scholars.

The indigenous knowledge and wisdom may also provide useful cues to the 'modern' man when he approaches to his real time issues. Many of this traditional knowledge, for example, have proved effective in the sustainable management of the resources. The ecological knowledge of the indigenous people who live in close association with nature is phenomenal. Thus, integration of these traditional knowledge in the policy and planning by the developmental agencies may be highly rewarding. The heritage of vernacular architecture or the traditional architectural culture retained by the different indigenous communities of the region is also such a great treasure, which can provide valuable tips to the builders and planners of today. For example, the typical house of the Mising, who generally live on the river banks, - the house on stealth, called 'Kare Okum' is able to minimize the loss of the properties of a family including the livestock during the floods. This sort of indigenous adaptation with the floods is an innovation, which has helped the government and non-government agencies to take effective programmes for housing for the riverrine communities.

In terms of ethnicity and identity, the North-East region presents a multi-hued socio-cultural space. The region boasts of around 150 ethnic tribes that are living in close association

with nature. Indigenous communities here display their singular and distinctive socio-cultural traits. Delving deeper into these ethnoscaples, one is also pleasantly surprised to discover how these people approach to different complexities of the material life with so much of realist approaches. Indeed, the traditional knowledge and wisdom together is an intrinsic part of every ethnic community. The Northeast is a cultural paradise in terms of all these. The man-nature reciprocity is embedded in the ethos of the indigenous communities of the region, which is also a testimony to their traditional wisdom. Because Nature gives, preserving the same is understood to be necessary by them. In many of the region's nature writings, therefore, one can see the representation and elaboration of this ecological wisdom regarding the cause of environmental justice traditionally retained and espoused by these people.

The ethnic communities of the North-East have got their indigenous systems of agricultural work, crop protection, food processing, water management, weather prediction, food security, ecological choices and values, ethno-medicines, soil conservation and customs regarding social management. In regards to agriculture, for example, in Arunachal Pradesh, the Apatani have shown their rare knowledge of cultivating rice in the wetlands which they do with application of the traditional wisdom with fascinating result in their production. The indigenous wisdom has proved highly rewarding in the settlement of disputes in many communities. In this context, for elucidation, one can refer to the process of delivery of the indigenous customary laws of the Lalung (Tiwa) tribe by the *bura-khel*. Referring to this traditional system of *bura-khel*, N.N. Sengupta says:

The *bura-khel* (group of elders) is the highest authority in the village set up. The number of members in a village council is generally eight but, in some cases, the number of members vary. They are selected by the villagers. Once selected the members of the council hold their membership till, they die or become too old to work. Vacancies in the council are filled usually after six or seven years. The council is headed by a *gaonbura* (headman) and assisted by an official *barikha* (messenger). The *gaonbura* is selected by the villagers for his capabilities. (Sengupta 486,487)

A spirit of mutual understanding and cooperation is found prevailing among the people of the community as the members obediently follow what the group of elders say and command to them. Thanks to such a *Khel* system, there is witnessed a strong community bond among the people. Thus, this system is able to regulate the participation of the people in the various activities of the village (for example, the members of the community help one another in times of a disaster besides working hard hand in hand in the fields during the cultivation and harvesting time, during construction of houses and during holding of the events like marriage and other rituals) besides ensuring prevalence of peace and harmony.

For many a rites and rituals of the people, there are definite material reasons behind their observance and these too reflect the practical wisdom of a community. The celebration of the Garu Bihu as part of the Bohag Bihu by the Assamese people may be a case in point. The first day of the Bohag Bihu is known as the Garu Bihu as it is dedicated to the cows in order to venerate the animal for all its services to man. On this occasion, the people customarily take the cattle to the nearby river or pond to bathe them. As for this ceremony, the cows of a village are brought together and are washed auspiciously by smearing a paste made of turmeric, gram, mustard oil etc on them. The veneration of the cows is something which has been in vogue since the Vedic times. The Garu Bihu thus can be considered as something which is part of the traditional veneration of the animal and something which is integral to the material and spiritual culture of the yore. This veneration is also the result of the bio-psychic drives of the agricultural man and is effectual in terms of the agricultural productivity. For one thing, all the worries

regarding the survival of him is resolved by this animal which furrows and ploughs the plots of land of a family. In a family which survives on agriculture, the cow becomes a defining factor. That the cow is considered a 'sacred' animal or an object of veneration, it indirectly goads their masters to help in its growth by all means. No wonder then that the Garu Bihu holds a special place in the mind of the people while they observe this springtime festival called Bohag Bihu.

The traditional wisdom of the indigenous tribes is generally based upon the concept of the essential unity extant among all the things of nature. The mind of them is filled with a sense of awe about it and they are prone to look upon the canvas of nature by endowing upon it the concept of a spirit having primeval power. They also see to different natural formations and objects separately in terms of giving each of them a personified principle of divinity. Thus, certain rocks, springs, rivers, hills, trees and groves hold special significance to them as they respond to them with a gaze of metaphysical awe and sensitivity. It is in this way that myth plays the key role in their appreciation of the natural world with all its forests, trees, rivers, lakes, animals and hills as they by the influence of it, automatically become the protectors of the environment around them. Their knowledge of conservation and the wisdom therein is the outcome of their group-beliefs, howsoever mythical those beliefs may appear to be. This traditional wisdom lets these people to view the environment as an insider-participant of it and not as an anthropocentric viewer of it. No wonder then that the ethnic communities of the region can boast of a rich heritage of ecological wisdom. Ecological wisdom has its own key importance in ensuring the balance of the environment. How we utilize our indigenous wisdom in the resource management can play an effective contribution in the ecological sustainability. Our indigenous knowledge has its capability to provide us with insights into this sustainability. It helps us by showing how we can live enjoying the offerings of the earth only by respecting the richness and diversity of life-forms. Thus, there is a precautionary principle integral to the indigenous ecological wisdom of us. Ecological wisdom also sustains through faith, tradition and the cultural mores and practices of the people. For example, the collective sense of the sacred gets expressed through various cultural cum traditional properties reared and nurtured by man and this faith also bears in its fold certain ecological wisdom. But to the bizarre contrast to the days of our ancestors when man was in quite harmony with the local and domestic landscape (thanks to their deeply ingrained and naturally developed ecological wisdom), today, the preponderance of the utilitarianism has been affecting usurpation of his innate ecological wisdom leading to an ominous setback to the ecological balance.

In Sikkim, certain Buddhist monasteries play important roles in protecting and preserving the biological diversity. Certain sacred groves are attached to them. These groves are dedicated to certain local deities and saints (Cho Chuba, Loki Sharia, Guru Padmasambhava, Rolu Devi) and the areas so assigned are called Gompa Forest Areas.

In Meghalaya, the sacred grove is a marked feature for several indigenous communities. In this state, people also worship ancient stones that are dedicated to the memory of certain legendary people who passed away long before.

In Assam, a section of the Bodos and Rabhas who rely mostly upon the forests for their survival are also preserving their tradition of protecting sacred groves. Their belief-system thus supports their service to the ecosystem.

There are sacred bamboo reserves in Manipur dedicated to different deities. These bamboo reserves help in regulating the atmospheric humidity which supports the agriculture.

*Umanglai* (*Umang* meaning forest and *lai* meaning deities) is a Manipuri word to mean worship and protection of forests. *Umanglai* is practiced traditionally as a rite by the Manipuris.

Various other ethnic communities of the North-East including the Dimasas and Mompas also have such a unique age-old tradition of management of the environment. Most of these groves and reserves may be considered as biosphere reserves as besides trees and shrubs, various rare orchids, medicinal plants, ferns and microbes too grow in these areas.

About how people's veneration of nature can play an effective role in the protection the environment, Justice S. Vaidyanathan has the following to say in course of his making an observation in disposing a writ petition:

Our tradition and values, passed down to us from our ancestors, are not wrong beliefs. They are scientific, rational and logical. That is why they worshiped nature. Even now, many of them who follow our ancestral beliefs continue to do so as they have got abundant sanctity.<sup>2</sup>

Traditional wisdom also remains embraced upon by folktales and other folk traditions. They are vehicles for the promotion of human values and social taboos (certain taboos also play key roles in maintaining harmonious and balanced order in the society). Certain of the oral folk resources are of great empirical values. The sayings of Dak ('Dakar Bachan') prevalent orally, for instance, are nurtured and preserved by the Assamese people since time immemorial. These are alive through their applications. 'Dakar Bachan' are maxims expressed by Dak (Reverentially named as the Dak Purusha, who was a knowledgeable man, said to have been born in Lauhagaon - not far from the Barpeta town of Assam) that embody some traditional empirical knowledge of the Assamese society, that are imperative for the common man to solving many of their problems of the daily life. Effective in terms of their imparting of informal education to the people in their daily life, indeed, it is because of the rhyming patterns of these maxims that these are still being alive in the people's memory.

In regards to the wisdom related with the folk tradition; mention may also be made about the terracotta craft which is being alive in the hands of a few families of the Dhubri District of Assam. A craft village set up at Asharikandi under Devitola Development Block in the district is home to a range of terracotta items and about eighty families are being associated with this. Terracotta and pottery craft is the mainstay of livelihood for all these families of this village. This traditional knowledge of the craft has thus given a grand opportunity to these people for self-employment (it has generated direct employment to as many as 400 artisans). It has also added a remarkable feather on the cap of the district's tourism industry.

The North-East is a home to numerous plants and seeds that are traditionally being in use for their medicinal values. The traditional knowledge and wisdom are very much in work behind their acceptance as ethno-medicines. There are also miniature forests among the human settlements bearing vegetation of these kinds. Turmeric, for example, is a widely used root since time immemorial, which is indispensable for various herbal cures. It is considered to be an auspicious plant being indispensable for several festivals and household events such as wedding. The curcumin in turmeric is known to be effective as antidotes for various ailments and it is also known to be particularly useful for warding off dementia. Taking cue from the traditional knowledge about the usefulness of Turmeric for its medicinal properties, the pharmaceutical industry through their laboratories have been able to make the most of it by manufacturing a whole lot of herbal cures for the diseases like arthritis, conjunctivitis, bodily wounds, skin cancer, chicken pox, urinary tract infections and liver disorder. Knowledge of various ethno-medicines acquired through oral traditions by one generation from the preceding

ones remain guarded secrets of certain families and the taboo in public disclosure of them prevents the outsiders from collecting them for use by a larger public; and if these remedies need to be brought into standardized forms for patenting them, there is need of sensitive approaches in acquiring the same from their original bearers. For one thing, the indigenous medicines are generally of informal kinds and they do not fall into the codified category.

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To conclude, there is need of developing scientific databases to record the innumerable traditional knowledge being extant till now that could connect the dots between nature (with all its organisms), mythology and science. A large chunk of the ethnic people of this part of India is still dependent upon the wealth of nature in their own bio-spaces and thanks to their traditional wisdom of paying veneration to the hills, forests, rivers, springs etc. these resources along with the animals and the numerous other organisms are able to survive in spite of the gruesome threats coming from the so-called projects of the modernity. Many of this knowledge retained in their memory and practiced by the communities are patentable; however, for this, proper research-based enterprises will be required. Many of this knowledge are also being zealously preserved by the communities considering them to be sacred in nature and these need to be dealt with due sensitivity. Protection of certain traditional knowledge has also become an important issue in the regime of the Intellectual Property Rights and necessary guidelines must be made in this direction by the appropriate authorities. The Article 31 of the United Nations Declaration on the Rights of Indigenous Peoples has said the following on the indigenous people's right to protect and develop their cultural heritages and traditional knowledge:

Indigenous Peoples have the rights to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property (.....) and traditional cultural expressions.<sup>3</sup>

## Notes

### 1. According to Neelotpal Deka

([https://www.academia.edu/indigenous\\_People\\_traditional...](https://www.academia.edu/indigenous_People_traditional...)):“Indigenous peoples are a group of people whose members share a cultural identity that has been shaped by their geographical region and they are ethnic and native groups of a land or region, especially before the intrusion of a foreign and possibly dominating culture. They are generally regarded as the "original inhabitants" of a territory or region and in different countries variety of names are used to identify such groups of people.”

2. S. Mohamed Imranullah, ‘Religious Beliefs Protect Nature: HC’, The Hindu, 27 August 2017, Chennai edition.

3. United Nations Declaration on the Rights of Indigenous Peoples ([https://www.un.org/2018/11/UNDRIP\\_E\\_web/](https://www.un.org/2018/11/UNDRIP_E_web/) accessed on 25-01-2024)

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Note:

- PP: Poster Presentation
- OP: Oral Presentation

NITN/2024/OP/01

**TITLE: INTEGRATED APPROACHES IN SILKWORM REARING: COMBINING  
TRADITIONAL WISDOM WITH MODERN ADVANCEMENT FOR SUSTAINABLE  
SILK PRODUCTION IN NORTHEAST INDIA.**

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**Abstract**

**Introduction:** This study probes into the sustainable avenues of silk production in Northeast India, with an acute emphasis on safeguarding the diversity of silkworms and integrating the region's rich traditional practices with progressive techniques. The research pays homage to the distinct profiles of local silkworm species and underscores their critical role not only in the textile market but also in the cultural tapestry of Assam. The research extends to modern advancements in breeding, rearing, and mulberry cultivation, particularly spotlighting the adoption of “Turmeric and Tulsi extracts.” These traditional supplements, deeply rooted in the local ethos, are evaluated for their potential to enhance silkworm vitality and silk quality—merging ancestral wisdom with contemporary science.

**Methodology:** The research findings indicate that the inclusion of turmeric and Tulsi extracts in the silkworm diet leads to more robust growth patterns and could significantly augment the silk yield. This is particularly relevant to Assam, where silk production is not merely an industry but a cultural heritage.

**Result and discussion:**

- The effect of *O. sanctum* extract on the larval, cocoon and silk characters of silkworm, *B. mori* are observed and results showed that *B. mori* larvae treated with 2% *O. sanctum* extract has significant increase in growth and every desired parameters.
- The effect of turmeric extract on *B. mori* has showed better performance in the growth of the silkworm and cocoon production.

**Conclusion:** The practice of sericulture is deeply interwoven with the community's identity, rituals, and economic wellbeing. By presenting this amalgamation of silkworm diversity and the use of traditional plant extracts, the study not only seeks to enhance the sericultural landscape but also to reinforce the cultural significance of silk in Assam.

**Keywords:** sustainable sericulture; silkworm diversity; traditional practices; cultural heritage; economic impact

NITN/2024/PP/02

## A SURVEY ON THE DEEP-FRIED FOOD CONSUMPTION HABITS AMONG THE PEOPLE OF DIFFERENT AGE GROUPS IN ASSAM AND INCREASING HEALTH RISKS

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### Abstract

**Introduction:** From restaurants to home kitchens, deep frying is a very popular cooking technique to prepare various food items like samosa, pakora, kachori, jalebi etc due to its enhancement of flavour, preservation ability and economic benefit. Deep frying of food degrades the quality of both the oil and the fried food by producing various biochemical or chemical substances and these substances enters our body along with the food and causes various health problems like hypertension, atherosclerosis, obesity etc.

**Methodology:** A survey was conducted on the deep-fried food consumption habits among different age group of people in Assam. A questionnaire was prepared related to the food habits and it was circulated among the people of various age groups.

**Results & Discussion:** It was observed from the responses that majority of people selected fried food over boiled food as their food preferences and samosa has come out as the mostly consumed deep fried food. It was very surprising to know that many people are aware of ill health effects of deep-fried food but still continuing to consume in repeated manner. People reported that they were suffering from gastric pain, diarrhoea or vomiting after consuming these food items. Nearly half of the responses revealed that people are being anxious when they do not eat fried foods and the tendency of eating has increased over time which clearly indicates the rise of mental health issues among the people.

**Conclusion:** There is a strong correlation between repeated consumption of deep-fried food and increasing tendency of various physical and mental health complications. A social awareness is required among the people about the ill effects of repeated consumption of deep-fried food items and related health problems in order to promote personal and social health.

**Key words:** Fried food; diarrhoea; mental health.

NITN/2024/PP/03

## WOMEN AND TEXTILE IN MANIPUR

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### Abstract

**Introduction:** Manipur's textiles are deeply ingrained in the region's social fabric and have significant cultural value. These textile traditions, closely linked to women's identity, cultural legacy, and means of economic subsistence, are created, maintained, and shared by women. The women of Manipur are the guardians of this legacy; they frequently start the textile production process from spinning yarns to weaving elaborate patterns. These are the kinds of talents that mothers have traditionally taught their daughters, which helps women feel connected and cohesive. Textiles are not just important culturally; in Manipur, they help women gain economic independence. The weaving cooperatives and self-help groups led by women have preserved traditional techniques and provided avenues for economic independence and entrepreneurship. However, even while women play a crucial part in Manipur's textile traditions, there are obstacles and dangers to their long-term viability. Women's economic potential in the textile industry cannot be fully realized due to limited access to resources, markets, and infrastructure. A comprehensive approach is needed to address these issues, including protecting traditional knowledge, encouraging innovation, giving women access to markets and resources, and empowering them on the social and economic fronts.

**Methodology:** A qualitative methods will be adopted for the study. In-depth interview, oral history and telephone interview are the multiple tools of data collection that will be used.

**Results & Discussion:** In Manipur, women are integral to the textile traditions, contributing to both economic growth and cultural preservation. Maintaining Manipur's rich textile legacy and fostering equitable prosperity in the area depend on empowering women artisans via skill development, market access, and policy assistance.

**Conclusion:** The participation and empowerment of women in Manipur's textile industry must be given top priority in initiatives to advance sustainable development and protect cultural heritage. Preserving Manipur's rich textile legacy and empowering its women depend heavily on acknowledging and valuing women's critical role in this field.

**Keywords:** textile; women; empowerment; culture.

NITN/2024/0P/04

## WOMEN SHAMANISM AMONG TRIBES OF ARUNACHAL PRADESH

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### Abstract

**Introduction:** Arunachal Pradesh is predominantly domiciled by the various tribal communities which include around 25 tribes and more than 100 sub-tribes. Every tribe has its own beliefs, tradition, cultural practices and tribal social institutions. One such noteworthy social institution comprise of shamanistic tradition where shamans play a crucial role in their cultural activities and their consultation is frequently pursued to fulfill significant tribal rituals spanning from birth of a child to his deathbed, commencing to closure of major festivals along with innumerable ritual performances. In the religious domain shamans are venerated and exercise the zenith power of authority, they are believed to be ordained as the custodian of physical, social and spiritual world. Shamans as a highly revered member in the tribal society has always comprised of male dominated space as an aftermath of which has accentuated and emphasized the dearth of understanding the need to study women shamanism. Thus comprehending the need to examine the existence, relevance, change and continuity of women shamanism.

**Methodology:** This research paper aims to study tribal communities of Arunachal Pradesh viz. Idu Mishmi, Adi, Apatani, Nyishi and Tagin. Methodologically, this study employs an ethnographic investigation using a qualitative approach. The study is based on both primary and secondary sources which includes in-depth interview with the shamans, cultural experts, authors, articles, books relating to women shamanism.

**Results & Discussion:** The study has highlighted the stature of women shamanism in Arunachal Pradesh resulting in balanced and parallel authority & influence in various acts of life. For instance in Idu Mishmi society, *igus (priest)* do not have any gender bias. There is awareness of hierarchy among the priests and it is generally believed that female igus who are fewer in number are actually quite powerful, in some cases even more powerful than their male counterparts.

It ascertains roles and functions of male & female shamans which is almost equivalent in significance if not purely identical in nature.

The study examine factors affecting growth or decline of women shamanism in Arunachal Pradesh which includes modernization of lifestyle, cultural lag, lack of self-interest, ignorant behavior, deliberate awareness on significance of tribal heritage through research institutes, higher educational institutes, community based indigenous societies etc like RIWATCH, Rajiv Gandhi University, Doimukh, Arunachal Pradesh through various formal education including research studies amongst native scholars, Idu Mishmi Cultural and Literary Society (IMCLS), Mysore based Nature Conservation Foundation (NCF) making a sincere effort to save age old faith by

starting 'Idu Mishmi Shaman Fellowship Programme'; The 'Donyi Polo Cultural & Charitable Trust' initiative of Nyubu (priest) Nyvgam (person having wisdom & knowledge) Yerko (learning institution)- a formal institution for indigenous language and knowledge systems.

However this study also documents the subjective experiences of women shamans who expressed their multifaceted roles and function they cater in society hence their inability to consecrate and devote time to practice shamanism.

**Conclusion:** Hence this study facilitates in understanding the status of women in tribal society which further highlight the prerequisites to transition into a higher social being culturally. It additionally helps us comprehend the comparative study of women shamanism and gender role among different tribes of Arunachal Pradesh, their similarities, differences and their status quo juxtaposed to their male counterparts. The study thus examines how women shamanism impacts the social institutions, their gender role and functions in multiple contexts such as social status, economic status (financial independence), political status, education, role in decision making, family and marriage.

**Keywords:** Women Shamanism; Change and Continuity; Status Quo; Gender role and function; Tribal social institution.



NITN/2024/PP/05

## EXTRACTION AND CHARACTERIZATION OF STARCH FROM PURPLE SWEET POTATO TO EVALUATE ITS POTENTIAL AS TABLET EXCIPIENTS

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### Abstract

**Introduction:** A naturally occurring polymer found in a wide variety of green plants is starch. Among polymers used as a pharmaceutical excipient, starch holds a prominent position because to its nontoxic and nonirritating qualities, low cost, ease of modification, and variety of usage. Starch is a common ingredient in conventional tablets and capsules, serving as a lubricant, disintegrant, binder, and diluent. In a drug delivery system, the excipient facilitates the drug's transport to the specific site of action. Excipients have an impact on the length and pace of medication release and absorption, either directly or indirectly.

**Methodology:** The present study examined the excipient properties of isolated native purple potato starches collected from the local market of Assam followed by modifications and analysis of starch includes parameters like amount of amylose, water-holding capacity, swelling, and solubility etc.

**Results & discussion:** Following pregelatinization, it was found that the amount of amylose, water-holding capacity, swelling, and solubility characteristics increased.

**Conclusion:** The obtained results indicated starch's extracted from purple sweet potato have numerous intrinsic qualities, inexpensive cost, wide range of applications, and ease of modification, it will remain a substance with significant utility in drug administration.

**Key words:** Excipient, starch, Amylose, Solubility

NITN/2024/0P/06

**BIOCHEMICAL STUDY ON THE EFFICACY OF *Dactylicapnos scandens* AN ETHNO-MEDICINAL IMPORTANT PLANT**

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**Abstract**

**Introduction:** *Dactylicapnos scandens* is popular among traditional healthcare providers in Nagaland, North East India, and used to treat various ailments including diabetes. Plants have been a major source of medicine in all cultures from ancient times. In the traditional system, various indigenous plants are being used in diagnosis, prevention, and elimination of human disease. India is the largest producer of medicinal herbs and has a rich heritage of traditional systems of medicine such as Ayurveda and homoeopathy.

**Methodology:** The present study evaluated pharmacognosy, herbarium preparation, GPS-GIS tagging, Elemental analysis, and Proximate analysis from *Dactylicapnos scandens*.

**Results & Discussion:** The pharmacognosy assay revealed the powder to possess fine particles averaging 170  $\mu\text{m}$ , passing through a 180 sieve. 0.8gm foreign particles were found out of 10 gm of fine powder sample. The bacterial load was found 2.8 CFU/ml and the fungal load was found 0.4 CFU/ml in the root tuber of *Dactylicapnos scandens*. Element Analysis was done by using Euro elemental analyzer, where found Carbone 40.863%, nitrogen 2.241%, and Hydrogen 6.736%. Proximate analysis showed carbohydrate  $45 \pm 2$  mg/gm, Protein  $17.5 \pm 0.2$  mg/gm, moisture  $9.6 \pm 0.25$  mg/gm, ash  $0.83 \pm 0.004$  mg/gm, fat  $1 \pm 0.05$  mg/gm, crude fiber  $20 \pm 0.05$ mg/gm.

**Conclusion:** In conclusion, the present experiment will provide the necessary information to evaluate further Research.

**Keywords:** Ayurveda; Homoeopathy; Diabetes; Pharmacognosy; GPS-GIS;

NITN/2024/0P/07

**COMPREHENSIVE PHARMACOGNOSTIC STUDY AND CHROMATOGRAPHIC  
FINGERPRINTING OF *Cuscuta reflexa* Roxb.: A DETAILED EXPLORATION OF A  
PHARMACOLOGICALLY POTENT PLANT**

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**Abstract**

**Introduction:** *Cuscuta reflexa* Roxb., commonly known as Dodder in English, is a parasitic weed belonging to the Convolvulaceae family. It has been documented for its diverse medicinal properties. *Cuscuta reflexa* Roxb., an atypical parasitic vine without leaves or roots, exhibits a green-yellowish coloration. The plant is utilized for diverse medicinal applications, demonstrating efficacy as an antifungal, anti-HIV, antibacterial, anti-inflammatory, antidiabetic, and antioxidant agent. Furthermore, it finds utility in promoting hair growth and serves anthelmintic, antihistamine, anticholinergic, anticonvulsant, central nervous system depressant, muscle relaxant, analgesic, antitumor, and diuretic functions, among other therapeutic applications.

**Methodology:** This study aimed to conduct pharmacognostic investigations and chromatographic fingerprinting of the entire *Cuscuta reflexa* Roxb., plant sourced from Mirza, Kamrup, Assam. Three distinct chromatographic evaluations, namely Thin-Layer Chromatography (TLC), High-Performance Thin-Layer Chromatography (HPTLC), and High-Resolution Liquid Chromatography-Mass Spectrometry (HRLCMS), were performed.

**Results & Discussion:** The pharmacognostic studies indicated that the parameters examined fall within the specified range. Analysis of TLC and HPTLC revealed that its Rf aligns with the Rf of the standard flavonoid. The HRLCMS report identified the presence of 100 different compounds. Subsequently, employing Swiss ADME and Molsoft led to the filtration of approximately 10 compounds.

**Conclusion:** Till date, no prior studies have documented the chromatographic fingerprint of *Cuscuta reflexa* Roxb. obtained from the Northeast region of the country. This absence of information represents an opportunity for researchers, as the development of a chromatographic fingerprint holds significant potential in facilitating and directing future investigations related to *Cuscuta reflexa* Roxb.

**Keywords:** *Cuscuta reflexa*, Dodder, HRLCMS, Molsoft, Pharmacognostic studies.

NITN/2024/0P/08

## ANCESTRAL TAILORING- INDIA'S INTANGIBLE CULTURAL HERITAGE

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### Abstract

**Introduction:** Tailors have been an essential part of our lives. Tailors are skilled artisans, usually on the socio-economic margins but they contribute both to elite and popular fashions with their knowledge, art of cutting and sewing. Inheritance of artisan's knowledge and skill, is evident by elegance, tradition and style of the garments.

In India the hierarchy of social classes were introduced in the Vedic Period (1500 to 500 BC). One of the main factors for this was the growth of occupational castes that brought the changes in the caste system. The main features of this caste system was the hereditary profession and endogamy. Castes were representatives of the various crafts and also played an important role in the formation of socio psychological features of craftsmen. The artisans adopted their forefather's profession and also inherited professional and technical skills which were orally passed on by the family.

**Methodology:** Mix methods of research has been used for present study and purposive sampling are applied for identification of cases from the tailor community. Data collection is done by case challenges and interviews and data analysis are based on narrative and case studies which is identified from the research area.

**Results & Discussion:** This research aims to explore the reason why the ancestral tailors who formed the backbone of the clothing industry, with their knowledge, abilities, and hard work receive little thought or recognition and their labour is usually characterized as mundane, as a consequence the younger generation of the ancestral tailor family prefer not to continue with the family profession which is our intangible heritage; and also explore the reason why the existing ancestral tailors who were once patronized are diminishing today? The rich experience and the nuances of the craft which were usually passed on to the next generation were only verbal.

**Conclusion:** Indian-crafted clothing of the past is a source of pride and have been admired domestically and internationally and are proudly displayed in Indian and international museums, like Victoria and Albert museum etc. Indian tailors, were highly patronized by the kings and noble for their immaculate craft and art of creating imagination to reality. Slowly the ancestral tailoring is disappearing so record the traditional format and the need to sustain this segment of tailors is the motivation for this study.

**Keywords:** Tailors, Indian Costumes, Cultural Heritage, Artisans, Craftsmen

NITN/2024/PP/09

## ETHOSOMES: A NOVEL APPROACH FOR TRANSDERMAL DRUG DELIVERY

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### Abstract

**Introduction:** Ethosomes are a novel phospholipid vesicular carrier containing high ethanol concentrations and offer improved skin permeability and efficient bioavailability due to their structure and composition. These are composed of phospholipid, ethanol and water. Ethosomes are noninvasive delivery carriers that enable drugs to reach the deep skin layers and/or the systemic circulation. Although ethosomal systems are conceptually sophisticated, they are characterized by simplicity in their preparation, safety, and efficacy—a combination that can highly expand their application. Skin acts as a major target as well as a principal barrier for topical/transdermal drug delivery. Despite the many advantages of this system, the major obstacle is the low diffusion rate of drugs across the stratum corneum. There have been many studies that are considering the nanoparticles as the carriers of the drugs for improving the transdermal drug delivery, but classic liposomes are of little or no value as carriers for transdermal drug delivery because they do not deeply penetrate the skin.

**Methodology:** Relevant data was searched using various databases like Google Scholar, PubMed, SpringerLink and Scopus.

**Results & Discussion:** Various studies has shown that, ethosomes have become an area of research interest because of its enhanced skin permeation, improved drug delivery, increased drug entrapment efficiency etc. Ethosomes are soft, malleable vesicles and potential carrier for transportation of drugs. These affect the normal histology of skin by producing lipid perturbation and increasing the intercellular lipid lamellae space of the stratum corneum. Also studies has shown that ethosomes containing 30% w/w ethanol and prepared by sonication showed highest value compared to other ethosomes.

**Conclusion:** Application of ethosomes provides the advantages such as improved permeation through skin and targeting to deeper skin layers which helps to increase the efficacy of transdermal drug delivery system.

**Keywords:** Ethosomes, transdermal, nanoparticle.

NITN/2024/0P/10

**PHARMACOGNOSTIC PROFILING AND HPTLC ANALYSIS OF *Pogostemon benghalensis* (BURM.F.) KUNTZE LEAF EXTRACT**

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**Abstract**

**Introduction:** *Pogostemon benghalensis* is an aromatic plant known for its strong and sharp fragrance. It possesses a significant amount of essential oil in both its leaves and flowers. This plant displays various biological effects, such as antibacterial, antiviral, antifungal, antipyretic, antinociceptive, anti-inflammatory activities and insect-killing properties. Notably, in Assam, this plant is consumed postpartum as a vegetable known for its restorative properties. The plant under investigation is rich in bioactive compounds such as Linalool, Ocimene, and Pinene, known for their anti-inflammatory properties.

**Methodology:** In August 2023, the leaves of *Pogostemon benghalensis* were gathered and subsequently validated at Guwahati University. The obtained plant material underwent drying, pharmacognostic analysis, and fluorescence analysis. Following these procedures, phytoconstituents were extracted through successive Soxhlet extraction utilizing different solvents such as n-hexane, ethyl acetate, and ethanol. The resulting extract was utilized for both phytochemical screening and HPTLC analysis.

**Results & Discussion:** Pharmacognostic analysis was undertaken to validate and identify the botanical material, ensuring its compliance with established standards and guaranteeing quality and purity. The powdered leaves' reactions with diverse chemical reagents and their fluorescence characteristics were observed under ultraviolet (254 and 366 nm) and visible light. Employing the successive Soxhlet extraction method yielded significant quantities for various solvents; specifically, n-hexane resulted in 1.74%, ethyl acetate in 9.53%, and ethanol in 3.28% w/w. The plant material exhibited the presence of distinct phytoconstituents, with alkaloids detected in n-hexane and ethyl acetate extracts, and flavonoids, glycosides, and phenols identified in ethyl acetate and ethanol extracts. HPTLC analysis was conducted using a solvent mixture of chloroform, ethyl acetate, and formic acid in a ratio of 5:4:1, confirming the existence of flavonoids, with a specific emphasis on the identification of quercetin.

**Conclusion:** *Pogostemon benghalensis*, rich in Linalool, Ocimene, and Pinene, displays diverse medicinal properties. The gathered and authenticated plant material underwent comprehensive analyses, confirming its quality. Soxhlet extraction yielded significant percentages, highlighting potential therapeutic compounds. Phytoconstituents like alkaloids, flavonoids, glycosides, and phenols were identified. HPTLC analysis further quantified chemical components, contributing to the plant's pharmacological understanding.

**Keywords:** *Pogostemon benghalensis*; HPTLC; Fluorescence; Pharmacognostic analysis

NITN/2024/0P/11

**CHEMICAL FINGERPRINTING: *Nymphaea rubra* ETHANOLIC EXTRACT  
UTILIZING PHYTOCHEMICAL FORENSIC TOOL AND GC-MS ANALYSIS**

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**Abstract**

**Introduction:** Plants have long been utilized as a medicinal resource in different cultures. Assam is one of the states of north-eastern India where different indigenous plants are found and mainly used by local tribes for treating infectious diseases or illnesses. *Nymphaea rubra* is one of them.

**Methodology:** The leaf of *Nymphaea rubra* was collected and was authenticated. The whole plant was shaded, dried & grinded. The dry powder of the plant continuously extracted with solvent ethanol for 72 hours to get the final extract. The ethanolic extract was subjected to phytochemical analysis & GC-MS for further analysis.

**Results & Discussion:** The current study investigated phytochemical screening using ethanolic extract. This is the existence of compounds such as alkaloids, proteins, carbohydrates, flavonoids, phenols, and saponins that have a therapeutic impact on pathogens that cause disease. Ten distinct compounds were identified by GC-MS analysis of the ethanolic extract of *Nymphaea rubra*. Numerous pharmacological properties, such as antibacterial, antioxidant, anti-inflammatory, anti-cancer, antiviral, and antifungal effects, have been reported for these phytochemicals.

**Conclusion:** The goal of the current work was to generate essential phytochemical parameters and GCMS data that may be useful and have a marketable interest to medicine companies and research institutions for the production of novel medications. This foundational knowledge will make it easier to do follow-up research on finding bioactive ingredients, determine their efficacy through in vivo experiments, and prove their safety and effectiveness through clinical trials.

**Keywords:** *Nymphaea rubra*, Phytochemical screening, GC-MS analysis.

NITN/2024/PP/12

**FORMULATION DEVELOPMENT AND *IN-VITRO* EVALUATION OF ANTI  
AGING CREAM USING THE EXTRACT of *Daucus carota***

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**Abstract**

**Introduction:** Skin aging is characterized by a progressive deterioration of the skin's functional properties, linked to alterations of dermal connective tissue due to the changes at the cell, gene and protein levels. Skin aging can be divided into two basic processes: intrinsic aging and photoaging. Cutaneous ageing can be defined as the result of two different and cumulated processes: intrinsic and extrinsic ageing (also known as photoageing). Creams are emulsions of oil and water. In coming future, more advanced technologies and methods will be used for preparation, formulation and evaluation of creams. Also, the demand of herbal constituents-based creams is increasing.

**Methodology:** The cream is prepared by continuous mixing of the Oil and Water phase. *Daucus carota* extract was used for the formulation of the oil-in-water (O/W) anti-aging cream. Beeswax and Sodium bicarbonate and other components were also added in various concentrations. Soxhlet extraction was used to extract the *Daucus carota* (Graded form) and was dried under the shade. Formulation were subjected to in-vitro evaluation, including assessment of physicochemical properties, antioxidant activity, moisturising potential and anti-aging efficacy.

**Results & Discussion:** Two formulations were prepared using the extract of *Daucus carota*. F1 was prepared using 1% w/v of extract and F2 with 3% w/v respectively. Among the prepared formulations F2 showed higher SPF value of  $10.63 \pm 0.06$  and F1 shows SPF value of  $8.36 \pm 0.05$ . Notably, pH values between 6 to 7 were present in both the formulations. No skin irritation or rashes were detected on the arm of test volunteers.

**Conclusion:** The primary objective of the current study is to develop an anti-aging cream with a high SPF. Through the investigation, it was found that two different formulations of anti-aging cream possess both antioxidant and antimicrobial properties. Notably, Formulation 2 exhibited the highest efficacy. However, it is not practical to rely solely on a single plant extract to enhance the product's effectiveness.

**Keywords:** Anti-aging, *Daucus carota*, SPF.



NITN/2024/OP/13

## ISOLATION OF MICROORGANISM FROM THE STREET VENDED FOOD OF MIRZA

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### Abstract

**Introduction:** India is celebrated for its extensive and palate-pleasing street food, exhibiting considerable regional variation. Prominent examples of street food enjoyed nationwide encompass Samosa, Kachori, Pani-puri, and Pakora, complemented by refreshing beverages like Sugarcane juice and Melon Juice. These selections merely scratch the surface of India's intricate and varied culinary panorama. However, it is imperative to acknowledge that street-vended food items are susceptible to contamination, frequently serving as a source of various diseases. Addressing the culinary dimension of Indian street food necessitates an awareness of the potential health risks associated with these popular yet vulnerable consumables.

**Methodology:** Two samples, namely sugarcane juice and pani-puri, were randomly gathered from the streets of Mirza, Kamrup. The microbial isolation process was conducted using the spread plate technique to obtain individual colonies. Subsequently, both Gram staining and Capsule staining were employed to analyze the microscopic characteristics of the isolated bacteria. Additionally, various biochemical characterization tests were performed to facilitate the identification process.

**Result & discussion:** Among the sample tested (sugarcane juice, pani puri) the street vended foods of Mirza are highly contaminated with pathogenic bacteria *Eschericia coli* and *Klebsiella sp*, which can contribute to potential health risks to its consumers. The result is compared to an earlier study conducted, where pani puri water was found to contain loads of pathogens like *E.coli* (41%) and *Klebsiella sp* along with some other microorganisms.

**Conclusion:** Street-vended foods, though flavourful and integral to regional culinary experiences, carry inherent contamination risks and may lead to foodborne illnesses. Food safety experts and regulatory bodies, such as FSI, caution both vendors and consumers to be vigilant. It is crucial for individuals to prioritize food safety while relishing diverse offerings to safeguard their health.

**Keywords:** Pani-puri, Samosa, Kachori, FS

NITN/2024/PP/14

**IN-SILICO STUDY OF TRADITIONALLY USED PLANTS AGAINST PROTEIN  
10WT RESPONSIBLE FOR CAUSING NEURODEGENERATIVE DISEASE**

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**Abstract**

**Introduction:** Since ancient times different plants have been used in the treatment of neurodegenerative diseases. Molecular docking is a theoretical simulation method based on bioinformatics, which studies the interaction between molecules (such as ligand and receptor).

**Methodology:** In this study, different parts of the traditionally used plants like *Canscora diffusa*, *Datura metel*, *Melissa officinalis*, *Salvia miltiorrhiza*, *Allium cepa L*, *Jatropha curcas L*, etc were selected to carry out the preliminary *in silico* screening. Total 50 compounds were collected from an already published article to build the compound library. The 2D structures of the selected compounds were generated in Marvin Sketch 18.15.0 and saved as .sdf file format for future use. X-ray crystal structure of the target enzyme 10WT were obtained from the Protein Data Bank websites (www.rcsb.org)

**Results and Discussion:** Different bond interactions were observed such as Conventional hydrogen bond, pi-pi stacked, pi-Alkyl, carbon hydrogen bond, Pi-lone pair, Pi-Sigma, Pi-Pi-T shaped, Pi Donor Hydrogen Bond. After getting these positive results we can conclude that the compounds have proper binding affinity with the protein. Out of all these chemical constituents a-pinene, daphnane, xanthoxol, vincristine, cuminaldehyde, caryophyllene oxide, euparotin acetate, salidroside have best binding affinity with the molecule as their Cdocker energy levels are more suitable and precise than the rest of the compounds

**Conclusion:** In this study after performing the experiments using various tools and applications we can conclude that the specific chemical constituents obtained from the traditional plants such as xanthenes, scopolamine, Lutiolin, apinene, quercetin, daphnane etc has the proper binding affinity with the protein and can be used in the treatment of different neurodegenerative disorders.

**Keywords:** Molecular docking, neurodegenerative disease, 10WT, amyloid protein

NITN/2024/PP/15

**TO EVALUATE THE *IN-VITRO* ANTHELMINTIC ACTIVITY OF  
ETHANOLIC EXTRACT OF LEAVES OF *Garcinia pedunculata***

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**Abstract**

**Introduction:** *Garcinia pedunculata* is an important predominant fruit of North Eastern (NE) region of India, having numbers of medicinal properties and used against various diseases in folk medicine. It is locally known as Bor-thekera in Assam. Administration of the extract of *G. pedunculata* fruit significantly reduced blood glucose levels, demonstrating the possibility of reduction of hyperglycaemia, diabetes, diabetic comorbidities, and protection against damages induced by oxidative stress.

**Methodology:** In August 2023, the leaves of *Garcinia pedunculata* were collected from Chamata (Nalbari) Assam. By using Soxhlet method using ethanol as a solvent preparation of extract has been done. Then phytochemical screening, physicochemical constants and pharmacognostic evaluation has been performed for the ethanolic extract. After that earthworms were collected from the soil and then *in-vitro* Anthelmintic activity was performed for the ethanolic extract of *Garcinia pedunculata*.

**Results & Discussion:** Indigenous medicine system listed several plants as anthelmintics, but few scientific analyses compare their effectiveness to commercial ones. *Garcinia pedunculata* plant's anthelmintic action has not been reported in literature. Traditional uses include blossoms, leaves, and stem. The ethanolic extract of *Garcinia pedunculata* showed strong action against earthworms, delivering the quickest time to paralysis and death. The study's findings could help develop sustainable, efficient, and secure alternatives to conventional anthelmintics.

**Conclusion:** Research on *Garcinia pedunculata* plant reveals its anthelmintic properties, making it a traditional herbal remedy for helminths. The ethanolic extract and earthworms are highly susceptible to its strong action, with less adverse effects than synthetic medications. This suggests that *Garcinia pedunculata* is a natural treatment for intestinal worm infections, but further research is needed to identify the anthelmintic compound.

**Keywords:** *Garcinia pedunculata*, albendazole, anthelmintic.

NITN/2024/PP/16

## EMPOWERING PERSONALIZED HEALTHCARE: THE ROLE OF 3D PRINTING TECHNOLOGY

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### Abstract

**Introduction:** Personalized medicine holds the promise of transforming the healthcare landscape by tailoring medication to the specific needs of individuals, accounting for their unique physiology, drug responses, and genetic profiles. This shift away from the traditional "one size fits all" approach is being facilitated by various emerging technologies, with three-dimensional (3D) printing standing out as a major player. 3D printing entails the creation of three-dimensional objects layer by layer using specialized computer software. Within the pharmaceutical realm, 3D printing enables the fabrication of diverse dosage forms, ranging in shape, release profiles, and drug combinations. Furthermore, it examines the potential of 3D printing in personalized medicine, emphasizing its ability to individualize dosage, tailor release profiles, and incorporate multiple drugs within a single dosage form, such as a polypill. Additionally, it outlines an approach for integrating 3D printing into clinical practice.

**Methodology:** Following databases were searched for certain duration of time to perform the literature searches: Pubmed, Medline, Scifinder, Scopus, ScienceDirect, Medline, Embase, Google Scholar, and Web of Science. The following MeSH terms were used for the search: "3D Printing", "Personalized medicine", "Customized Drug Delivery System", "Computer Aided Drug Design". In addition, a search was conducted in the institution's library for peer-reviewed papers and accessible books in the area.

**Results & discussion:** This review paper highlights the significant impact that 3D printing technology has on revolutionizing personalized healthcare. Through a comprehensive analysis of literature, industry reports, expert insights, and technological advancements, it is evident that 3D printing holds immense potential in tailoring medical treatments to individual patients, thereby improving treatment efficacy, patient outcomes, and overall healthcare delivery.

**Conclusion:** The integration of 3D printing technology into personalized healthcare holds immense promise for revolutionizing medical practices and enhancing patient outcomes. Through its ability to customize medical devices, implants, and anatomical models, 3D printing facilitates tailored solutions that cater to individual patient needs, improving treatment efficacy and patient satisfaction. Moreover, the accessibility and affordability of 3D printing technology are steadily increasing, opening doors for widespread adoption across healthcare settings.

**Keywords:** Personalized Medicine; 3D Printing; Customized Drug Delivery System.

NITN/2024/OP/17

## EXTRACTION AND CHARACTERIZATION OF STARCH TO EVALUATE ITS POTENTIAL AS TABLET EXCIPIENT

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### Abstract

**Introduction:** One of the most prevalent organic substance on earth is starch. The Starch is a cost-effective, biodegradable, and biocompatible natural polymer which finds widespread use in pharmaceutical formulations. This includes conventional dosage forms and drug delivery systems. Starch is commonly found in staple foods such as potatoes, rice, wheat, and corn. Sweet potato has a potential to be used as a raw material for tablets. However, it needs chemical modifications to produce derivatives with excellent pharmaceutical characteristics.

**Methodology:** Collection of two sweet potatoes i.e, White sweet potato and Red sweet potato was acquired from the local market in Narengi (Guwahati, Assam). The Sweet potatoes starch was extracted from two types of potatoes Red and White sweet potato. Then the starch was pregelatinized. Afterwards acid modification of the pregelatinized starch was performed. The FTIR was performed then the tablet was prepared.

**Results & Discussion:** The evaluation of granules was done and the result of angle of repose of Red sweet potato is  $40.12^{\circ}$ , and White sweet potato  $41.03^{\circ}$ . The bulk density is 0.45, 0.42 and the tapped density was found to be 0.57, 0.55 respectively. Tablets were prepared from the modified starch extracted from Red Sweet Potato, and the Red and White sweet potato friability is evaluated which is found to be 0.58%, 0.56%.

**Conclusion:** This study is to characterize the binding property, disintegration property of red and white sweet potato starch with normal starch to find out which one is best. This study focuses on evaluating starch from the sweet potato species native to Assam.

**Key words:** Sweet Potato, starch, Acid modification, excipient, binder, disintegrant.

NITN/2024/OP/18

## EXTRACTION OF PHENOLIC COMPOUNDS FROM ASSAM LEMON POMACE AND ITS UTILIZATION IN NANOPARTICLES SYNTHESIS

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### Abstract

**Introduction:** The pomace of Assam lemon contains valuable bioactive compounds like phenolic acids and flavonoids, beneficial for health. Utilizing byproducts for extraction reduces environmental impact and provides sustainable materials. Microwave-assisted extraction (MAE) efficiently extracts these compounds with rapidity, quality, and low cost, minimizing environmental impact. Zinc oxide nanoparticles (ZnO NPs), widely used in food packaging and skincare, were synthesized using the optimized MAE extract. This green synthesis method offers scalability, cost-effectiveness, simplicity, and requires no advanced equipment.

**Methodology:** In this study, MAE was optimized based on ethanol concentration, microwave power, and extraction time and the process parameters were optimized using central composite design (CCD) combined with response surface methodology (RSM) to obtain the maximum total phenolic content (TPC) and free radical scavenging activity (RSA). The nanoparticles were synthesized using green synthesis method using zinc acetate and phenolic extract.

**Results & Discussion:** The optimal conditions for MAE were found to be 70% ethanol concentration, 3 minutes of extraction time, and 600 W microwave power, resulting yield of 1.101 mg GAE/ g dw total phenolic content and 63.42% radical scavenging activity. Characterization of ZnO NPs showed the agglomeration of spherical nanoparticles with sizes ranging from 15-30 nm and an average size of 21 nm, with 75.18% of Zn and 24.82% of O were present on the surface area. The particles are hexagonal wurtzite crystals in nature.

**Conclusion:** The study optimized microwave-assisted extraction conditions for phenolic compounds from Assam lemon pomace, yielding high amounts with radical scavenging activity, affirming MAE's effectiveness; it also showcased MAE extracts' use in synthesizing ZnO NPs, highlighting scalability, cost-effectiveness, simplicity, and minimal equipment needs.

**Keywords:** Microwave-Assisted Extraction, Response surface methodology, Zinc Oxide Nanoparticles.

NITN/2024/OP/19

## DESIGN AND *IN-SILICO* STUDIES OF SOME NOVEL XANTHONE ANALOGUES

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### Abstract

**Introduction:** Xanthones, classified as secondary metabolites, are commonly found in various plant families, fungi, and lichen. These compounds have drawn significant interest from medicinal chemists due to their diverse biological activities. Pharmacological investigations into xanthones have been ongoing since 1968, revealing a broad spectrum of activities such as antibacterial, antiviral, antimalarial, anthelmintic, anti-inflammatory, antiprotozoal, and anticancer properties. Although isolating natural xanthones with the desired pharmacological activity can be challenging. Moreover, naturally occurring xanthones may possess structural limitations that reduce their specificity as potential drug targets. To address this, *in silico* studies can be conducted to assess the pharmacological potential of natural xanthones with chemical modifications.

**Methodology:** The library for the novel class xanthone was designed by taking into consideration of the previous literatures. To evaluate the druglikeness properties of the designed compounds, *in-silico* studies were conducted utilizing the SwissADME web server. Subsequently, molecular docking of the designed library was carried out using the PyrX tool against the alpha-glucosidase protein (PDB ID: 5NN8), with the protein sourced from the RCSB PDB web server. Following the docking process, visualization of the protein-ligand interactions was performed using the BIOVIA Discovery Studio.

**Result and Discussion:** Based on the *in-silico* studies, it was determined that 5 of those compounds exhibited favorable docking scores and demonstrated desirable drug-likeness properties. Additionally, protein-ligand interactions were visualized for these compounds, indicating their potential as candidates for further synthesis.

**Conclusion:** Xanthones have captured the interest of researchers worldwide. The findings of this study suggest that chemically modified natural xanthones could potentially serve as potent anti-diabetic agents. However, to validate this assertion, additional molecular dynamic studies and laboratory experiments are necessary. If the outcomes of these studies prove favorable, it could pave the way for xanthones to emerge as a novel class of anti-diabetic medication in the future.

**Keywords:** Xanthone, anti-diabetic, natural, *in-silico*,

NITN/2024/OP/20

## EFFECT OF FULVIC ACID LOADED NANOPARTICLES OF PIPERINE AND CURCUMIN IN THE MANAGEMENT OF BREAST CANCER

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### Abstract

**Introduction:** Breast cancer is a grave problem that affects people all over the world. Unfortunately, breast cancer is becoming the most frequent malignancy among women in India, particularly in northeastern India. In the management of breast cancer, this worrying trend necessitates our focus and intervention. Currently, the only options for treating cancer with traditional methods are radiation, chemotherapy, and surgery, all of which run the risk of harming healthy tissues or not completely curing the disease. The other main issues that need to be resolved for greater therapeutic action are drug bioavailability, lipophilicity, and poor drug solubility; and to overcome these issues, nanoparticles were chosen. Additionally, nanotechnology offers a special set of resources to combat drug resistance and make cutting-edge immunotherapies possible.

The goal of our research is to create a ternary cocrystal form that contains curcumin, piperine, and fulvic acid for the treatment of cancer. In general, co-crystal formation increases a molecule's water solubility and total bioavailability.

**Methodology:** Using a solid dispersion approach, co-crystals were created by combining fulvic acid with piperine and curcumin in a 1:1 stoichiometric ratio. Acetone was used as a solvent for piperine, while water was used for fulvic acid, resulting in a precipitate when combined. Differential scanning calorimetry, FTIR, and spectroscopic techniques were used to characterize the co-crystals. Additional validation was obtained through morphological analyses utilizing SEM. Additionally, a structural study was performed utilizing solid-state <sup>13</sup>C NMR analysis.

**Result and Discussion:** The production of semicrystalline forms was confirmed by the SEM, FTIR, and DSC. Additionally, the saturation solubility of piperine and curcumin showed an increase in solubility of up to 10, and 5-fold, respectively.

**Conclusion:** Nanoparticles being smaller in size enhance the solubility of the BCS Class II drugs, thereby providing greater bioavailability of the drugs. Also being nanosized systems, they possess an EPR (Enhanced Permeability and Retention) effect that primarily targets the tumor cells.

**Keywords:** Cancer; bioavailability; co-crystals; fulvic acid; piperine; curcumin.



NITN/2024/PP/21

**PRELIMINARY PHYTOCHEMICAL SCREENING AND *IN-VITRO* EVALUATION OF  
THE ANTI-INFLAMMATORY ACTIVITY OF RHIZOME EXTRACT OF *Hellenia  
speciosa***

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**Abstract**

**Introduction:** *Hellenia speciosa* has been widely used for different diseases by the primitive hill tribes of South India. This study is aimed to investigate possible in vitro anti-inflammatory activities by using the ethanolic extract of *Hellenia speciosa*. In the present study, preliminary phytochemical screening shows the presence of alkaloids, glycosides, carbohydrates, etc. The anti-inflammatory activity was studied by using human red blood cell membrane stabilization method (HRBC) and inhibition of protein denaturation. On the basis of the results obtained, the ethanolic extract of *Hellenia speciosa* was evaluated.

**Methodology:** On January 4th, 2022, the plant species *Hallenia speciosa* was collected from South Salmara, Assam. By using the Soxhlet method, the ethanolic rhizome extract of *Hallenia speciosa* was prepared. Then pharmacognostic evaluation and preliminary phytochemical screening were done to reveal the presence of carbohydrates, glycosides, alkaloids, and other substances.

**Results & Discussion:** The ethanolic extract of *Hallenia speciosa* was found to exhibit the inhibition property of denaturation of proteins, and the anti - inflammatory activity was investigated using the human red blood cell membrane stabilization method (HRBC). The ethanolic rhizome extract of *Hallenia speciosa* at 150 µg/ml shows a maximum IC<sub>50</sub> of 54.69% and was noted. The standard anti - inflammatory medication diclofenac demonstrated a maximum IC<sub>50</sub> value of 58.02% at 150 µg/ml in comparison to control. The graphical analysis was done to find out the statistical significance of the reported data. After this study, it was confirmed that it has anti - inflammatory activity.

**Conclusion:** Research on the *Hallenia speciosa* plant reveals its anti - inflammatory properties, making it a traditional herbal remedy for inflammation. The ethanolic rhizome extract of *Hallenia speciosa* is highly susceptible to its strong action, with fewer adverse effects than synthetic medications. This suggests that *Hallenia speciosa* is a natural treatment for inflammation, so, in the near upcoming future there could be further significant research on it.

NITN/2024/PP/22

## ISOLATION OF MUCILAGE FROM HIBISCUS AND *IN-VITRO* EVALUATION AS A TABLET BINDER

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### Abstract

**Introduction:** Binders are added to the tablet formulation to impart plasticity and thus increase the interparticle bonding strength with the tablet. Natural substances like starches, mucilage, gum, and also dried fruits can be used as binding agents. They have been shown good potential as binding agents as well as possess some other properties like disintegrating agents, filler, and sustain releasing agents. The flower and leaf of hibiscus (*Hibiscus rosa-sinensis*) were used in the research to extract the mucilage for use as a natural binding agent in the tablet formulation. Natural binders have some advantages like Low toxicity, biodegradability, availability, and low cost, and increased stability, precision, and accuracy of dosage form due to which these are widely used nowadays.

**Method:** Isolation of mucilage was done using the decoction process and the tablet was formulated using the mucilage extract as a binder.

**Result and discussion:** The result obtained from this research will give important information on the potential of hibiscus mucilage, as a natural binder in tablet manufacturing. By evaluating different parameters of the hibiscus mucilage, because it includes the amino acid, we discovered that hibiscus mucilage can be employed successfully as a binder in tablet formation. Carbohydrates and flavonoids can contribute to the binding properties of tablets. The hardness of the tablet formulated with 5% and 10% hibiscus mucilage falls within the acceptable range, indicating that these formulations have sufficient strength and integrity. However, tablets formulated with a lower percentage of hibiscus like 2% hibiscus mucilage fail to meet the hardness requirement.

**Conclusion:** Isolation of mucilage was done and before formulation/all the necessary reformulations studies and method development were studied. After the formulation process, various evaluation parameters were studied and performed, and drug release rate was evaluated to check the efficacy of mucilage as a natural binder.

**Keywords:** Mucilage, Binder, Tablet.

NITN/2024/PP/23

***IN-SILICO* STUDY OF NOVEL CHALCONE-AMINE HYBRIDS FOR ANTI-  
INFLAMMATORY ACTIVITY**

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**Abstract**

**Introduction:** Chalcones are secondary metabolic products of edible or medicinal plants that belong to the flavonoid family. Chalcones are based on two aryl moieties bridged via an  $\alpha$ ,  $\beta$ unsaturated carbonyl group. Chalcones have various pharmacological potential including activities and characteristics such as antibacterial, anti-inflammatory, analgesic, anticholinergic, antiplatelet, antiulcer, antioxidant, antimalarial, anticancer, antiviral, antileishmanial, antidiabetic. Anti-inflammatory medications are always needed because inflammation is a common presenting sign of many diseases, including cancer, metabolic disorders, aging, and neurological diseases. Pain, swelling, redness, and warmth are signs of inflammation.

**Methodology:** In this research, a library of 50 amine derivatives are theoretically designed through ChemDraw and their In-silico studies are performed. Pyrx software was used for the docking study and Discovery Studio was used to examine the binding interactions. The online tools Molinspiration, SwissADME and ProTox-II were used to forecast the chemical characteristics and toxicities of the compounds that were designed.

**Results & Discussion:** In this long-term study, binding energies for anti-inflammation drugs were found to range from -9.7 to -7.8 kcal/mol. Based on lowest energy, each designed compound's rank was established.

**Conclusion:** The results suggest that these new derivatives of the chalcone-amine hybrids may have anti-inflammatory properties.

**Keywords:** Anti-inflammation, chalcone, amine, chalcone amine hybrid.

NITN/2024/PP/24

## DEVELOPMENT OF CONTROLLED RELEASE MUCOADHESIVE PATCHES OF ROSUVASTATIN BY IMPROVING THE BIOAVAILABILITY WITH CYCLODEXTRIN COMPLEX

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### Abstract

**Introduction:** Rosuvastatin is a hydroxy-methyl-glutaryl-coenzyme A (HMG-CoA) inhibitor, is one of the latest drugs of the statin class. It is widely used for the treatment of familial hyperlipidemia, dyslipidemia, triglyceridemia, atherosclerosis, osteoporosis, benign prostatic hyperplasia and Alzheimer's disease. It belongs to Biopharmaceutics Classification System-II (BCS-II), thereby presenting solubility issues and it also has low bioavailability of 20%.  $\beta$ -Cyclodextrin is an acyclic oligosaccharide that has an inner hydrophobic cavity and hydrophilic outer rim.  $\beta$ -Cyclodextrin are used in various sectors as they possess innate ability to improve physiochemical properties of water drugs via complexation. They promote solubility, bioavailability and stability of the drugs. Mucoadhesive patches can serve as an effective controlled delivery system for drugs by adhering to mucosal surfaces and releasing the medication in a controlled manner over an extended period.

**Methodology:** Methodology for the development of mucoadhesive patches of rosuvastatin by improving the bioavailability with cyclodextrin complex involves a multidisciplinary approach encompassing formulation, manufacturing, characterization, and evaluation stages. Formulation begins with selecting suitable polymers, plasticizers, and solvent to achieve desired properties such as enhance bioavailability, solubility, thickness and patch mass. Manufacturing techniques including solvent casting technique.

**Result and discussion:** The efficiency of cyclodextrin complexation with rosuvastatin was evaluated through techniques such as phase solubility studies and spectroscopic analysis. The formation of inclusion complexes between cyclodextrin and rosuvastatin was confirmed, indicating the potential for improved solubility and stability of rosuvastatin in the mucoadhesive patches.

**Conclusion:** To improve the bioavailability of the rosuvastatin and also to increase the solubility by cyclodextrin complex. Mucoadhesive patches can serve as an effective controlled delivery system for drugs by adhering to mucosal surfaces and releasing the medication in a controlled manner over an extended period.

**Keywords:** Rosuvastatin,  $\beta$ -Cyclodextrin, mucoadhesive patches.

NITN/2024/OP/25

## SYNTHESIS, SPECTRAL ANALYSIS AND *IN-SILICO* STUDIES OF ACETYLATED COUMARIN - THIAZOLE DERIVATIVES

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**Introduction:** Coumarin, part of the benzopyrone compound family, features a benzene ring linked to a pyrone ring. These compounds exhibit diverse therapeutic effects in medicine. Molecular hybridization, a modification technique, creates compounds with improved pharmacokinetics: targeting multiple sites, altering bioavailability, efficient elimination, and reduced toxicity. This approach enhances efficacy by combining properties of different medicines, yielding safer and more efficient pharmaceuticals.

**Methodology:** Coumarin synthesis involved Pechman condensation of orcinol, ethyl acetoacetate, and H<sub>2</sub>SO<sub>4</sub>, followed by addition of chloroacetyl chloride. Subsequent addition of four thiazole derivatives 2-aminothiazole, 2-aminobenzothiazole, 2-amino-6-nitrobenzothiazole, and 2-amino-4-methylthiazole in a mixture of chloroform and ethanol yielded four distinct compound derivatives. This multistep process resulted in the synthesis of diverse compounds with potential pharmacological significance.

**Results & Discussion:** The *in-silico* parameters of the four final compounds were initially assessed, followed by an evaluation of their physicochemical characteristics. Subsequently, Fourier-transform infrared spectroscopy (FTIR) and mass spectrometry analyses were employed to further investigate the compounds. This comprehensive approach allowed for a thorough examination of both the computational and experimental aspects, providing valuable insights into the molecular and structural properties of the synthesized compounds.

**Conclusion:** By combining coumarin and thiazole derivatives, novel compounds were synthesized with potential pharmacological activities similar to coumarin. Molecular properties of these compounds were determined using *in-silico* methods like Molinspiration and SwissADME. Confirmation of synthesized compounds was achieved through FT-IR and mass spectroscopy. Further modification of these compounds holds promise for the development of new drug entities in the future.

**Keywords:** Coumarin, Molecular hybridization, *in-silico*.

NITN/2024/PP/26

## OVERVIEW ON FLOATING DRUG DELIVERY SYSTEM- AN APPROACH TOWARDS GASTRO RETENTIVE DRUG DELIVERY.

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### Abstract

**Introduction:** Among the various route of drug delivery, oral route holds the superior position due to its easy administration, less cost and better patient acceptability. However, due to some reasons like- physiochemical properties, faster gastric retention time, hepatic first pass metabolism and reduced drug localization patient suffers from sub therapeutic effect and to overcome such factors a type of controlled drug delivery system termed as “Gastro retentive drug delivery system” (GRDDS), have been developed since past decades. Floating drug delivery system (FDDS) is a type of GRDDS in which the drug remains buoyant in gastric fluid for a longer period, because of its lower specific density than the gastric fluid.

**Methodology:** Various approaches for formulating FDDS mainly depend on two concepts i.e., effervescent, and non- effervescent system. These methods are obtained by incorporating several processes like- gas generating system, alginate beads, hydrodynamically balanced system.

**Results & Discussion:** In this review we have discussed about the factors affecting gastric retention time, various approaches to formulate FDDS, drugs which are suitable for FDDS, and the FDDS based drug that have been marketed by pharmaceutical companies over the world.

**Conclusion:** The goal behind the review is to understand the consequences behind formulating FDDS, potentiating its importance in attaining better therapeutic efficacy with increased bioavailability and sustained release of orally administered drugs.

**Keywords:** Floating drug delivery system, gastric retention time, effervescent system, non-effervescent system

NITN/2024/OP/27

## **IN-SILICO, SYNTHESIS AND SPECTRAL ANALYSIS OF DICHLOROMETHANE BASED NOVEL BENZOTRIAZOLE DERIVATIVES**

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### **Abstract**

**Introduction:** The most often used heterocyclic reagent is benzotriazole. The chemical name for the nitrogen-containing heterocyclic auxiliary benzotriazole is C<sub>6</sub>H<sub>5</sub>N<sub>3</sub>. It is a member of the class of heterocycles with two fused rings: a triazole ring and a benzene ring, benzotriazole is synthesized because benzotriazole is a medicinal miracle from where different activities are found like antidiabetic, antifungal, antibacterial, antitubercular etc.

**Methodology:** *In silico* studies employ Molinspiration, Molecular docking and SwissADME methods for predictive analysis. Synthesis of 1-(chloromethyl)-1H-benzotriazole involves reflux heating with dichloromethane, K<sub>2</sub>CO<sub>3</sub>, and dimethyl formamide. Benzotriazole derivatives are synthesized by reacting with cyclohexylamine, hydroxylamine, or aniline. Spectral analysis, including FT-IR and Mass Spectrometry, characterizes compounds, aiding in structural elucidation.

**Results & Discussion:** The derivatives of benzotriazole is synthesized and molinspiration, SwissADME molecular docking (3G9k) was performed and drug likeness was found. Synthesis was done of the benzotriazole derivative were Cyclohexylamine (N-((1H-benzotriazol-1-yl)methyl)cyclohexylamine) and Hydroxylamine (N-((1H-benzotriazol-1-yl)methyl)hydroxylamine) and Aniline (N-((1H-benzotriazol-1-yl)methyl)aniline) with the % yield of 44, 30 and 39% respectively and for the confirmation spectral analysis is done FT-IR for functional group determination and mass spectroscopy was done to determine the molecular weight of the synthetic product.

**Conclusion:** The drug likeness analysis was performed and it comes under the accepted criteria using molinspiration, Swiss ADME and for docking 3G9k protein is used and synthesis of N-((1H-benzotriazol-1-yl)methyl)cyclohexylamine and N-((1H-benzotriazol-1-yl)methyl)hydroxylamine and N-((1H-benzotriazol-1-yl)methyl)aniline was done and for the spectral analysis FT-IR and mass spectroscopy was done. For the future *In-vitro* and *In-vivo* study can be performed.

**Keywords:** Benzotriazole, heterocyclic reagent, *in silico* studies, Molinspiration & Molecular docking.

NITN/2024/PP/28

**FORMULATION AND DEVELOPMENT OF HERBAL TOOTHPASTE  
INCORPORATING *Psidium guajava* LEAVES EXTRACT**

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**Abstract**

**Introduction:** India's rich heritage of traditional remedies for ailments is evident in maintaining oral health. Toothpaste, a semi-solid, smooth material, is crucial for maintaining good dental health. It contains various ingredients, including fluoride, which strengthens tooth enamel and prevents decay. The best bioavailability of active ingredients in toothpaste is achieved during formulation, but there are still challenges, such as low oral substantivity of active components. Tooth caries, caused by the bacteria *Streptococcus mutans*, is a prevalent disease that can lead to discomfort, tooth loss, infection, and even death. Maintaining good oral hygiene is essential for maintaining good teeth and gums.

**Methodology:** The preparation of the polyherbal toothpaste involved a sequential process conducted in a mortar and pestle. Initially, HPMC was triturated with the preservative, sodium benzoate, followed by the addition of glycerine, a humectant, which was mixed thoroughly by triturating together. Next, calcium carbonate, serving as an abrasive, along with the Tween 80, were added and well-mixed. Subsequently, the *Psidium guajava* leaf extract was introduced and triturated again to ensure an even blend of all components. Finally, water was incrementally added to attain the desired consistency for the polyherbal toothpaste.

**Results & Discussion:** The in-vitro antibacterial activity of *Psidium guajava*'s ethanolic extract demonstrated notable results against bacteria, particularly with significant inhibition zones observed against *S. aureus* (18mm) and *P. aeruginosa* (15mm), attributed to the flavonoids present in the leaves. Additionally, the formulation of a polyherbal toothpaste using *Psidium guajava* leaves extract exhibited promising outcomes, notably in formulation F3, which displayed improved foaming activity, spreadability, and moisture content compared to F1 and F2.

**Conclusion:** The evaluation of polyherbal toothpaste involves assessing its physical characteristics such as color, texture, and pH to ensure it meets quality criteria. Additionally, analyzing its antibacterial action against oral infections is crucial for understanding its effectiveness in promoting oral health. In conclusion, the formulation of a polyherbal toothpaste harnessing guava leaves extract withstands an eccentric chance to improve oral health by implementing organic & plant-based components. This formulation might provide people a methodical, firm, and eco-friendly explication for sustaining good dental hygiene with auxiliary innovations and scientific research.

**Keywords:** Toothpaste, Organic, Oral health



NITN/2024/PP/29

**THE PHARMACOLOGICAL ACTIVITIES OF INDOLE-3-ACETIC ACID: A  
POTENTIAL PHARMACOPHORE FOR NOVEL SYNTHESIS.**

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**Abstract**

**Introduction:** Indole-3-acetic acid is the most common naturally occurring plant hormone of the auxin class. Indole-3-acetic acid is a fascinating compound because of its physical characteristics, structure and its composition. Over the past few decades, there has been a significant global research effort focused on the biological properties and production of indole-3-acetic acid. This offers an abundance of possibilities and scope for the hunt for new compounds. In light of this, the heterocyclic aromatic compound indole-3-acetic acid has been employed as a model chemical in the present work. After the extensive literature search we have found that indole-3-acetic acid holds a major role in showing many pharmacological activities such as: anti-cancer, anti-diabetic, anti-inflammation Activities etc. So, it can be a potential pharmacophore for the further synthesis and development of novel entity for varied pharmacological importance.

**Methodology:** Focusing on main objective of the research, literature search was conducted to find relevant articles. By searching various websites such as: google scholar, pub med, Scopus etc. regarding the pharmacological activities of indole-3-acetic acid and selected them regarding the inclusion criteria where articles are being focused on the topic, studies involve on the pharmacological activity of indole-3-acetic acid and exclusion criteria which include the articles published in other than English language, review articles etc. were excluded. Based on these inclusion exclusion criteria 25 papers were selected out of 246 papers.

**Results and discussion:** From the above selected papers, we have found that Indole-3-acetic acid have proven anti-cancer, anti-inflammatory and analgesic activity which would serve as a good pharmacophore for the further synthesis.

**Conclusion:** Indole-3-acetic acid is a novel pharmacophore for the synthesis of compounds having pharmacological activities and further researches can be done on the activities of the novel indole derivatives.

**Key words:** Indole-3-acetic acid, Pharmacophore, anti-diabetic, anti-inflammatory, analgesic etc.

NITN/2024/PP/30

**EVALUATION OF *IN-VITRO* ANTI-DIABETIC ACTIVITY OF *Begonia burkillii* Dunn.**

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**Abstract**

**Introduction:** *Begonia burkillii* Dunn. belonging to the family Begoniaceae is a plant which is distributed throughout Arunachal Pradesh and Assam, also in Myanmar. S.T. Dunn first characterized *Begonia burkillii* in 1920 based on a collection made by I. H. Burkill in the Abor Hills region, which borders India and Myanmar in the year 1920. They are helpful for moderate fevers as well as stomach issues including dysentery, dyspepsia, etc. Rhizomes are used as an antibacterial agent and to treat a variety of illnesses and ailments, including scrofula, swellings, peptic ulcers, skin infections, bronchitis, candidiasis, colds, digestive disorders, dysentery, haemoptysis, liver problems, stomach problems, headaches, conjunctivitis, and liver issues.

**Methodology:** The fresh leaf and stem of the plant was collected in the month of Nov. of the year 2022 from Mirza, Kamrup, Assam and it was further extracted. Various preliminary screening methods were performed to determine the presence of active constituents present in the extract followed by determination of pharmacognostical parameters. For evaluation of anti-diabetic activity, in-vitro alpha amylase activity was evaluated.

**Results & Discussion:** Phytochemical screening of the extract revealed that alkaloids, carbohydrates, phenols, glycosides, tannins, fixed oils, terpenoids and flavonoids were all present in the plant extract of *Begonia burkillii*. For the alpha amylase inhibitory activity, acarbose was taken as a standard drug which shows activity from 13.94% to 50.14%. *B.burkillii* has the percentage of inhibition from 13.70% to 46.20%. This value is compared with the value of the standard drug acarbose which shows that investigatory test sample have potential anti-diabetic activity.

**Conclusion:** The plant extract of *Begonia burkillii* Dunn was also found to obtain good about of total phenolic content. This may include that there may be a linear relationship between the anti-diabetic activity and the phenolic contents of the plant. Further investigation of pharmacological activities indicates that the extract have potential in vitro anti-diabetic activity. The anti-diabetic activity was shown to be dose-dependent. Hence from this study we can conclude that this plant *Begonia burkillii* Dunn is useful as a healthy food and in development of anti-diabetic drugs.

**Keywords:** Plant extract, anti-diabetic, pharmacognostical parameters, phytochemical screening, drug, food

NITN/2024/PP/31

## EMULGEL: A COMPREHENSIVE REVIEW FOR TOPICAL DRUG DELIVERY SYSTEM

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### Abstract

**Introduction:** Topical drug delivery systems offer precise, localized medication application, bypassing first-pass metabolism for consistent distribution. Gels and emulgels enhance delivery, overcoming challenges with hydrophobic drugs. The skin, the body's largest organ, provides accessible sites for drug absorption. Emulgels combine gel and emulsion benefits, favored for their aesthetics and effectiveness. Linezolid, an oxazolidinone antibiotic, targets antibiotic-resistant Gram-positive bacteria, including MRSA, making it a first-line treatment for MRSA pneumonia. Overall, these systems optimize drug delivery efficacy and patient satisfaction in dermatological and systemic treatments.

**Methodology:** Systematic review was done from where different datas were collected. It includes the process for preparing emulgel involves several key steps. Firstly, Carbopol 940 is dispersed in warm distilled water and allowed to hydrate. Other ingredients such as propylene glycol and glycerol are added, followed by the drug. The dispersion is neutralized to pH 6 using triethanolamine, adjusted with distilled water, sonicated, and left overnight to remove air bubbles. Secondly, depending on the desired emulsion type an emulsion is prepared.

**Result & Discussion:** Lastly, the emulsion is incorporated into the gel base to create the emulgel. This method allows for precise drug delivery with enhanced properties for both topical and systemic applications.

**Conclusion:** In the future, topical drug delivery systems will gain popularity due to enhanced patient acceptance. Emulgels, offering superior spreadability, adhesion, viscosity, and extrusion, will emerge as the preferred choice. They'll serve as an effective medium for incorporating hydrophobic pharmaceuticals into water-soluble gel bases, addressing key formulation challenges and broadening their applicability in drug delivery.

**Keywords:** Linezolid, Antibiotic, MRSA, Emulgels, First-pass metabolism, Review

NITN/2024/PP/32

**A COMPREHENSIVE STUDY OF ADULTERANTS PRESENT IN RED CHILLI  
POWDER OBTAINED FROM THE COMMERCIAL MARKET OF ASSAM**

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**Abstract**

**Introduction:** Chilli powder is made from dried, crushed fruits. A lot of illnesses, such as stomach, metal hazards, cancer, food poisoning, etc can result from the reduction of chilli powder to brick powder, plum solvent salts, Rhodamine B, and oil.

**Methodology:** 15 different samples of chilli were collected from the local market of Mirza, ASSAM i.e sunrise, Kashmiri, sona, MDH, etc which were examined properly by chemical identification and chromatographic analysis. Further sudan I was synthesized by coupling reaction and standard addition method, quantitative estimation of sudan I were performed.

**Results & Discussion:** I found that samples showed presence of Sudan I, Rhodamine B, Bricks, Oil soluble colours, Starch, and artificial colours. Further Sudan dye was synthesized and was used for chromatographic analysis and compared with the other chilli samples with rf values 0.55, 0.59, 0.57, 0.52, 0.57, 0.53, 0.56, 0.56 respectively. Standard point addition method followed by serial dilution was done and absorbance of sudan I was recorded at different concentrations of 10, 15, 20, 25, 30 and the absorbance obtained were 0.0296, 0.1339, 0.1553, 0.3310, 0.5229nm respectively and chilli sample absorbance with sudan I were as 2.9, 0.98, 1.5, 0.6, 3.0, 3.5, 0.6, 0.4 nm respectively.

**Conclusion:** Adulteration is an offence that should not be followed but it is done with the motive of profit maximisation and to increase sales. Purchasing packaged chilli from reputable vendors that have an Agmark or an ISI mark is advised. Additionally, the government needs to start checking on spices and take appropriate legal action against those who sell contaminated chilli to boost their bottom line.

**Keywords:** Adulterants, chilli, ingredients, Rhodamine B, artificial colours, profit maximisation,

NITN/2024/PP/33

***IN-SILICO* STUDY OF NOVEL CHALCONE-AMINE HYBRID FOR ANTI-  
INFLAMMATORY ACTIVITY**

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**Abstract**

**Introduction:** Inflammation is the immune system's dynamic response to injury and infection. Long-term inflammation can be dangerous and is linked to multiple medical conditions which include cancer, aging, metabolic diseases, allergic rhinitis, asthma, atopic dermatitis, and neurological issues. Thus, there is always a need for improved medications that are anti-inflammatory. In spite of its simple structure, the chalcone moiety continues to be a widely used scaffold in the field of medicinal chemistry. Chalcones are not only widely found in nature, but they also serve as vital connects for a variety of other naturally occurring compounds that have major medical applications. The presence of a 2-propen-1-one chain, specifically the important pharmacophoric  $\alpha$ ,  $\beta$ -unsaturated keto group, is responsible for the therapeutic properties of chalcones. The  $\alpha$ ,  $\beta$ -unsaturated carbonyl functionality's natural electrophilicity is now found to play a role in the chalcones' anti-inflammatory properties.

**Methodology:** *In-silico* docking study was performed using Pyrx software and Discovery studio was used for the visualization purpose. Swiss ADME and ProTox-II software were also run to predict the properties and toxicities for the designed compounds with the help of Chemdraw.

**Results & Discussion:** Based on the studies certain derivatives with chalcone showed anti-inflammatory activity and effective binding affinity spanning from -9.8 to -7.6 kcal/mol and will be further proceed for synthesis.

**Conclusion:** The result of the study indicates positive effect of these novel Chalcone-amine hybrid derivatives as an anti-inflammatory agent.

**Keywords:** Anti-inflammation, Chalcone, *In-silico* studies

NITN/2024/PP/34

**COMPREHENSIVE STUDY OF ADULTERANTS IN DIFFERENT MARKETED  
BRANDS OF MUSTARD OIL**

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**Abstract**

**Introduction:** Mustard oil is packed with goodness like vitamin B complex, vitamin A, vitamin E, calcium, protein, and omega-3 fatty acids. It's even known to help with coughs and colds. Sadly, because of mixing in things like argemone oil, butter yellow, and cottonseed oil, its goodness gets diluted. The objective of this study was to investigate the presence of adulterants in five different marketed brands of mustard oil collected from local market of Guwahati, Assam.

**Methodology:** Various identification tests were performed using chemicals and reagents for different samples of mustard oil from various brands. Such as test for presence of Argemone oil and test for presence of Mineral Oil – Holde's method.

**Results and Discussion:** The presence of red colour and turbidity following the tests suggested that out of the five samples, four marketed mustard oils sample reveals the presence of Argemone oil and Mineral oil respectively. Widespread use of Argemone oil has toxins which causes epidemic dropsy, cancer and many other harmful diseases.

**Conclusion:** This study have shown that Argemone oil is a common adulterant of mustard oil and this findings are quite concerning, as the existence of these adulterants endangers public health.

**Keywords:** Adulteration, Mustard oil, Argemone oil, Mineral oil.

NITN/2024/OP/35

**EVALUATION OF *IN-VITRO* ANTIOXIDANT, ANTI-INFLAMMATORY AND ANTI-UROLITHIATIC ACTIVITY OF *Erigeron karvinskianus* EXTRACTS.**

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**Abstract**

**Introduction:** *Erigeron karvinskianus*, the Mexican fleabane, a small herb, is a species of daisy-like flowering belong to the family Asteraceae, was identified by the Botanical Survey of India, Shillong, Meghalaya.

**Methodology:** The present aim of this study is to evaluate the antioxidant activity, anti-inflammatory activity, and anti-urolithiatic activity of various extract of *Erigeron karvinskianus* in different solvents such as chloroform, ethyl acetate, Methanol and water. The antioxidant activity was studied by performing DPPH activity using ascorbic acid as standard. For the anti-inflammatory activity the Egg albumin denaturation assay was performed and for the anti-urolithiatic there are two assay nucleation and aggregation assay.

**Results and discussion:** The antioxidant activity was studied by performing DPPH activity using ascorbic acid as standard. The IC<sub>50</sub> value was found to be 145.65µg/ml, 122.05µg/ml, 168.45µg/ml and 150.39µg/ml for chloroform, ethyl acetate, methanol and aqueous extract respectively compared to 104.23µg/ml of standard ascorbic acid. For the anti-inflammatory activity, the IC<sub>50</sub> value was found to be 374.91µg/ml, 481.57µg/ml, 245.6µg/ml and 545.78µg/ml for chloroform, ethyl acetate, methanol and aqueous extract respectively compared to 347.091µg/ml of standard Diclofenac sodium. For the anti-urolithiatic, In nucleation assay the IC<sub>50</sub> value was found to be 289.86µg/ml, 58.52µg/ml, 181.16µg/ml, and 58.44µg/ml for chloroform, ethyl acetate, methanol and aqueous extract respectively compared to 315.99µg/ml of standard cystone and in aggregation assay the IC<sub>50</sub> value was found to be 246.5µg/ml, 109.8µg/ml, 246.5µg/ml, and 171.51µg/ml for chloroform, ethyl acetate, methanol and aqueous extract respectively compared to 303.7µg/ml of standard cystone.

**Conclusion:** These indicated that the *Erigeron karvinskianus* plant is a potential source of natural antioxidants as well as to cure pain and kidney stones. Thus, after conducting certain advanced studies, the phytochemical compound may be separated, and biosynthesis and structural elucidation can be carried out in the future for the effective utilization of this potential medicinal plant.

**Keywords:** *Erigeron karvinskianus*, anti-oxidant, anti-inflammatory, anti-urolithiatic

NITN/2024/PP/36

**EVALUATION OF ANTIMICROBIAL ACTIVITY OF SEED EXTRACT OF *Musa balbisiana***

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**Abstract**

**Introduction:** *Musa balbisiana*, also known as Bhimkol, is a commonly cultivated fruit in Assam. Bhimkol exhibits beneficial agronomic characteristics, including disease resistance and tolerance to dry conditions. Traditionally, kola khar, a byproduct of banana peel, is utilized for medicinal purposes, offering remedies for various ailments. Moreover, the banana flower is abundant in essential nutrients such as vitamins, flavonoids, and proteins, which have been historically employed in traditional medicine to address conditions like bronchitis, constipation, and ulcers. The market already offers a compound called Bhim shakti, which is powered by bhimkol and known for its utility.

**Methodology:** The fruit of *Musa balbisiana* was collected from local market and stored in Microbiology laboratory of NGI at room temperature. The stored sample of banana fruit was subjected to sieving and separation of seeds from the fruit. Subsequently, we conducted purging followed by cold extraction using distilled water. Phytochemical screening was then carried out, followed by antimicrobial testing against gut bacteria *E.coli* using well diffusion method.

**Result and discussion:** The initial phytochemical screening revealed that bhimkol contains phenols and flavonoids as active biological compounds. The seed extract showed an antimicrobial activity with a zone of inhibition of 20mm against the gut bacteria while the drug norfloxacin showed a zone of inhibition 11mm and was used as a standard.

**Conclusion:** *Musa balbisiana* possesses phenols as an active compound which contributes to its antimicrobial properties.

**Key words:** Bhim kol, *Musa balbisiana*, cold extraction, antimicrobial.



NITN/2024/OP/37

**KNOWLEDGE ON IMPORTANCE OF YOGA THERAPY AMONG TYPE II DIABETIC  
ADULTS OF MIRZA, KAMRUP(R), ASSAM: A DESCRIPTIVE STUDY**

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***Abstract***

**Background of the study:** Type 2 Diabetes mellitus is a chronic metabolic disorder in which prevalence has been increasing steadily. Lifestyle factors are known to be important to the development to type 2 DM. These are sedentary lifestyle, cigarette smoking, consumption of alcohol etc. Yoga is a traditional mind-body system originating in India over 4000 years ago. Indians usually have high acceptability of Yoga because it fits their health beliefs and culture. People who were aware of the complication of diabetes and practicing healthy behaviour can suffer less. In order to prevent and control type 2 diabetes mellitus in its early stages of life, this study attempts to evaluate the level of knowledge among adults with diabetes mellitus regarding the effectiveness of yoga therapy in managing the condition.

**Material and Methods:** Quantitative descriptive design was adopted in present study. Total 200 individuals were selected through purposive sampling technique. Tool used for collecting data consists of two sections. Section A consist of demographic characteristics and section B include knowledge questionnaire to evaluate the knowledge on importance of yoga therapy among type II diabetic adults.

**Results:** Out of 200 type II diabetic adults, 33(16.5%) of the adults had adequate, 130 (65%) had moderately adequate and 37(18.5%) had knowledge on importance of yoga therapy. There was no association between knowledge on importance of yoga therapy with demographic characteristics like age like age( $p=.868$ ), gender( $p=.842$ ), educational qualification( $p=$ ), family history of diabetes mellitus( $P=.918$ ), duration of confirmed diabetes mellitus( $p=.245$ ), food habit( $p=.835$ ), habit of smoking( $p=.935$ ) and alcoholism( $p=.980$ ) performed regular exercise( $p=.671$ ) and attended training /programme on yoga therapy( $p=.854$ )

**Conclusion:** Present study found that most of the type 2 diabetic adults had moderately adequate knowledge on importance of yoga therapy. In future there is a scope to conduct more research on knowledge as well as practice of yoga therapy in management of type 2 diabetes mellitus with large sample size.

**Keywords:** Knowledge, yoga therapy, type 2 diabetes mellitus, adult

NITN/2024/OP/38

## IMPORTANCE OF ZOOBOTIC DISEASE IN NORTHEAST INDIA

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### Abstract

**Introduction:** Most people engage with animals in some manner. Any illness that may transmit from vertebrate animals to people or from humans to vertebrate animals on their own is referred to be a zoonotic disease. Zoonoses that are a hazard to human health on a global scale, such the human immunodeficiency virus, severe acute respiratory syndrome, or newly developing influenza Type-A viruses, may not really share many characteristics with existing, well-known zoonotic agents. This is due to the fact that before adapting to humans, these novel agents only passed through a brief zoonotic stage. Some diseases or illnesses, despite having a zoonotic origin, represent a danger to human health on a worldwide scale. Almost 60% of human diseases originate from zoonotic agents.

**Methodology:** Relevant data was searched using various databases like Google Scholar, PubMed, SpringerLink and Scopus.

**Results & Discussion:** This study concentrates on pertinent facts, zoonotic illnesses that may be found in Northeast India as well as other regions of India and the world, and some approaches to prevention and treatment of zoonotic diseases that have been employed in the past. There are many different pathogens included in this like bacteria, viruses, fungus, protozoa, etc. Animal movement, commerce, urbanization, travel and tourism, vector biology and anthropogenic influences have all had a substantial impact on the emergence, re-emergence, distribution patterns of zoonosis.

**Conclusion:** The emergence of zoonotic diseases is often related to environmental and behavioral changes like deforestation and urbanization which can result in the degradation of natural habitats and the displacement of wildlife, increasing the likelihood of human-animal encounters. Furthermore, the global movement of people and goods may facilitate the cross-border transmission of zoonotic diseases, elevating them to the level of global health concern. Some essential methods for avoiding and controlling zoonotic diseases are vaccination, improving hygiene and sanitation practices can help to reduce the risk of zoonotic disease transmission, particularly in places where humans and animals live together.

**Keywords:** Zoonosis; Influenza; Pathogens

NITN/2024/PP/39

## A REVIEW SUMMARY ON THE USAGE OF JUTE IN HERBAL MEDICINE

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### Abstract

**Introduction:** Jute (*Corchorus olitorius L.*) is a natural leafy vegetable that is valued by people in parts of Asia, the Middle East, and Africa. Jute leaves are rich in active diterpenoids, which may help with the development of novel medications and immune system boosting. It is commonly used for its immune- stimulating, anti-inflammatory, antitumor, anti-cancer, antipyretic, antihypertensive, antidiabetic, and antipyretic effects.

**Methodology:** Identification of the research topic, Collection of data from secondary sources like google scholar, google, research journals and other conference papers, Combine the data and form a collective database, Analysis of data and charting out the result.

**Results and Discussion:** Medicinal Properties -Both the species of white jute (*Corchours capsularis L.*) and tossa jute (*Corchorus olitorius L.*) offer therapeutic benefits. Tussah jute is a traditional medicine for aches and pains, dysentery, enteritis, fever, dysentery, pectoral pains, and tumors. It is a de-obstruent, diuretic, lactagogue, purgative, and tonic

**Conclusion:** Many cultures have used jute leaf for centuries as a treatment. The jute leaf contains approximately 17 nutritionally active substances, many of which include vitamins, minerals, and amino acids. Protein, calories, fibre, and the anticancer compounds phytol and monogalactosyl-diacylglycerol are all present in jute leaf. It could lessen cancer risk. As a result, jute leaf is crucial for human nutrition, health, and aesthetic maintenance. On the other side, it can be to get important chemical substances to create new medicine molecules. The knowledge at hand assists in bridging the gap between existing traditional medicinal accounts on this plant and contemporary scientific investigations.

**Keywords:** *Corchorus olitorius*, Ethnomedicine, Traditionaluse, Antioxidant, Antimicrobial

NITN/2024/PP/40

***Cascabela thevetia*: A MEDICINAL PLANT WITH DIVERSE TRADITIONAL USES,  
BIOACTIVE CONSTITUENTS, AND PHARMACOLOGICAL ACTIVITIES AND ITS  
TOXICITY**

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**Abstract**

**Introduction:** *Cascabela thevetia*, a botanical species of considerable pharmacological interest, has a rich history of traditional use and medicinal significance. The plant has been extensively utilized in traditional medicine for its diverse therapeutic properties, including the treatment of cardiovascular conditions, inflammatory disorders, and neurological ailments. Phytochemical investigations have revealed a plethora of bioactive compounds like thevetin, quercetin, amyriins, kaempferol present in various parts of *Cascabela thevetia*. This comprehensive exploration of *Cascabela thevetia* highlights its potential as a source of bioactive compounds with diverse pharmacological activities.

**Methodology:** Focused, systematic search on google scholars, Pubmed, Science direct.

**Search terms:** (Phytochemical constituents and pharmacological activities of *Cascabelathevetia*)

**Result and discussion:** This review comprehensively examines the traditional applications, bioactive constituents, and pharmacological activities associated with *Cascabela thevetia*. It also serves as a reference source for future research that may be carried out to elucidate the molecular mechanisms underlying these effects and to explore the therapeutic potential of *Cascabela thevetia* derived compounds in modern medicine.

**Conclusion:** In conclusion, main aim of the review is to provides a thorough investigation into the multifaceted aspects of *Cascabelathevetia*, shedding light on its traditional uses, bioactive constituents, and pharmacological activities.

**Key words:** *Cascabela thevetia*, pharmacological action, bioactive compounds.

NITN/2024/PP/41

***IN-SILICO* STUDY OF NOVEL BENZOTHAZOLE DERIVATIVES FOR ANTI-DIABETIC ACTIVITY**

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**Abstract**

**Introduction:** Diabetes is a chronic condition or group of metabolic diseases in which a person has an elevated level of blood glucose in the body due to insufficient insulin synthesis. It is a chronic hyperglycemia that is related with end organ damage, malfunction, and failure in organs and tissues such as the retina, kidney, nerves, heart, and blood vessels. Benzothiazole is a heterocyclic molecule that has been used as a parent molecule to create novel derivatives with potential use as antidiabetic drugs.

**Methodology:** In this research, a library of 30 benzothiazole derivatives are theoretically designed through ChemDraw and their *In-silico* studies are performed. The study involves the assessment of molecular properties, toxicity, and the potential anti diabetic activity of the benzothiazole derivative through Molinspiration, Swiss ADME, Molecular docking via vina wizard software programme and Discovery studio.

**Result:** Based on these studies it has been determine that certain benzothiazole derivatives has shown effective binding affinity and further these derivatives can be proceed for synthesis.

**Conclusion:** The result of the study indicates a potential effectiveness of the novel benzothiazole derivatives as an anti diabetic agent.

**Keywords:** Anti-diabetic, Benzothiazole, *In-silico* studies

NITN/2024/PP/42

## PEPTIC ULCER REMEDIES FROM NORTHEASTERN INDIA: A JOURNEY INTO INDIGENOUS HEALING TRADITIONS

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### Abstract

**Introduction:** Peptic ulcer disease (PUD) poses a formidable challenge in global healthcare, characterized by mucosal lesions resulting from an intricate interplay of protective and detrimental factors. Despite advancements in conventional therapeutics, such as proton pump inhibitors and histamine-2 receptor antagonists, challenges such as ulcer recurrence persist. Traditional medicine, with its focus on natural products, presents a promising avenue for drug discovery. Northeast India, renowned for its rich botanical diversity and indigenous knowledge, offers a unique opportunity to explore novel therapeutic interventions for PUD. In this interdisciplinary study, we endeavor to compile a comprehensive list of 100 medicinal plants from Northeast India traditionally used in managing stomach-related issues, elucidate their chemical constituents, and unravel their traditional preparations.

**Methodology:** A rigorous methodology was employed, combining database searches and literature reviews to identify medicinal plants traditionally used for stomach-related ailments in Northeast India. Extensive literature reviews and database searches were conducted to compile a comprehensive list of bioactive constituents associated with antiulcerogenic properties.

**Results and Discussion:** Various chemical compounds from medicinal plants, including chlorogenic, and neochlorogenic acids, alongside flavonoids like rutoside and hyperoside, demonstrate antiulcerogenic properties through antioxidant and anti-inflammatory effects. Terpenoids such as  $\alpha$ -Citral, Limonene, and Linalool exhibit cytoprotective and anti-inflammatory actions, contributing to their antiulcerogenic potential. Additionally, compounds like  $\beta$ -sitosterol, cucurbitin, and rhamnose aid in mucosal healing and ulcer prevention.

### Conclusion:

The study highlights the significant potential of chemical compounds from medicinal plants in managing peptic ulcer disease. Future research endeavors should focus on elucidating their mechanisms of action and conducting clinical trials to validate their efficacy and safety. Ultimately, this research underscores the importance of natural products in modern drug discovery, particularly in addressing complex health conditions like peptic ulcer disease.

**Key-words:** peptic ulcer, ethnomedicinal plant, biochemical chemical compound, northeast, flavanoids

NITN/2024/PP/43

## IDENTIFICATION OF PLANT DERIVED BIOMOLECULE THROUGH *IN-SILICO* STUDIES FOR ANTI-OSTEOARTHRITIC PROPERTY

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### Abstract

**Introduction:** Osteoarthritis (OA) is a chronic joint condition marked by inflammation driven by oxidative stress and increased levels of inflammatory mediators like TNF- $\alpha$ , IL-6 and IL-1 $\beta$ . Excessive nitric oxide (NO) production by chondrocytes via inducible NO synthase (iNOS) damages cartilage and cells in OA. Risk factors include genetics, age, sex, joint injury and obesity. Conventional treatments like NSAIDs offer relief, they come with limitations. The search for non-toxic alternatives is crucial, with plant-derived compounds showing promise. Identifying specific molecules for clinical study is essential for advancing OA treatment.

**Methodology:** A comprehensive review of literature was performed to identify medicinal plants for OA management. Biomolecules from these plants were selected via the IMPAAT database or literature survey. Molecular docking was conducted against TNF- $\alpha$ , IL-1 $\beta$ , IL-6 and iNOS by using PyRx software. Subsequently, the ADME profile of plant-derived biomolecules was assessed using the Swiss ADME web tool.

**Results & Discussion:** The study selected 17 plants and 23 plant-derived biomolecules. Molecular docking revealed favorable binding affinities, with Beta sitosterol and Riboflavin exhibiting the highest, and Betaine the lowest. Riboflavin meets Lipinski's Rule of Five and shows favorable ADME properties, suggesting efficacy in OA management. With its antioxidant and lipid metabolism properties, Riboflavin holds promise in mitigating cartilage degradation and oxidative injury, crucial in addressing OA's pathogenesis.

**Conclusion:** Riboflavin shows promise for OA management due to its favorable properties and potential to mitigate cartilage degradation and oxidative injury, highlighting its significance in combating OA pathogenesis.

**Keywords:** Osteoarthritis, anti-arthritis, medicinal plant, biomolecule

NITN/2024/PP/44

**DESIGN AND *IN-SILICO* STUDY OF NOVEL BENZOTHAZOLE DERIVATIVES FOR  
ANTI-BACTERIAL ACTIVITY**

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**Abstract**

**Introduction:** Bacterial infections are any illness or condition caused by harmful, small single-cell organisms called bacteria that invade the body. Bacteria can infect every area of the body, like the bladder, brain, intestines, lungs, and skin. Some of the most common general signs and symptoms of infection include: fever, chills, severe headache, neck stiffness, eye redness, difficulty breathing, pain, cough etc. Untreated bacterial infections can sometimes lead to serious, life-threatening conditions.

Benzothiazole is one of the important fused heterocyclic compounds, which is a weak base having varied biological activities. Benzothiazole moiety is of great importance as it is found in a large variety of naturally occurring compounds and possesses a broad spectrum of medicinal and pharmacological properties. The unique methyne center present in the thiazole ring makes benzothiazole as the most bioactive heterocyclic compound.

**Methodology:** In this research, a library of 30 benzothiazole derivatives are theoretically designed through ChemDraw and their *in-silico* studies are performed. The study involves the assessment of molecular properties, toxicity, and the potential anti diabetic activity of the benzothiazole derivative through Molinspiration, Swiss ADME, Molecular docking via vina wizard software programme and Discovery studio.

**Result and discussion:** Based on these studies it has been determine that certain benzothiazole derivatives has shown effective binding affinity and further this derivatives can be proceed for synthesis.

**Conclusion:** The result of the study indicates a potential effectiveness of the novel benzothiazole derivatives as an anti-bacteial agent.

**Keywords:** Anti-bacterial, Benzothiazole, *in-silico* studies



NITN/2024/PP/45

**EMPHASIS ON THE ETHNOPHARMACOLOGY, TRADITIONAL USE,  
PHYTOCHEMISTRY AND THERAPEUTIC ACTIVITY OF NORTH EAST INDIA'S  
ETHNIC PLANT *Houttuynia Cordata***

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**Abstract**

**Introduction:** *Houttuynia cordata*, also known as fish mint, is a flowering medicinal plant with thin, spreading rhizomes. It has a long tradition of use in various cultures especially in North east Indian regions. It has been traditionally used in various aspect like drugs, cosmetics, dietary supplements, and drinks. It is also used as raw medicinal salad, essential for decreasing blood sugar levels. *Houttuynia cordata* contains various phytoconstituents such as flavonoids, phenols, flavonoid glycosides, polysaccharides, ionones, and some alkaloids containing benzamide and isoquinoline moieties. *Houttuynia cordata* has been found to possess a range of essential activities, including anti-leukemic, anti-viral, anti-tumour, anti-oxidant, anti-allergic, anti-cancer, anti-mutagenic, anti-obesity, and anti-bacterial properties. Additionally, it is used as a hepato-protective agent.

**Methodology:** For this review, Literature survey was conducted with a preliminary search using PubMed, Wiley Online, Scopus, Springer, and Science Direct databases. The resulting review provides a comprehensive overview of the current scientific knowledge of *Houttuynia cordata*.

**Result:** A detailed study of the selected findings about the phytochemistry, pharmacological activity of *Houttuynia cordata* was presented in a narrative summary, and statistical findings was incorporated.

**Conclusion:** This review can widen the understanding regarding *Houttuniya cordata*, supported by relevant evidence and highlight its prospects for further research

**Keywords:** *Houttuynia cordata*; Therapeutic activity; Phytochemistry; Pharmacological aspects

NITN/2024/PP/46

## THERAPEUTIC POTENTIAL OF PLANT-DERIVED BIOMOLECULES IN GOUT THROUGH MOLECULAR DOCKING STUDIES

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### Abstract

**Introduction:** Gout is the painful form of arthritis. Its impact is observed in approximately 0.1–10% of adults, with a greater prevalence among men as opposed to women. (–)-Verbenone, a monoterpene bicyclic ketone, is a component of the essential oil from rosemary species such as *Rosmarinus officinalis L.* and *Eucalyptus globulus* and is used for an herb tea, a spice and a perfume. Previous studies on (–)-verbenone have confirmed that it possesses various pharmacological activities like antiviral, bronchodialating, anticancer, and antioxidant properties etc. The present study aimed to explore the therapeutic potential of plant-derived biomolecule in gout by molecular docking studies.

**Methodology:** A comprehensive literature review identified medicinal plants with anti-gout properties and their corresponding compounds. Ligands for molecular docking studies were sourced from the PubChem database, and proteins associated with gout were obtained from the Protein Data Bank (RCSB). Molecular docking was performed using PyRx software, and the ADME profile for plant-derived biomolecules were assessed with the Swiss ADME web tool.

**Results & Discussion:** The study investigated 15 plants and 18 plant-derived biomolecules. Molecular docking analysis indicated favorable binding affinities with (–)-verbenone demonstrating the highest affinity and 2-Pentanone the lowest. Among all the ligands docked, (–)-verbenone achieved the highest docking scores of -6.1, -5.8, -5.8, -5.9 against Xanthine oxidase, TNF- $\alpha$ , IL-1 $\beta$ , and iNOS proteins, respectively. Notably, (–)-verbenone complied with Lipinski's Rule and exhibited favorable ADME properties.

**Conclusion:** (–)-Verbenone shows promise in managing gout due to its favorable properties, found in essential oils with diverse medicinal activities, including anti-inflammatory effects. Given the well-documented side effects of prescribed gout drugs, Verbenone's potential to alleviate these reactions is significant.

**Keywords:** Molecular docking, Xanthine oxidase, TNF- $\alpha$ , ADME.

NITN/2024/PP/47

**PHYTOCHEMICAL SCREENING AND *IN-VITRO* STUDIES OF *Picriafel-terrae* Lour**

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**Abstract**

**Introduction:** In recent years, there has been a notable increase in the exploration of medicinal plants, particularly in the northeastern states. One such plant commonly found in Northeast India is *Picriafel-terrae* Lour, known as Khatual in the Mizo language.

*Picriafel-terrae* Lour, a member of the Linderniaceae family, has been traditionally utilized for its stimulant and diuretic properties, as well as for the treatment of malaria. Moreover, it has exhibited promising characteristics as a potential anti-inflammatory agent.

**Materials and method:** The plant was collected and sent to Shillong, Eastern circle, Botanical Survey of India for Authentication and was authenticated respectively with reference number: BSI/ERC/Tech/2022-23/360. The collected plants were washed thoroughly and dried under shade and later crushed carefully into coarse particles and weighed. It was then extracted using ethanol and later, some pharmacognostic analysis as well as preliminary phytochemicals screening were done and the in-vitro anti-inflammatory activities of ethanolic extract were studied using Bovine Serum Albumin (BSA) denaturation using Diclofenac sodium as standard.

**Result and Discussion:** The extractive value of ethanol: 6.712 % Yield (w/w) and the ethanolic extract contained alkaloids, protein, glycosides, flavonoids, steroids, and triterpenoids. The IC50 value for the Bovine Serum Albumin assay was 213.768 µg/ml for the ethanol extract and 190.565 µg/ml for Diclofenac sodium as the standard.

**Conclusion:** In conclusion, the extract derived from *Picriafel-terrae* Lour demonstrates promising anti-inflammatory effects. These beneficial properties may be attributed to the presence of substantial phenolic content within the plant extract. However, further comprehensive studies are warranted to fully elucidate the mechanisms underlying these effects and to determine the potential therapeutic applications of the extract.

**Key words:** Anti-inflammatory, Diclofenac sodium and plant extract

NITN/2024/PP/48

## IMPACTS OF MENSTRUAL HYGIENE MANAGEMENT ON THE HEALTH OF INDIGENOUS COMMUNITIES OF NORTH EAST INDIA

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### Abstract

**Introduction:** Menstrual hygiene management (MHM) is a crucial aspect of women's health, yet it remains a neglected concern, particularly among marginalized populations such as indigenous communities in North East India. Cultural norms, inadequate infrastructure, and limited awareness pose significant barriers to accessing proper menstrual hygiene resources in this region. Indigenous groups continue to struggle with persistent obstacles that undermine their ability to maintain menstrual health safely and hygienically. This study aims to investigate the impacts of MHM practices on the health and well-being of indigenous women in North East India, emphasizing the urgent need for culturally tailored interventions.

**Materials and Methods:** This study employed a comprehensive approach, including a review of existing literature, to gather data on menstrual hygiene practices and their effects on indigenous communities in North East India. Data was collected through Google Scholar, ScienceDirect, PubMed and Research Gate to gather informations regarding menstrual hygiene management in North East India.

**Discussion and Future Prospects:** Cultural taboos surrounding menstruation contribute to stigma and secrecy, inhibiting open discourse and impeding the adoption of safe and hygienic practices. In rural India, geographic disparities persist in hygienic method usage among adolescent women, with 42% exclusively using such methods. A north-south divide is evident, with 73.79% opting for sanitary pads and 26.21% using clothes, exacerbated by inadequate infrastructure for clean water and sanitation, particularly affecting indigenous women and girls.

**Conclusion:** This research underscores the Inadequate access to hygienic methods and infrastructure within indigenous communities of North East India. Solutions must include affordable sanitary products, MHM education, and water and sanitation investments. Prioritizing MHM promotes better health, empowers women and girls, and aids community development. Culturally sensitive awareness, education, product access, infrastructure improvements, and ongoing evaluation are key for sustainable progress in the region's menstrual health.

**Keywords:** Menstrual hygiene management (MHM), Indigenous communities, Awareness, Clean water and sanitation, Community engagement, Empowerment.

NITN/2024/PP/49

**EXPLORING HEPATOPROTECTIVE PLANTS OF BARAK VALLEY: TRADITIONAL  
AND PRE-CLINICAL ASPECTS**

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**Abstract**

**Introduction:** The Barak Valley, located in Southern Assam, India, is home to a variety of plants that have historically been utilized by the natives to cure a variety of illnesses. Hepatic illnesses, which are often brought on by oxidative stress, inflammation, and hereditary factors, pose a threat to world health. This review provides a thorough description of the hepatoprotective plants found in Barak Valley, highlighting their medicinal potential traditionally as well as preclinically while also discussing the safety issues and ethical considerations.

**Methodology:** The authors have gone through a vast number of published ethnobotanical surveys and research articles from various scientific database like PubMed, Google Scholar and Embase.

**Results & Discussion:** *Achyranthes aspera*, *Adhatoda vasica*, *Ageratum conyzoides*, *Andrographis paniculata*, *Bombax ceiba*, *Cajanus cajan*, *Clitoria ternatea*, *Curculigo orchoides*, *Curcuma longa*, and numerous other hepatoprotective plants discovered in the Barak Valley. According to several pharmacological research, these herbs have the capacity to mitigate liver damage, reduce inflammation, and strengthen antioxidant defenses. In carbon tetrachloride, paracetamol, simvastatin etc. induced liver damage, these plants have shown promising activity preclinically.

**Conclusion:** Therefore, available information needs to be scientifically validated clinically to find effective/alternative drugs/formulations in the management of hepatic and associated diseases.

**Keywords:** Barak Valley, herbal medicine, hepatic disease, review, preclinical study

NITN/2024/PP/50

**PHARMACOGNOSTICAL STUDIES AND *IN-VITRO* EVALUATION OF  
ANTIINFLAMMATORY ACTIVITY OF *Cascabela Thevetia* LEAVES**

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**Abstract**

**Introduction:** *Cascabela thevetia* is medicinally used in antioxidant, anti-inflammatory and wound healing etc. The herb is used by both scientists and common people because it has a variety of medicinal properties. The plant contains a variety of phytochemicals, including glycosides, flavonoids, terpenoids, alkaloids, and steroids etc. This study aims to investigate the In-vitro antiinflammatory activity of the leaves of *Cascabela thevetia*.

**Methodology:** The plant leaves were collected from the locality and the pharmacognostical investigations were carried out. The In-vitro evaluation of anti-inflammatory activity was performed on the ethanolic extract of the leaves by egg albumin protein denaturation assay and human RBC membrane stabilizing assay.

**Result & Discussion:** The egg albumin protein denaturation assay was found to be 227.47 pg/ml compared to 154.54 pg/ml of standard diclofenac. Again human RBC membrane stabilizing assay was found to be 201.28 ug/ml compared to standard having 124.69 pg/ml of standard diclofenac.

**Conclusion:** In this study we can conclude that the ethanolic leaf extract of *Cascabela thevetia* has low anti-inflammatory activity as compared to diclofenac. Although compared to standard the percentage inhibition of free the ethanolic leaf extract of *Cascabela thevetia* is moderately low, still it possesses the anti-inflammatory activity. This can be used in polyherbal formulation for a synergistic anti-inflammatory activity, but further research might be needed in order to achieve such heights. As the leaf of *Cascabela thevetia* possesses some kind of anti-inflammatory activity, it can be hypothesized that other parts of the plant might also have same or greater amount of antiinflammatory potential. So we can conclude that *Cascabela thevetia* has the potential for being recognized as a plant containing anti-inflammatory activity.

**Keywords:** *Cascabela thevetia*, anti-inflammatory,

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**FORMULATION AND EVALUATION OF HERBAL LIP BALM USING COLOUR  
PIGMENTS OF *Basella alba* L.**

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**Abstract**

**Introduction:** Herbal lip balm is a cosmetic product containing pigments, wax material, oils, and emollients that apply color, moisture, and protection to the lips.

The ingredients in the herbal lip balm are all natural and free from harmful chemicals and it also have many advantages like better nourishment, make lips healthy and soft, non-irritating to the skin etc. Lip balm is a wax-like material that nourishes lips when applied topically. Lip balms are made to shield the lips from the elements such as the cold of winter, and stop drying and chapping. It helps prevent irritation and infection. Lip balm keep lips moisturized and aid in the healing of cracked lips. The main benefit of herbal lip balm is that it uses natural botanicals, like herbs, plant oils, and essential oils, which have many advantages for the delicate skin of the lips.

**Method:** Formulation of herbal lip balm by using lyophilized extract of *Basella Alba* and antimicrobial activity was determined by using disk diffusion method.

**Result and discussion:** The result obtained from this research is that marketed lip balm often contain synthetic waxes, alumina, parabens, hydrogenated oils and colours which are toxic. The main motive behind the formulation was to incorporate as many natural ingredients to retain the natural properties of lip balm. The use of *Basella Alba* provided natural colour which are less toxic as compared to synthetic colours. Evaluation was done for melting point, pH measurement, test for spreadability and stability studies. After performing the Stability studies for the lip balm at different temperatures, it was observed that the lip balm at room temperature ( $25.0 \pm 3.0^\circ\text{C}$ ) and refrigerator ( $4.0 \pm 2.0^\circ\text{C}$ ) showed; Good: uniform, no fragmentation; perfect application, without deformation of the lip balm.

**Conclusion:** It can be concluded that lip balm formulation was successfully created utilising organic elements can be extrapolated to have a number of advantages, including the ability to prevent chapping, dry lips and cold sores. Also, we carried out an evaluation of the plant *Basella Alba* and its herbal formulation and reported that it presents an antibacterial property using *in-vitro* antibacterial method.

**Keywords:** *Basella alba*, Colour pigments, herbal lip balm

NITN/2024/PP/52

**TITLE: *IN-VITRO* ANTHELMINTIC ACTIVITY OF POLYHERBAL FORMULATION**

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**Abstract**

**Introduction:** Medicinal plants, usually referred to as medicinal herbs, have been identified and employed in traditional medical procedures since ancient times. In village area of Jagiroad, Assam traditional plants are used to treat tapeworm infestation in humans. *Punica granatum linn* (bark) *Trachyspermum ammi*(seed), *Areca catechu linn* (nut).

**Methodology:** *Punica granatum*, *Trachyspermum ammi*, *Areca catechu linn*is traditionally used in Anthelmintic ulcer, Gastroprotective, Nematicidaletc. Due to its possession of various medicinal properties the herb is also used in cuisines by folk people. The plant contains different phytochemicals like tannins, flavonoids, phenolic compounds, alkaloids etc. This study aims to investigate the *In-vitro* anthelmintic activity of polyherbal formulation. The polyherbal formulation contains extract of *Punica granatum*, *Trachyspermum ammi*, *Areca catechu linn*. The bark of *Punica granatum*, seeds of *Trachyspermum ammi* and the nuts of *Areca catechu linn* were collected from the locality and evaluation of *In-vitro* anthelmintic activity were carried out.

**Results and Discussion:** The *In-vitro* evaluation of anthelmintic activity was performed on the water extract by conventional earthworm method. It has given a prominent result when compared to standard drug albendazole.

**Conclusion:** The plant may be further explored for its phytochemical profile to recognize the active constituent accountable for anthelmintic activity. While these *In-vitro* results are of a preliminary nature further *In-vivo* studies have to be undertaken to investigate the efficacy of the plant extract in the treatment of helminthes.

**Keywords:** Anthelmintic activity, *Punica granatum*, *Trachyspermum ammi*, *Areca catechu linn*.



NITN/2024/PP/53

**A COMPARATIVE STUDY ON ANTI-DIABETIC EFFECT OF THE FLOWERS OF  
*Nymphaea rubra* & *Eichhornia crassipes*.**

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**Abstract**

**Introduction:** *Nymphaea rubra*, sometimes known as kumuda, is a kind of aquatic plant that grows at the borders of lakes and rivers. It belongs to the Nymphaeaceae family. *Nymphaea* species have a diverse spectrum of biological activities, including anti-diabetic, anticancer and antioxidant capabilities. And the fresh water aquatic plant *E. crassipes*, sometimes known as water hyacinth, belongs to the Pontederiaceae family. Many substances with radical-scavenging action are found in water hyacinth, including vitamins, terpenoids, phenolic acids, alkaloids, sterols, and other metabolites with significant biological activity.

**Methodology:** The extraction of *Nymphaea rubra*(flower) and *Eichhornia crassipes*(flower) were done by using Soxhlet apparatus in different solvents like petroleum ether, Chloroform and Ethanol. The extracts were studied for their physiochemical and phytochemical parameters. The comparative study of both the plants extract was done by Alpha- Amylase inhibitory assay.

**Result and Discussion:** The IC<sub>50</sub> value of the *Nymphaea rubra*(flower)for Ethanolic extract varies from 178.2925 to 968.8063µg/ml, for Chloroform extraction it varies from 185.9349 to 952.2184µg/ml, and for petroleum ether extraction varies from 175.7046 to 887.4484µg/ml. Whereas, the IC<sub>50</sub> value of the *Eichhornia Crassipes* (flower) for Ethanolic extract varies from 269.274 to 1368.17µg/ml, for chloroform it extraction varies from 201.654 to 1024.7µg/ml and for pet. Ether varies from 164.4396 to 835.580µg/ml. So according to the result, the Ethanolic extract of *Nymphaea rubra* has more potent diabetic activity as compare to the ethanolic extract of *Eichhornia crassipes*.

**Conclusion:** *Nymphaea rubra* and *Eichhornia crassipes* were collected and soxhlet apparatus was used to obtain petroleum ether, chloroform and ethanolic extract. The qualitative phytochemical analysis shows the presence of secondary metabolites like alkaloids, carbohydrates, cardiac glycoside, anthraquinone glycosides, phenols, tannins in both the plant. After the comparative study of the *Nymphaea rubra* and *Eichhornia crassipes* for *in-vitro* anti-diabetic activity the Ethanolic extract of *Nymphaea rubra* has more potent than ethanolic extract of *Eichhornia crassipes*.

**Keyword:** *Eichhornia crassipes*, *Nymphaea rubra*, anti-diabetic

NITN/2024/PP/54

**NANOPARTICLES BIOSYNTHEZIZED FROM MICROBES FOUND IN FERMENTED  
FOODS OF NORTHEAST INDIA: A PROSPECTIVE VIEW**

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**Abstract**

**Introduction:** Nanoparticles can be defined as a carrier for drug molecules that are having a size range of 1 to 100 nanometers. Nanoparticles are utilized in various fields for different purposes due to their unique properties. They can be used as Targeted Drug Delivery System, enhance bioavailability, Biosensors, and bio-labels, anti-microbial and used in textile industry. Due to its high demand in the industrial and laboratory fields, different conventional methods are being used for its production. But its productions involve use of different hazardous metals such as Silver, Gold, platinum, and Nickel etc. that are harmful to the environment. Studies from the eminent researchers opine that biological method can be used to prepare nanoparticles where Microbes are utilized to prepare nanoparticles.

**Methodology:** In biological method of preparing nanoparticles, the bacteria are firstly extracted from different sources such as fermented foods and dried fruits etc. then they are cultured in a media after that they are introduced into a particular metal which will further reduce it into smaller nanoparticles.

**Result and discussion:** This method will result in the synthesis of green nanoparticles that are ecofriendly and non-toxic to the environment.

**Conclusion:** By exploring the major bacterial species present in the fermented foods we can shed new light into the potential of the fermented foods of North-East India to prepare nanoparticles from available literature. These microbes will help not only to prepare nanoparticles but also, they will show some of the additional health benefits to human.

**Keywords:** Green Nanoparticles; Microbes; Fermented foods; North-East India.

NITN/2024/PP/55

## REVIEW ON PLANT DERIVED BIOACTIVE COMPOUND HAVING ANTIDIABETIC ACTIVITY

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### Abstract

**Introduction:** Diabetes mellitus or diabetes is a serious metabolic endocrine disorder in which blood glucose, also referred to as blood sugar, becomes too high on the blood plasma. Diabetes mellitus is now a global pandemic that affects approximately 536.6 million people worldwide and is predicted to rise to 643 million people by 2030 and 783.2 million people by 2045. Herbal plants are known to have various bioactive compounds. Currently more than 400 plants species having hypoglycemic effects. Herbal medicine can be a good way to counteract the negative effects of synthetic drugs. Bioactive compounds are the basic essential component of current medicines due to their availability, low side effect, and cost-effectiveness. Researchers are going on to bring nature and technology through herbal nanomedicine to treat different ailments to give better life.

**Methodology:** Nanoemulsion, solid dispersion, solid lipid nanoparticle, nanoliposome, Nanomicelle.

**Results & Discussion:** Bioactive compound have a peculiar odour and taste, poor aqueous solubility, bioavailability, half-life and unstable in nature. Thus, to overcome these obstacles nanotechnology based herbal nanoformulations have gained much attention. Nanoformulation loaded with these phytoconstituents exhibited significant therapeutic effects on diabetes by improving their aqueous solubility, bioavailability, half-life, storage stability, controlling the release mechanism and reducing side effects. In this review, we discuss the potential role of various herbal nanoformulations and their recent advances for systemic delivery in the diabetes treatment.

**Conclusion:** This review provides information on selective antidiabetic bioactive compound, as well as its nanoformulation with their mechanism of action.

**Keywords:** Bioactive compound, Diabetes, Nanocarrier.

NITN/2024/PP/56

## REVIEW ON FAST DISSOLVING ORAL FILM AND IT'S APPLICATION

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### Abstract

**Introduction:** Fast dissolving oral films (FDOFs) represent a novel dosage form that has garnered increasing attention in the pharmaceutical industry due to their potential to enhance patient compliance and convenience. These thin, flexible films are designed to rapidly disintegrate upon contact with saliva, offering a non-invasive and easy-to-administer alternative to traditional oral dosage forms such as tablets and capsules. FDOFs hold promise for delivering a wide range of drugs, including those with poor solubility or requiring immediate onset of action, making them suitable for various therapeutic applications.

This abstract provides an overview of the formulation, manufacturing techniques, advantages, challenges, and future prospects of FDOFs, highlighting their role in addressing the evolving needs of modern healthcare.

**Methodology:** Firstly, we visited various search engines such as Google Scholar, Science Direct, and PubChem. Next, we applied keywords such as "fast dissolving films," "fast dissolving oral films," and "fast dissolving biofilms," resulting in approximately 52,000 search results. From these, we selected 1,000 papers for review based on their publication in reputable research journals and their recent publication dates, typically within the past 8-10 years.

**Results & Discussion:** After reviewing these papers, we have found that FDOFs require careful examination and proper attention to detail to ensure optimal formation. Different excipients are necessary for formulation, such as polymers like Hydroxypropyl Methylcellulose (HPMC) E5 and HPMC E3, plasticizers like PEG400, as well as other sweetening agents, saliva-stimulating agents, and flavoring agents. Varying concentrations of plasticizer and polymer result in different physical characteristics of the films, including changes in tensile strength and other properties.

**Conclusion:** Fast dissolving oral films have several advantages over the conventional dosage forms. So they are of great importance during the emergency cases such as allergic reactions and asthmatic attacks whenever immediate onset of action is desired.

**Keywords:** Fast dissolving films, Oral Films, Buccal Delivery System, Fast dissolving biofilms.

NITN/2024/PP/57

**TO IDENTIFY THE MOST EFFICACIOUS ASSAMESE TRADITIONAL PLANT  
AGAINST PCOD USING *IN-SILICO* APPROACHES**

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**Abstract**

**Introduction:** Traditional herbs have been used for medical purposes since time immemorial. In our study we enumerated about the hundred one herbs “Ekho ek bidh xaak” as commonly known in Assamese cuisine and the therapeutic beliefs.

**Methodology:** The plants were screened using numerous databases for performing in- silico like KNapSack Core Database System, PASS (Prediction Activity Spectral Substances) software, CSIR-CDRI Plant Metabolite Database.

**Results and discussion:** After precisely screening the plants by numerous in-silico measures, we came with convincing evidence about two plants namely Cinnamomum tamala and Eryngium foetidum being forecasted to have the best effectiveness for our aimed root cause of Chronic inflammation in PCOD. Cinnamomum tamala had three bioactive phytochemicals which exerts the best antagonistic action against tyrosine kinase pathway which leads to the signalling activation of the transcription factor NF-kB which in turn promotes events consequential to inflammation, and is predicted to alleviate inflammatory conditions in PCOD.

**Conclusion:** Lastly, we would like to conclude on this note that since treatment research for PCOD is still concurring on track, therefore symptomatic reliefs are the preferred direction. We recommend from our inclusive analysis that consuming both the herbs Cinnamomum tamala and Eryngium foetidum can have a long-term alleviating effect when it comes to chronic inflammation in PCOD.

**Keywords:** cuisine; chronic inflammation; PCOD; signalling; transcription factor

NITN/2024/PP/58

**TO ANALYSE THE METABOLITES PRESENT IN TRADITIONAL RICE BEERS OF  
NORTHEAST INDIA**

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**Abstract**

**Introduction:** The Northeast India consists of many ethnic tribes and communities having diverse customs and lifestyles with difference in their preparation and consumption of fermented rice beer. The natural metabolites present in traditional rice beer of North East India play important roles in its flavour, aroma, and potential health benefits. These traditional beers hold immense cultural, social, and economic significance in the region.

**Methodology:** Traditional Rice Beer samples: *Sadhier* (Meghalaya), *Xaj-pani* (Assam), *Apong* (Arunachal Pradesh), *Zutho*, *Khe* (Nagaland) were collected from various parts of North-East India. Fresh samples were collected of approximately 100 mL, then stored in airtight containers free from moisture at 4 °C until further use. The beer samples were then subjected for phytochemical and Thin layer chromatographic analysis.

**Results and Discussion:** After performing phytochemical screening of the rice beer samples we found the existence of the compounds such as organic acids, carbohydrates, amino acids, alkaloids, sterols, volatile aromatic compounds, different mineral elements and by performing TLC mainly five distinct compounds were identified namely Carbohydrates, Amino Acids, Saponins, Tannins and Sterols.

**Conclusion:** The metabolite analysis would provide us with a report on the nutritional benefits of these traditional beer preparations and aid in the determination of the dose level of consumption if any toxins are detected. Further analysis of in-vivo methods would be suggested for extensive research.

**Keywords:** Metabolites; Traditional; Rice Beer; TLC

NITN/2024/OP/59

**STUDY ON EXTERNAL APPLICATION THERAPY AS MENTIONED ON AYURVEDA  
WITH SPECIAL REFERENCE TO VITILIGO**

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**Abstract**

**Introduction:** External application or Bahiparimarmajan karma of Ayurveda form really an unique system which include local application of medicine and nutrient, heat etc & lead to the improvement in function, correction of deformities, nourishment & strength to the part treated. Skin diseases are described in Ayurveda under the umbrella of Kustha roga & kshudra roga. In vitiligo or switra vyadhi, “the Lepa karma” which is included under vahiparimarjan karma plays a great role for treatment purpose. Here, aliterally study is carried out on Vahiparimajan karma & its applied aspect on Vitiligo or switra vyadhi according to ayurveda. A comparative study has done on switra & vitiligo from Ayurveda & modern medicine point of view. A clinical study is done on Vahiparimajan karma i.e. Lepa karma by churna of Vakuchi seed & Gomootra & internal use of pigmento with the trial drug.

**Methodology:** Critical study: A critical literary study was carried out on external application or vahiparimajan karma with special reference to vitiligo or switra as mentioned in ayurveda.

Clinical study: Research work is carried out on 40 patients of Govt. Ayurvedic College & Hospital. Drug : Bakuchi seed + gomootra ( For external use )

Tab Pimento (for internal use)

Dose: For internal use-2tab twice daily. (Depending upon severity of the condition & tolerance of the patient). For external use-Quantity sufficient for external application & according to the size of the patch. Duration of trial:-45 days and Follow up after every 15 days.

**Result and discussion:** Vahiparimarjan chikitsa is an non-invasive & unique contribution of Ayurveda to the world of medicine. Classical procedures & many traditional treatments which are widely practiced by Ayurvedic scholar are being world-wide in recent era.

**Conclusion:** From my study about the disease Switra, we may conclude that, it is worth mentioning that bahiparimarjan as single therapy has also potency to play a major role effectively in the management of Switra but the combined effect of systematic correction with internal preparation and the local stimulation by external application has shown more effective as compared to external application of bakuchi churna with go-mutra only in the management of the disease Switra.

**Keywords**—vitiligo, external application, bakuchi, gomutra

NITN/2024/PP/60

## REVIEW ON DIFFERENT PHARMACOLOGICAL ACTION OF 1,3,5-TRIAZINE BASED DERIVATIVES

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### Abstract

**Introduction:** Triazine molecules are typically derived from heterocyclic compounds with structures that include sulfur or nitrogen atoms. Since nitrogen-containing heterocycles represent a significant class of both organic and synthetic compounds with a wide range of physicochemical characteristics and pharmacological actions, they are of greater interest. Triazine derivatives are one kind of nitrogen-containing heterocycle that has demonstrated a wide range of biological uses (such as analgesic, anti-tuberculosis, anti-fungal, anti-cancer, antiprotozoal, anti-malarial, anti-viral, anti-microbial, and anti-inflammatory activity). Due to its distinct physical and chemical characteristics, the triazine-based material has become more and more common in adsorption materials. In addition to having a large specific surface area, it can also offer hydrogen bonding, electrostatics,  $\pi$ - $\pi$ , and It has been applied to chemical sensing, chromatographic analysis, adsorption-based extraction, catalysis, and drug controlled release due to its hydrophobic and hydrophilic properties with different species.

**Methodology:** Different pharmacological action of 1,3,5-triazine based derivatives have been searched using scientific search engines like Google scholar and science direct on the given topic “pharmacological action 1,3,5-triazine based derivatives” which resulted in around 500 articles and out of those 20 articles were selected based on the relevant topic.

**Conclusion:** This review work revealed that 1,3,5-Triazine moiety possess variety of pharmacological activities like analgesic, anti-tuberculosis, anti-fungal, anti-cancer, antiprotozoal, anti-malarial, anti-viral, anti-microbial, and anti-inflammatory activity. So, this review work can be further proceeded for future therapeutic prospective.

**Key words:** 1,3,5-Triazine, anti-inflammatory, anti-cancer, electrostatics, anti-viral, anti-microbial



NITN/2024/PP/61

**MOLECULAR HYBRIDS AS A SYNTHETIC STRATEGY FOR DRUG DISCOVERY:  
REVIEW**

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**Abstract**

**Introduction:**

The molecular hybridization (MH) is a strategy of rational design of new ligands or prototypes based on the recognition of pharmacophoric sub-unities in the molecular structure of two or more known bioactive derivatives which, through the adequate fusion of these sub-unities, lead to the design of new hybrid architectures that maintain pre-selected characteristics of the original templates. It involves the formation of molecular hybrids from two or more than two non-identical molecules having different characteristics with the help of a covalent bond. Such artificial scaffolds could produce antibiotics with the ability to overcome drug resistance, intensify activity, and increase binding affinity. It is also called as Hybrid drug design, covalent bi-therapy, Molecular amalgamation, Molecular crossing, Molecular fusion, Molecular association, etc. It is a multitargeted drug design. Molecular hybrids are the products of molecular hybridization. Hybrid compounds can be defined as chemical entities with two or more structural moieties with different biological functions. It is a new concept in drug designing and drug development. The hybridization process is closely related to the strategy of obtaining a mutual pro-drug.

**Methodology:**

Molecular hybrids as a synthetic strategy for drug discovery have been searched using scientific engines like Google scholar and Science direct on the topic, "Molecular hybrids as a synthetic strategy for drug discovery" which resulted in around 500 articles and out of those 20 articles were based on the relevant topic.

**Conclusion:**

From this review work it can be concluded that molecular hybridization is an important strategy in drug designing and development and the molecular hybrids possesses variety of pharmacological activities like anti-inflammatory, anti-bacterial, anti-tubercular, anti-viral, anti-cancer, antileishmanial, antiproliferative activity. So, this review work can be further proceeded for future therapeutic prospectives.

**Key words:**

Molecular hybrid, anti-inflammatory, anti-bacterial, anti-tubercular, anti-viral, anti-cancer

NITN/2024/PP/62

## A REVIEW ON PHARMACOLOGICAL ACTIVITIES OF *Justicia gendarussa*

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### Abstract

**Introduction:** *Justicia gendarussa* (family Acanthaceae), a medicinal plant found in parts of China, India, Sri Lanka. It is also known as Willow-leaved justicia, a significant herb utilized in Ayurveda system of medicine; whereas in most cases leaves the frequently used for therapeutic purposes. This plant contains a broad range of physiologically active substances including some nutrients and phytochemical compounds showing numerous pharmacological activities.

**Methodology:** A sequential study of articles related to the topic the 'pharmacological activities of *Justicia gendarussa* was done using different scientific search engines like Google scholar and Science Direct which resulted in around 2000 articles. Out of those 20 articles were selected related to the relevant topic.

**Results & Discussion:** The study on the plant *Justicia gendarussa* showed the presence of pharmacological activities like anti-microbial (anti bacterial, anti fungal, anti viral), anti-arthritic, anti-inflammatory, hepatoprotective, antioxidant activities, immunomodulatory actions, anthelmintic action, anti sickling, anti nociceptive and anti cancer activities.

**Conclusion:** The medicinal plant *Justicia gendarussa* is found in mainly regions of China, Sri Lanka, Malaysia and also found in Assam, a state residing in India. This study of the plant showcases different pharmacological actions like antibacterial, antifungal, antiviral, anti arthritic, anthelmintic, anti-inflammatory, anti nociceptive, anti cancer activities. So the plant can be explored in future for different pharmacological actions and by extracting and isolating its different phytoconstituents this can be approached further to formulate different dosage formulations.

**Keywords:** *Justicia gendarussa*, pharmacological activities, phytochemical constituents.

NITN/2024/PP/63

**TRADITIONAL IMPORTANCE AND UNIQUE PHARMACOLOGICAL PROPERTIES  
OF *Garcinia* spp. FOUND IN ASSAM, INDIA: A REVIEW**

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**Abstract**

**Introduction:** Tropical fruit trees like *Garcinia* spp. are indigenous to Southeast Asia, where they have long been used in traditional medicine. *Garcinia*, also referred to as "thekeera" in Assam, which is widely utilized in food preparation and in the creation of refreshing juices that relieve symptoms such as headache, exhaustion, nausea, vomiting, and difficulty concentrating. Typically, villagers use them in an effort to lessen or avoid the consequences of drinking alcohol. In the current review, recorded knowledge of the *Garcinia* spp. found in Assam and its active constituents based on the available literature are summarized in order to explore its potential applications and prospective research works on this plant.

**Methodology:** From the review of literature, we can conclude that very less scientific work has been done on *Garcinia* spp. of Assam. Almost 215 literature survey has been done for this review from which we have excluded 185 literatures because those are not related regarding the review and included 30 literatures which have provided a comprehensive overview of the current scientific knowledge of *Garcinia* spp. For this review, Literature survey was conducted with a preliminary search using PubMed, Google scholar, Scopus, Springer, and Science Direct databases.

**Result:** A detailed study of the selected findings about the bioactive components such as primarily flavonoids, xanthenes, and hydroxycitric acid (HCA), which have important pharmacological properties like anti-hypertensive, anti-bacterial, anti-hypolipidemic, anti-cancer, and anti-malarial activity of *Garcinia* spp. has been reported.

**Conclusion:** This review can provide the better understanding regarding *Garcinia* spp. and literature review revealed that *Garcinia* species are found to be potential sources of diverse secondary metabolites and further research could give us a new breakthrough to discover an innovative product out of it.

**Keywords:** *Garcinia* spp., traditional medicine, phytochemical, pharmacological activity, bioactive components, Assam.

NITN/2024/PP/64

***Psidium guajava* LEAVES: UNVEILING THE HEALING POTENCY OF A  
TRADITIONAL ELIXIR IN NORTH EAST INDIA**

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**Abstract**

**Introduction:** Tea is one of the most widely consumed beverages worldwide, next to water. Since ancient times, inhabitants of the northeastern region of India have been consuming herbal teas and plant formulations with curative properties. Typically, tea is made from the young leaves, leaf buds, and internodes of *Camellia sinensis* tea plants. Caffeine, a bitter component, stimulates the central nervous system and has adverse impacts on the human body. In order to boost the flavour, aroma, and nutritional benefits of commercial tea leaves, herbal teas were developed using guava leaves. Guava (*Psidium guajava*) is a plant which belongs to the Myrtaceae family, grows throughout the world's tropical and subtropical regions. In order to explore its probable purposes and future research projects on this plant, the recorded knowledge of the guava leaves found in north east India and its active constituents based on the literature that is at present accessible are summarized in this overview.

**Methodology:** Relevant data was searched using various databases like PubMed, Google scholar, Scopus, Springer, and Science Direct. Over 5000 articles are present on these databases. The articles published in the standard sites and recent publications are included here considering the keywords *Psidium guajava leaves*, herbal drink, North East India, caffeine. We have considered the English papers only. Whereas the odd ones are being excluded.

**Result and discussion:** This study concentrates on the traditional use of *Psidium guajava leaves* as herbal tea in the north eastern region of India. It has various chemical constituents which are used as a healer for various health condition like quercetin, ferulic acid, protocatehuic acid, guavin B, asiatic acid and  $\beta$ -carotene that has been known to have antioxidant activity. Polyphenol, another ingredient in guava leaf tea, controls how well dietary carbohydrates are absorbed from the intestines. Further it contains certain properties like antioxidant, antimicrobial, antiulcer, anti-inflammatory, antidiabetic etc. A thorough analysis of the findings regarding the phytochemistry, pharmacological activity, and active components of guava leaves has been studied.

**Conclusion:** This review emphasizes the variety of medicinal benefits of guava leaf-infused herbal tea. Based on its antioxidant-rich composition and possible anti-inflammatory and antimicrobial properties, guava leaf tea appears to have health-promoting properties. To clarify its entire range of advantages and provide recommendations for optimal consumption, more research is necessary. Guava leaf tea stands out as a promising herbal option with potential implications for human well-being as interest in natural remedies grows

**Keywords:** *Psidium guajava leaves*, herbal drink, North East India, caffeine.

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**COMPREHENSIVE STUDY ON INDIGENOUS TRADITIONAL FOODS AND  
BEVERAGES OF BODO TRIBES, ASSAM, INDIA**

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**Abstract**

**Introduction:** North-east India is home to many traditional groups and ecological resources, in addition to being a biodiversity hotspot. Among many traditional groups or tribe, the Bodo Community is one of the oldest and has a strong traditional healthcare system. The current study intended to collect data on traditional meals consumed by the Bodo Community. This review discusses the diverse array of ingredients and cooking techniques and cultural significance embedded within the Bodo culinary heritage. It discusses the role of traditional foods and beverages in the Bodo community.

**Methodology:** A survey was conducted on the consumption habits of different exotic cuisines of the Bodo tribe in Baksa and Udalguri districts of Assam.

**Conclusion:** In conclusion, the comprehensive study on traditional food and beverage consumed by the Bodo tribe in Assam illuminates the intricate tapestry of culinary heritage woven into the fabric of Bodo culture. Through an exploration of diverse ingredients, cooking techniques, cultural practices, and socio-economic dynamics, the review underscores the pivotal role of food in shaping identity, fostering social cohesion, and preserving collective memory within the Bodo community.

**Key words:** Traditional food, traditional beverages, Bodo tribe

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**FORMULATION AND EVALUATION OF DICLOFENAC SODIUM CONTAINING  
PATCH LOADED WITH *Ocimum tenuiflorum* L. LEAF EXTRACT AS PERMEATION  
ENHANCER**

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**Abstract**

**Introduction:** Transdermal drug delivery offers a particularly advantageous technique for drug delivery when compared to other routes of drug administration, with advantages such as avoiding the hepatic first pass metabolism and having a longer duration of action. Since the stratum corneum, the skin's outermost layer that acts as a barrier, is one of their main obstacles, skin penetration enhancers are garnering the greatest focus in pharmaceutical research. Transdermal patches containing NSAIDs (Non-steroidal anti-inflammatory drugs) are often used to relieve pain or inflammation. As opposed to their oral form, NSAID patches are more convenient and secure. Tulsi is a fragrant shrub that is indigenous to the tropics of the eastern hemisphere and is a member of the Lamiaceae family of basil. Tulsi is referred to as "The Incomparable One," "Mother Medicine of Nature," and "The Queen of Herbs" in Ayurveda and is acknowledged as a "elixir of life" that is unmatched for both its medicinal and spiritual qualities.

**Methodology:** The transdermal patch containing diclofenac sodium was prepared by using the solvent casting method. *Ocimum tenuiflorum* L. leaf extract was used as a permeation enhancer in the formulation.

**Results and discussion:** The patch loaded with *Ocimum tenuiflorum* L. leaf extract as permeation enhancer showed a better drug release. The drug release study was done using the USP type II dissolution apparatus.

**Conclusion:** After completing the research work, we can conclude that the leaf extract of *Ocimum tenuiflorum* L. have significant penetration enhancing capacity.

**Keywords:** Transdermal patch, permeation enhancer, *Ocimum tenuiflorum* L., drug release.



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