

ABSTRACTS

For
NATIONAL SEMINAR
On

“RECENT ADVANCES IN HERBAL SCIENCE AND TECHNOLOGY FOR DRUG DISCOVERY”

18th to 19th August, 2016

Sponsored by SERB & DBT



Organized by
DEPARTMENT OF HERBAL SCIENCE AND TECHNOLOGY
A.D.P. COLLEGE, NAGAON, ASSAM

Website: www.adpcollege.ac.in
Email: hstadp@gmail.com

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सत्यमेव जयते

**Science and Engineering Research Board (SERB)
Department of Science and Technology (DST)
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**DEPARTMENT OF BIOTECHNOLOGY
Ministry of Science & Technology**

Anandaram Dhekial Phookan College

Nagaon, Pin-782001 (Assam)

Estd. 1959



Dr. S. U. Ahmed, M.Sc., Ph.D.

Principal

MESSAGE

It is a matter of happiness and pride to note that the Department of Herbal Science and Technology, Anandaram Dhekial Phookan College (A.D.P. College), Nagaon is organizing the 1st National seminar entitled "Recent advances in Herbal Science and Technology for Drug discovery" from 18th to 19th August 2016.

Conference of such nature provide a great opportunity to Science fraternity, not only to update knowledge and keep obsessed with latest developmental scenario in the respective Herbal Science field, but also an occasion for the resource persons / delegates / observers to exchange ideas and interact with each other.

I take this opportunity to extend warm welcome to the resource persons and delegates registered for the seminar.

The efforts of the committee entrusted with the job are praiseworthy. I feel privileged to invite you to experience the Hospitality with a difference!

August 12, 2016

(S. U. Ahmed)

From the Desk of the Organizing Secretary...

On behalf of the Organizing committee and on my own behalf, I have great pleasure to extend my warm welcome to all the distinguished delegates, resource persons and all beloved participants coming to Anandaram Dhekial Phookan College (A.D.P. College), Nagaon, Assam, to participate in the National Seminar on "Recent Advances in Herbal Science and Technology for Drug Discovery".

The Department of Herbal Science and Technology, is organizing the seminar which starts from 18th to 19th August, 2016. This is for the first time, the Department of Herbal Science and Technology, is holding this National seminar.

The theme of the seminar is suitably chosen in the present scenario of drug development. The theme emphasizes the importance of herbs in new drug discovery. By amalgamating new research technologies with traditional and basic research we can take the Herbal research in new heights. This seminar allows researchers and academicians to share their recent discoveries, developments and knowledge with one another to better care of our society.

The seminar could not have been successful without the generous support from the sponsors namely, SERB and Dept. of Biotechnology, Govt. of India. The Organizing Committee expresses its sincere gratitude to the authors and reviewers for their valuable contribution.

Let us join our hands together to share our knowledge and experience that will go a very long way in helping to build up the healthy, prosperous and developed nation.

We wish you comfortable and enjoyable time here. My sincere thanks to every member of the committee for making this conference successful and a memorable event.

With best wishes,

August 12, 2016



(Bapan Banik)

From the Desk of the Co-Organizing Secretary...

On behalf of the Organizing committee it is our proud privilege to welcome the delegates to attend the National Seminar on "Recent advances in Herbal Science and Technology for Drug Discovery" in Anandaram Dhekial Phookan College (A.D.P. College), Nagaon, Assam, to participate in the

The theme emphasizes the importance of herbs in new drug discovery. This seminar allows researchers and academicians to share their recent discoveries and knowledge with one another.

It is hoped that this seminar will draw the attention of delegates and experts. I hope that the participants will be immensely benefited from this seminar and will have a nice time during their stay in the conference.

With best wishes,

August 12, 2016

Kishor Kr. Shah

**PROGRAMME
FOR
NATIONAL SEMINAR
ON
"RECENT ADVANCES IN HERBAL SCIENCE AND
TECHNOLOGY FOR DRUG DISCOVERY"**

18th to 19th August, 2016

| DAY 1 : 18th August, 2016 | |
|--|-----------------------------|
| Event | Time |
| Registration | 8:30 AM to 9:30 AM |
| Inaygural Session | 9:30 AM to 10:30 AM |
| Breakfast | 10:30 AM to 11:00 AM |
| Key Note Address by : Prof. M. C. Kalita Deptt. of Biotechnology Gauhati University | 11:00 AM to 11:30 AM |
| 1st Technical Session | 11:30 AM to 1:00 PM |
| Lunch | 1:00 PM to 2:00 PM |
| Plenary Lecture by : Dr. Brijmohan Singh Bhau, Head of the Division, Biological Sciences & Technology Division (BSTD) CSIR-North-East Institute of Science & Technology (CSIR-NEIST) Council of Scientific and Industrial Research (CSIR) Jorhat 785 006, Assam, India | 2:00 PM to 2:30 PM |
| 2nd Technical Session | 2:30 PM to 3:30 PM |
| Tea break | 3:30 PM to 4:00 PM |

| DAY 2 : 19th August, 2016 | |
|--|-----------------------------|
| Event | Time |
| Plenary Lecture by : Prof. Bishnu Prasad Sarma Dean, Faculty of Ayurvedic Medicine Govt. Ayurvedic College & Hospital Guwahati | 10:00 AM to 11:00 AM |
| Breakfast | 11:00 AM to 11:30 AM |
| 3rd Technical Session | 11:00 AM to 1:00 PM |
| Valedictory Session | 1:00 PM to 1:30 PM |
| Lunch | 1:30 PM to 2:30 PM |

Organizing Committee

NATIONAL SEMINAR ON

**"RECENT ADVANCES IN HERBAL SCIENCE AND TECHNOLOGY FOR DRUG
DISCOVERY"**

18 to 19th August, 2016

Patron **Dr. S. U. Ahmed**, Principal, ADP College Nagaon

Organizing Secretary **Mr. Bapan Banik**
Asst. Professor, Dpt. Herbal Science &
Technology, ADP College Nagaon

Co-organizing Secretary **Dr. Mousmi Saikia**
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Technology, ADP College Nagaon
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Asst. Professor, Dpt. of Chemistry, ADP College

Dr. Jayanta Barman
Asst. Professor, Dpt. of Physics, ADP College

Ms. Sulakshana Brahma
Asst. Professor, Dpt. of Chemistry, ADP College

Ms. Farhana Sultana
JRF, IBT-HUB, ADP College Nagaon

Ms. Lipika Bora
Asst. Professor, Dpt. Herbal Science &
Technology, ADP College Nagaon

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Evaluation of Hypoglycaemic potentiality of *Terminalia chebula* leaves

*Jayashree Dutta and M.C Kalita

*jshrdtt@gmail.com

Department of Biotechnology, Gauhati University

Abstract

Diabetes mellitus and the related complications continue to be a major medical problem not only in developed countries but also in developing countries. Several herbal medicines are described for the care of diabetes mellitus in ancient literature of Ayurveda in India. Many of the plants used as diet were reported to have anti diabetic property. *Terminalia* is a genus of large trees of the flowering plant of family Combretaceae, is a species distributed in tropical regions of the world. The plant possesses high medicinal value, and is used most in therapeutics. The present work is carried out to study the hypoglycaemic potentiality of the polyphenol present in the leaves part of *Terminalia chebula* Retz. The collected leaves were shade dried ground to fine powder, extracted in methanol using a soxhlet apparatus. The crude plant extract was evaluated *in vitro* for alpha amylase and alpha glucosidase inhibition. The crude methanol extract was subjected phytochemical screening, followed by thin layer chromatography for separation of bioactive compounds present in it. Total phenol and flavonoids content of the crude methanol extract was also determined. The leaves of *Terminalia chebula* are potent inhibitor of enzyme alpha glucosidase ($IC_{50} = 0.956 \pm 0.342$ mg/mL). The crude methanol extract reveals the presence of several bioactive compounds like phenols, tannin, flavonoids, terpenoid and glycosides. Thin layer chromatography reveals the presence of gallic acid and ellagic acid as its major constituents. The total phenol content was estimated is 184 μ g/mL and the flavanoid content was found to be 124 μ g/mL respectively. The study suggests that unlike the fruit part, leaves of *terminalia chebula* are also a potent inhibitor of enzyme alpha glucosidase, hence help in minimize the post prandial hyperglycemia. The extract being a rich source of polyphenol is suggested to contribute for its antidiabetic property.

Key words: Postprandial hyperglycaemic, *Terminalia chebula*, alpha amylase, alpha glucosidase and thin layer chromatography.

Wood anatomy and medicinal uses of some timbers of NE India

*M. K. Singh, M.B. Sharma & C. L. Sharma

*singh.malti978@gmail.com

Wood Science and Forest Products Laboratory,
Department of Forestry,
North Eastern Regional Institute of Science and Technology,
Nirjuli- 791109, Arunachal Pradesh, India

Abstract

The present investigation was carried out on 4 timber species namely *Chukrassia tabularis*, *Ficus racemosa*, *Macaranga denticulata* and *Phoebe goalparensis*. The study was conducted on wood characteristics and their medicinal uses. It was observed that all the above mentioned wood species were diffuse-porous, growth rings were indistinct in all selected species while distinct due to fibres in *C. tabularis*. Prismatic crystals were observed in parenchyma, rays in *M. denticulata* and in fibres, ray and parenchyma in *C. tabularis*. Also black deposits were reported in vessels, rays and parenchyma in *F. racemosa* and *P. goalparensis*. Medicinally, wood of *C. tabularis* is used as astringent and febrifuge. *P. goalparensis* wood is of great importance in skin disease and lesions. Other woods like *M. denticulata* yields reddish colour gum, coloured dye is obtained from wood of *F. racemosa*. The utilization of these wood species for pharmaceutical purposes might be due to presence of crystals, gummy deposits or other deposits in wood. The need for such study was undertaken as the above mentioned timber species are included in the list of threatened, rare and endemic taxa due to its over exploitation for timber purposes.

Key words: Hardwoods, Crystals, Astringent, Gummy deposits.

Therapeutic and Clinical Effect of Tila taila (Sesamum oil) Enema in the Management of Sciatica

***Dr. Deepanjali Bora**

P.G. Scholar, Samhita Siddhanta Dept. GACH

Dr. Niten Barma

Associate Prof. Samhita Siddhanta Dept. GACH

Abstract

The use of Sesamum oil for both health and medicinal purpose is an age old concept. It can be used both internally and externally. The specific indication of the oil depends upon its constituents. The disease Sciatica, is a much prevalent disease in the present times. Due to the hectic life schedule, long sitting postures in the working places, Sciatica is seen prevalent even in the younger age people. It is a disease of the Sciatic nerve which runs from the low back area to the foot through the posterior aspect of thigh. The Sesamum oil possesses rich source of minerals like zinc, calcium, copper, manganese, potassium, sodium. The zinc, calcium, copper helps to improve the bone condition, strengthens nerves, decreases inflammation of bones. It also consists of vitamins like riboflavin, pyridoxine, biotin. When the oil is administered in the rectum in the form of enema, it gets absorbed by the intestinal walls. Researches proved that the constituents after being absorbed, they synthesize the normal bacterial flora of the colon, which in turn modulates the synthesis of Vit. B₁₂. This

vit B₁₂ have a role in the maintenance of regeneration of nerves. There is also rise in vit. B₁ in blood which is responsible for integrity of peripheral nerve functioning and prevents its degeneration. The Enteric Nervous System of the intestine also gets stimulate by the Sesamum oil. It has a direct connection with the CNS which is responsible for controlling the neurological functions of the body. A Clinical trial was conducted over 30 patients of Sciatica in the Govt. Ayurvedic College & Hospital, Ghy and it was found that the patients improved well and the results were found significant statistically.

Application of Chemistry, Nanotechnology in Herbal Science Research

*Pingal Sarmah¹, Sulakshna Brahma²

¹Department of Chemistry, Diphu Govt. College, Diphu, Assam

²Department of Chemistry, ADP College, Nagaon, Assam, India

*e-mail: pingal1988sarmah@gmail.com

Abstract

Nanoscale Materials in Chemistry covers a broad area not only in science and engineering but also in herbal sciences and medicines. Nanoscale materials have been able to produce some amazing contributions in every field in day to day life. Herbal science can be said to be a bridge between pharmaceutical science and agriculture, applied in transformation of medicinal herbs, marketing of medicinal plants and derivatives for use in herbal, food and cosmetic products. Presence of chemical compounds in herbal plants has been found to have anti-platelet and anti-coagulant activities. An effort has always been made to combine herbal science and nanotechnology to enhance the action of plant extracts. Nano-sized drug delivery system shows a promising future, overcoming problems associated with plant medicines.

Role of the single herb Bhringaraja in management of Eczema

***Dr. Priti Rekha Das,**

PG Scholar, Dept. of Kayachikitsa;
Govt Ayurvedic College, Jalukbari 14

Prof Dr. Bishnu Prasad Sarma

HOD, Dept. of Kayachikitsa

Abstract

Purpose: Eczema also known as atopic dermatitis is a non-contagious inflammatory disease of the skin characterized by itching, redness edema, papulovesicles in acute stage; edema and scaling in subacute stage and severe itching, hyperkeratosis and lichenification in the chronic stage. In the developed world Eczema accounts for a large proportion of skin diseases. Current treatment of it provides only symptomatic relief by reducing inflammation and itching. Moreover there are many adverse effect of this drugs. So it has become imperative to search out drugs from natural sources like Ayurveda.

Materials & Method : The single herb bhringaraja was selected for this clinical study. A total of 10 patients were selected form the Kayachikitsa OPD at Govt. Ayurvedic College & Hospital, Jalukbari, Guwahati-14. The patients were given the medicine in the form of oral tablets at a dose of 3gm/day in three divided doses and ointment for local application for duration of 60 days.

Results : On going through the records, it was found that Bhringaraja was effective in alleviating the symptoms of Atopic dermatitis. It was effective in ameliorating the symptoms of itching, erythema, oozing, and excoriation. No any adverse effect was seen during the study. The details of this study will be given during the presentation.

Conclusion : Bhringaraja was found safe and effective to combat the symptoms of Atopic dermatitis as well as to improve the quality of life.

But many research works in traditional medicine have showed positive and encouraging results. A research work was carried out on total 30 patients at Govt. Ayurvedic College & Hospital. The patients were selected irrespective of their sex, creed, socio-economic status. The registered 30 patients were divided into two groups as Group – A and Group – B. The inclusion of the patients into these two groups were done randomly. In both the groups of patients internal medicine and the trial drug oil were given uniformly. In the trial group 'A' the fomentation was given in addition to the oral medicine and the trial drug oil.

Internal Medicine Panchatiktaghrita guggulu

External Application (A) Strikutaja oil

External Application (B) Fomentation – the traditional therapy

Results obtained in Group A were more remarkable in comparison to Group B. When the significance of efficacy of treatment in Group A and Group B were tested by Unpaired 't' test the 't' value obtained for itching was 2.22 ($p < 0.05$), for erythema it was 2.93 ($p < 0.01$) and for scaling the 't' value obtained was 2.5 ($p < 0.02$). Thus the overall outcome of the study was significant indicating that the fomentation therapy has an effective role in the treatment of psoriasis.

Evaluation of Phytochemical composition, *in vitro* antioxidant and antibacterial activity of two types of *Averrhoa carambola* L. fruit

***Farhana Sultana¹, Raihana Shobnam²,
Mousmi Saikia², Jayanta Barman**

¹Biotech-Hub, ADP College, Nagaon

¹Department of Herbal Science and Technology, ADP College, Nagaon

³Department of Physics, ADP College, Nagaon

*Corresponding author. Tel.: 9707779150

E-mail address: farhana_miss@ymail.com

Abstract

Herbal products are gaining much popularity now-a-days. There is a revival of interest with plant based medicines due to increasing realization of the side effects and health hazards associated with the arbitrary use of synthetic products. Phytochemical screening of *Averrhoa carambola* L. fruit reveals it as a valuable medicinal plant with numerous medicinal properties. During the preliminary phytochemical analysis, the methanol and water extracts of two types of *Averrhoa carambola* L. fruit was screened for the presence of carbohydrates, proteins, alkaloids, flavonoids, saponins, glycosides and terpenoids. Antioxidant activity was measured using total phenolics content, flavonoid content and DPPH free radical scavenging assays. The methanol extract of sour type of fruits shows higher antioxidant activity than the sweet type of fruit. This may be due to the presence of higher amount of phenolics and flavanoid content. Phenolic compounds which acts as natural antioxidant and antibacterial agents. The antimicrobial activity was tested *in vitro* using well diffusion assay on four bacterial species such as *B.subtilis*, *S.aureus*, *E.coli* and *K. pneumonia*. Methanolic extract of sour type fruit was the most active against the bacterial species.

Key words: *Averrhoa carambola*, Antioxidant activity, Antibacterial activity, phenolic content, Methanolic extract.

**ALLEOPATHIC EFFECT OF COLOCASIA
(*Colocasia esculanta schott*) ON OKRA
(*Abelmoschus esculentus*) and CUCUMBER
(*Cucumis Sativus*)**

Sukanya Sarma¹, Kaushik Das²

¹ Department of Botany,
Handique Girls' College, Guwahati

²Department of Crop Physiology,
Assam Agricultural University, Jorhat.

Abstract

A laboratory experiment was carried out during July, 2016 in the department of Crop Physiology, Assam Agricultural University, Jorhat-13, to determine the possible a Allelopathic effect of Colocasia Esculanta Schott on Okra (*Abelmoschus Esculentus*) and Cucumber (*Cucumis Sativus*). Aqueous extract of root, stem and leaf of colocasia at 5%, 10%, 50% and 20% (W/V). Concentrations were bio-assayed separately against germination and seedling growth of Okra and Cucumber. In both the crops, germination percentage, germination index, shoot and root length, fresh and dry weight of root and shoot were appreciably reduced by leaf extract whereas root and stem extract of colocasia failed to produce such pronounced inhibitory effects. Germination of Okra seed was found to be more sensitive to colocasia leaf extract than the cucumber seeds.

Key words: Colocasia, Okra, Cucumber germination, Seedling growth, Leaf extract.

A study on the medicinal value of Turmeric as a mitigator in mouth sores and gastritis

***Dr. Jahnabi Goswami**

Department of Zoology, Gauhati University,
Guwahati-781014, Assam, India
e-mail: 25jahnabigoswami@gmail.com

Abstract

As we all know that turmeric (*Curcuma longa*) is a plant used historically as a spice and medicinal agent in India, China and Indonesia. It is native to India. In the present experiment turmeric is used as a medicine for treatment of mouth sores and gastritis in two patients. The present study focuses how the turmeric acts as a drug in curing mouth sores or mouth ulcers and gastritis and acidity problems. A six months study on these two diseases shows the improvements of both the problems. For this experiment the patient with mouth sore problem was given a spoon of turmeric juice mixing with a spoon of honey in the morning and the second patient who was suffering from gastritis problems was given a piece of haldi (5cm long and 3cm width) in the morning in empty stomach with a glass of water. The first patient was suffering from mouth sores in every year in the month of June to August since 2010 and could not get relief from it in less than 15 days after taking antibiotic. But this year when he suffered from the same problem, he got relief within a day with the same antibiotic when it was accompanied by a teaspoon of turmeric juice with honey taken in the morning. The second patient who was a regular consumer of prescribed drug Pan-D or Pan-40, got gradual relief from this problem and now he is not taking any medicine in the morning time for last one month. So from this study an inference can be made that turmeric can act as a supplementing agent in curing or lowering the infections from bacteria or virus when administered along with antibiotic. It can also be used as a medicine for gastritis and acidity problem.

Clinical effect of Adityapakaguggulu and AswagandhabaladiGhrita in the management of Sandhigatavata (Osteoarthritis)

*Dr. Kimjonhling

Prof.(DR). Bishnu Prasad Sarma

Prof. & HOD Dept of Kayachikitsa
Govt. Ayurvedic College & Hospital, Jalukbari Gh-14

Abstract

Sandhigatavata is described under Vatavyadhi in all Ayurvedic texts. In Vriddhavastha, all Dhatus undergo Kshaya, thus leading to Vataprakopa and making individual prone to many diseases. Among them Sandhigata Vata stands top in the list. In Allopathic Science, the similar condition of joint is explained as Osteoarthritis. Osteoarthritis is the most common joint articular disorder condition. It is the degenerative type of Arthritis which mainly occurs in old ages.

The incidence of Osteoarthritis in India is as high as 12%. It is estimated that approximately 4 out of 100 people are affected by it. Osteoarthritis is the most common articular disorder begins asymptotically in the 2nd & 3rd decades and is extremely common by age 70. Osteoarthritis is also 4th leading cause Yearly Lived with Disability (YLD) and also accounts for the decrease in activities of daily living (ADL) in elderly dependent populations in the community. Indisputably the risk factors in high risk populations include the female gender, old ages, overweight, history of trauma etc.

Considering the above factors, a clinical study was done at Govt. Ayurvedic college & Hospital, Guwahati, Assam. Total 30 Osteoarthritis Patients were registered. Here AdityapakaGuggulu (orally)-3gms/day for 60 days and AswagandhabaladiGhritavasti(60 ml) as matravasti was given for 8 days.

RESULTS : From the outcome of the study, it was observed that Pain, stiffness, swelling and restricted movement was reduced, walking distance increases, provides well being of the patients as well as can perform their daily activities to great extend.

CONCLUSION: It can be concluded that, orally adityapakaguggulu and Aswagandhabaladighritavasti was effective in the management of sandhigatavata.

DEVELOPMENT OF HIGHLY ACTIVE CERIA-BASED CERIA-BASED GOLD CATALYST FOR REDUCTION OF 4-NITROPHENOL

***Bishnu Jyoti Kalita**

Department of Chemistry
A.D.P. College, Nagaon, Assam

Abstract

The present study shed light on synthesis, characterization and solar light induced catalytic activity investigation of nano-sized gold supported over $\text{CeO}_2\text{-TiO}_2$ (1:1 mole ratio based on their oxides) nanocomposite for reduction of 4-nitrophenol. The $\text{CeO}_2\text{-TiO}_2$ nanocomposite was prepared by simple co-precipitation technique and the gold supported sample was synthesized by using modified deposition-precipitation with urea (DPU) method. The physico chemical characterization of the prepared samples was performed by X-Ray Diffraction (XRD), Fourier Transform-Infrared (FT-IR) spectroscopy and Transmission Electron Microscopy (TEM) technique. The catalytic performance of the synthesized $\text{Au/CeO}_2\text{-TiO}_2$ catalyst was measured spectrophotometrically for the reduction of 4-nitrophenol (4-NP) to 4-aminophenol (4-AP) in presence of NaBH_4 serving as a hydrogen source. The catalyst was found to be very effective showing ~100% 4-NP conversions in short period of time.

C. carandas as a source of phytochemicals

*Dipanjali Saikia*¹ Kakoli Borah² Moonmoon Bora³
Jesmina Siddika⁴ Priyanka Kumari⁵

¹Assistant Professor, Deptt. of Biotechnology,
Kaliabor College: Kuwarital: Assam, e-mail: dipanjali10@gmail.com
^{2,3,4,5} BSc. Biotechnology 6th Sem. Students, Deptt. of Biotechnology,
Kaliabor College: Kuwarital: Assam.

Abstract

Carissa carandas in Assamese called Koroja tenga is a flowering shrub upto 3 m in tall belongs to *Apocyanaceae* family. There are about 32 species of *Carissa carandas* distributed throughout India. Among these 8 Indian species; 3 are of economic importance (*Carissa carandas*, *Carissa diffusa* and *Carissa spinarum*). For the synthesis of drugs, knowledge of chemical constituents of plants is desirable. The whole plant usually used as antihelmintic and antidiarrheal and stem of plant is used to reinforce tendons, fruits are used in skin infections and leaves are remedy for fevers earache, rheumatism, biliary dysfunction, syphilitic pain analgesic, antiinflammatory. Phytochemicals with antioxidant capacity naturally present in food are of great interest due to their beneficial effects on human health as they offer protection against oxidative deterioration. Phytochemical screening refers to the extraction, screening and identification of the medicinally active substances found in plants. The dry weight estimation of the plant *Carissa carandas* (Leaf, Fruit, Seed) were identified. The Acetone, Ethanol, Methanol, Ethyl acetate, Chloroform, Diethyl ether, Petroleum ether and distilled water extracts of leaves, fruits and seeds of *Carissa carandas* were subjected to Preliminary phytochemical analysis in order to identify the nature of chemical constituents present in the plant material and show the presence of various phytochemical constituents including alkaloids, tannins, flavonoids, anthocyanin and saponins. The quantitative estimation of chemical constituents in leaves of *Carissa carandas* were as alkaloids (0.58), flavonoids (0.46), tannins (6.9), saponins (0.34) and total phenolic components (0.52) mg/g respectively. Phytochemical investigations carried out on the plant, to explain the multifaceted role of this medicinal plant. The result of present analysis showed that methanol and ethanol extracts of *C. carandas* leaves were rich in phenolics and flavonoids constituents and exhibited good antioxidant activity. The many pharmacological effects of phenolic compounds and flavonoids are linked to their ability to act as strong antioxidants and free radical scavengers, to chelate metals. The data obtained from our present study, indicate that *C. carandas* present rich sources of antioxidants, with high levels of phenolic compounds, anti-oxidant activities.

Synthesis and Characterization of Titanium dioxide (TiO₂) nanoparticles and its application to Herbal science research

***Lakshmi K. Singh**

Department of Physics, ADP College, Haibargaon, Assam, India
e-mail: lakshmicpp@gmail.com

Abstract

In the present scenario, nanotechnology and biology has created the new field of nanobiotechnology which involves biochemical and biophysical processes. Metallic nanoparticles have potential application as antifungal and antiviral agents which mark the application of nanoparticles in Herbal science. In the present study, TiO₂ nanoparticles were synthesized using chemical method. The size and morphology of the nanoparticles were determined by both SEM and XRD. Techniques such as FT-IR, UV-vis and DSC etc. are used to determine other properties of nanoparticles. The application of TiO₂ nanoparticles in various fields such as medicine and health, electronics, energy and environment, is discussed in detail.

Key words: nanoparticles, XRD, SEM, DSC, FTIR

Study on *in vitro* regeneration and antimicrobial properties of an endemic ginger cultivar of Assam – *Zingiber officinale* Linn. cv. Moran

*Lipika Bora*¹, Nilufar Nashreen Rehman¹,
P. J. Handique¹

Department of Biotechnology, Gauhati University, Gauhati-14

*Corresponding author email: bora.lipika414@gmail.com

Abstract

Zingiber officinale Linn. cv. Moran, an important endemic medicinal plant species of Assam. The sprouted rhizomes were used as explants to develop an ideal micropropagation method and the dried, grounded rhizomes were used for antimicrobial studies. Contamination free regeneration was achieved after surface sterilization of the explants by treating with 0.1% bavistin for 20 minutes, then treating them with 0.1% bleaching powder along with 1% solution of tween-20 for 10 minutes followed by 70% ethanol for 3 minutes. Then the explants were again surface sterilized under the LAF cabinet by treating them with 0.1 % HgCl₂ for 3 minutes. The MS media containing BAP 3 mg/l plus IAA 0.5 mg/l gave the maximum number of shoots (3.6) per explant and a good nos. of roots were obtained on MS medium fortified with 2mg/l IBA. For antimicrobial activity the methanolic extracts obtained from the cold extraction showed strong inhibition against pathogenic bacteria *S. aureus* (75%) and moderate inhibition against *B. subtilis* (68%) and no inhibition against *E. coli*. Ethanol extracts showed moderate inhibition against *S. aureus*(66%) as well as for *B. subtilis*(62%) and no inhibition against *E. coli*. The hexane extracts showed very weak inhibition against *S. aureus*(34%) as well as for *B. subtilis* (27%) and no inhibition against *E. coli*. The soxhlet extraction by methanol showed weak inhibition against *S. aureus*(34%) as well as very weak inhibition weak inhibition (27%) and no inhibition against *E. coli*. The distilled water extracts showed no inhibition against any bacteria.

Key words: *Zingiber officinale*, micropropagation, antimicrobial.

Phytochemical, antioxidant and anthelmintic activities of *Pouzolzia zeylanica* (L.) Benn.

***Pallab Kalita*, Saikat Sen, Biplob Kumar Dey,**

Department of Pharmacy, Assam Down Town University,
Guwahati, Assam, India.

Abstract

For thousands of years mankind is using plant sources to alleviate or cure illness. Traditionally, *Pouzolzia zeylanica* is used for the treatment of different diseases. The current study investigated presence of various phytoconstituents, antioxidant and anthelmintic activities of methanolic extract of *Pouzolzia zeylanica* (L) Benn which was tested by using different methods. Preliminary physicochemical screenings with the crude extract demonstrated the presence of various phytoconstituents. The plant extract showed very good antioxidant and anthelmintic activity in dose dependent manner.

Key words: Traditionally, extract, antioxidant, anthelmintic

ETHNOMEDICINAL PLANT DIVERSITY OF DEHANG DEBANG BIOSPHERE RESERVE OF ARUNACHAL PRADESH

***Rajib Kagyung**

Department of Botany, A.D.P. College, Nagaon, Assam
e-mail: rajibkagyung@gmail.com

Abstract

Ethnobotany is an inherent component of human kind and culture since antiquity, denoting the entire realm of useful relationship between plants and humankind. Traditional medicines is the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses which has been utilized by various ethnic communities since time immemorial. Culturally, 26 major tribes and over 110 sub-tribes inhabit different parts of the state of Arunachal Pradesh, with an intricate lifestyle totally dependent on forest resources, making the entire region a cultural landscape. Dehang Debang Biosphere Reserve (DDBR) of Arunachal Pradesh is a unique ecosystem with rich floristic components, high concentration of rare and endemic species and bio-cultural diversity. The flora of the biosphere reserve is utilized by more than 10 tribes like *Adis, Galos, Membas, Khambas, Boris, Bokars, Milangs, Mishmis* etc. for day to day necessities such as foods, fodder, fibres, dyes, shelter and medicines. The communities of the biosphere reserve are fully dependent on natural resources due to inaccessibility to modern medical facilities and remoteness of the villages. Documenting the indigenous knowledge through ethnomedico botanical studies is an important measure for the sustainable conservation of bioresources as well as their sustainable utilization in biosphere reserve since sustainable development of ecosystem and bio-culture is one of the prime objectives of the Biosphere Reserves. Present investigation recorded a total of 209 species belonging to 162 genera of 80 families in the treatment of various ailments prevailed in the BR by herbal

practitioners like digestive system disorders, inflammation and wound healing, reproductive system disorders, fever, respiratory system disorders, circulatory system disorders, nervous system disorders, snake bite & scorpion sting, dental ailments, bone fracture and eye & ear ailments. Among the highly used medicinal plants the common ones are *Houttuiniya cordata*, *Clerodendrumcolebrookianum*, *Andrographis paniculata*, *Centella asiatica*, *Coptisteeta*, *Campylandra aruntiaca*, *Costus speciosus*, *Paederia scandens*, *Garcinia pedunculata*, *Drymari adiandra*, *Gynocardi aodorata* etc.

Key words: Ethnomedicinal plants, Dehang Debang Biosohere Reserve.

A novel application of the buccal micronucleus cytome assay in oral leukoplakia: A pilot study

***Afifa Kausar**

*Department of Zoology, Anandaram Dhekial Phukan college,
Nagaon, Assam, India. e-mail: afifakausar@gmail.com

Abstract

The Buccal Micronucleus Cytome (BMCyt) assay is a newly developed minimally invasive technique for studying DNA damage, chromosomal instability, cell death, and the regenerative potential of buccal mucosa occurring in vivo in humans. This method is increasingly used in molecular epidemiological studies for investigating the impact of genotoxin exposure and genotype on DNA damage, chromosome malsegregation and cell death. Oral leukoplakia (OL) is the best-known potentially malignant disorder. A new binary system to grade dysplasia was proposed by WHO, but the biological significance in predicting malignant transformation risk is unknown. The aim of this study was to assess cellular and nuclear morphology in a group of patients with oral leukoplakia measured by means of buccal micronucleus cytome assay. This study included thirty patients with a clinicopathological diagnosis of oral leukoplakia and thirty healthy control subjects. Both samples were similar in age and gender. Cells collected from both the cheeks with a cotton swab were centrifuged, fixed and Fielgen stained. A total of 2000 exfoliated cells were screened per person under x1000 magnification of the microscope for nuclear abnormalities. Exfoliated buccal cells were analyzed for DNA damage and cytogenetic defects by micronucleus and nuclear bud; proliferative defects by basal cells; and binucleated cells and cell death parameters by karyolytic cells, condensed chromatin cells, pyknotic cells and karyorrhectic cells. Statistically significant ($P < 0.001$) increase in all the cytome parameters were observed in patients with oral leukoplakia when compared to age and sex matched control group. This method is an easy way for clinicians to assess DNA damage, proliferative potential of basal cells and cell death in buccal cells in cases of oral leukoplakia and is a promising tool for early detection.

Keywords: Leukoplakia, Genotoxicity, Micronucleus, Basal cell, Nuclear bud, Binucleated cells, Karyorrhectic cells, Karyolytic cells, Pyknotic cells

***In vitro* antioxidant and cytotoxic activity of ethanolic leaf extract of *Corchorus capsularis* Linn.**

¹Prakash Haloi, ²SK Shamim Ali, ³Bapan Banik, ⁴Pallab Kanti
Halidar and ¹Chandana Choudhury Barua

¹Department of Pharmacology & Toxicology, College of Veterinary
Science, Khanapara, Guwahati, Assam -781022.

²Department of Pharmacology, Himalayan Pharmacy Institute.
Rangpo, East Sikkim-737136.

³Department of Herbal Science and Technology, ADP College,
Nagaon-782002

⁴Department of Pharmaceutical Technology, Jadavpur University,
Kolkata-700032, India.

Email id- prakash.haloi@gmail.com

Abstract

The present study evaluates the *in vitro* antioxidant and cytotoxic activity of ethanolic leaf extract of *Corchorus capsularis* Linn. The *in vitro* antioxidant activity of ethanol extract of *Corchorus capsularis* (EECC) leaves was estimated by DPPH radical scavenging, Superoxide radical and Nitric Oxide Scavenging assays. *In vitro* cytotoxicity assay was determined in Ehrlich Ascites Carcinoma (EAC) cell line by Trypan blue exclusion & Brine shrimp lethality test. EECC extract showed higher potency in scavenging the DPPH, superoxide and nitric oxide free radicals in a dose dependent manner. IC₅₀ value of the *C. capsularis* extract was found to be 27.47±0.76 µg/ml (DPPH), 56.57±1.39 µg/ml (Superoxide radical) and 43.3±1.69 µg/ml (nitric oxide radical) respectively. EECC showed potent cytotoxic potential in EAC with the IC₅₀ value 57.08 ± 0.23 µg/ml. From the result, it can be concluded that *C. capsularis* leaf is having the potential to be used for the treatment of the cancer. Further research is needed, for the determination of specific compound and its isolation, so that it could be used as a therapeutic agent for the welfare of mankind.

Key words: *Corchorus capsularis*, DPPH, Ehrlich Ascites Carcinoma (EAC), cytotoxicity, antioxidant.

An outbreak of *Lantana camara* poisoning in Majuli of Assam

PranabKonch*¹, SamirBikash Gogoi², Muzaharul Islam¹ and Munmi Saikia³

¹Department of Pathology, ² Department of Public Health,

³ Department of Parasitology

College of Veterinary science, Assam Agricultural University, Khanapara, Ghy-22

Abstract

Lantana camara is a very multicoloured noxious weed which contained two major toxins Lantadene A and Lantadene B causes severe intrahepatic cholestasis and associated liver damage. In the present study, an outbreak of *Lantana camara* poisoning in cattle was reported in the Majuli at Jorhat District of Assam. The toxicity occurs due to lack of green fodder submerged by heavy flood water, livestock bound to take *Lantana Camara* plant in search of green fodder. Clinically, the affected animal showed edematous swelling of ear, sloughing of skin due to photosensitization, yellowish discolouration of the mucous membrane with foul smelling diarrhoea lead to death. Grossly, the lesions found yellowish discolouration of tissue and enlargement of liver with distended Gall bladder. Presence of ulceration in cheeks, gum, tongue and muzzle were observed. Histopathologically, liver showed mild necrosis in some area with some cells contained large intra cytoplasmic vacuoles and coagulative necrosis of proximal tubules of kidneys.

Key words: *Lantana camara*, Toxicity, Photosensitization and Histopathologically.

*Corresponding author email: pranabkonch932@gmail.com

Characterization of paper mill effluent and kinetics study for Cu and Ni adsorption using dried eichhornia crassipes plant

Dr. Linton Hazarika

Asstt. Professor, Dept. of Chemistry, Jagiroad College

Dr. Kishor Kr Shah,

Asstt. Professor, Dept. of Chemistry, ADP College

Abstract

In the present study common water hyacinth plant found in various water bodies in Assam, India. *Eichhornia crassipes* was used as adsorbent for treatment of Paper Mill effluent. The plant showed good adsorption of toxic metal, Cu, Ni from synthetic medium and paper mill effluent. Concentration of Cu and Ni in the industrially treated paper mill effluent observed were 0.021 – 0.103 mgL⁻¹ and 0.042 – 0.151 mgL⁻¹ respectively. Concentration of Ni in effluent is above the permissible limits of WHO. Water hyacinth plant was treated with twenty synthetic medium containing 40, 50, 60 70 and 80 mgL⁻¹ of heavy metals Cu and Ni. From the Batch study, it was observed that the adsorption mechanism for both the studied metals follow the 2nd order kinetics.

Key words: Adsorption, Heavy metals, Paper mill effluent, *Eichhornia crassipes*.

Role of Herbal Medicines in Traditional Healing - A Review

¹Nargis Parbin

¹Department of
²Biotech Hu
E-mail address

Immed, *²Farhana Sultana

tany, A.D.P. College, Nagaon
A.D.P. College, Nagaon
farhana_miss@ymail.com

Abstract

Medicinal plants have been known since ancient times and are highly esteemed all over the world as a rich source of therapeutic agents for ailments and prevention of diseases. North-Eastern part of India is enriched with medicinal plants. The herbal drugs are popular among both rural and urban community of India. People are using these medicines from centuries for safety, efficacy, cultural acceptability and lesser side effects. Indian Systems of Medicine are the system of medicines which are Indian in origin or have come to India from outside and assimilated in to Indian traditional systems. They are- Ayurveda, Siddha, Unani and Yoga, Naturopathy and Homoeopathy. Apart from these, there are a large number of medicinal plants in the folklore. To obtain optimum benefit, it is necessary to have minimum basic level information on their different aspects. In the current review, attempt has been made to provide a brief introduction of scenario and perceptions of herbal medicine

Key words: Ethno medicinal plants, Traditional knowledge, Herbal medicine.