



Bio-rays

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E-News Bulletin

**Institutional
Biotech Hub
Imphal College,
Imphal**

Sponsored by
**Department of
Biotechnology**

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From the Principal's Desk

It gives me immense pleasure to learn that Institutional Biotech Hub Imphal College, sponsored by the Department of Biotechnology, Ministry of Science and Technology, Govt. of India is bringing out the first issue of its annual bulletin "Bio-rays".

Institutional Biotech Hub in this institution is a boon to the students as well as to the teachers of this college. It has been working ceaselessly to provide awareness about the potential of biotechnology not only to our students but also to the students of neighbouring schools.

Biotech Hub of Imphal College has arranged awareness programmes, hands-on training programmes, invited lectures, outreach programmes periodically which have increased the knowledge and skill of the students and teachers of our college and the neighbouring institutions.

I hope in the days to come the hub will work with more enthusiasm and vigour to popularize biotechnology among the students and carry out research work on medicinal plants to help produce more efficient medicines. I also wish the Biotech Hub, success in their endeavour.

L. Randhoni Devi

(L. Randhoni Devi)



Principal
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Topic of the issue

Medicinal plants and its importance

Medicinal plants include a wide variety of plants which has medicinal properties and can be used as rich resources of ingredients in drug development and synthesis. There is an increasing interest in medicinal plants research due to its pharmaceutical, cosmetic and nutritional applications. Medicinal plants frequently used as raw materials for extraction of active ingredients which are used in the synthesis of different drugs. In laxatives, blood thinners, antiseptics, antibiotics and antimalaria medications contain ingredients from plants. The plant-derived compounds have a long history of clinical use, better patient tolerance and acceptance. In the treatment of common ailments and even life-threatening diseases like cancer, the components of the plants proved to be very effective.

Medicinal plants help to reduce the use of the chemical remedies which will be used when the disease is already present. More research work is required to identify the main active ingredients which can be extracted from medicinal plants to clarify their role in the treatment of present diseases, and how they can be used to produce or synthesize more effective drugs. Imphal College IBT Hub is extracting and screening the active ingredients of aromatic and vegetative plants available in Manipur which has medicinal values. So far five research papers have been published in international journals from the work carried out in IBT hub.



Training Programmes...

Ten Hands-on Training Programmes were conducted by IBT Hub, Imphal College since inception for students and teaching staffs of Zoology, Chemistry and Botany Department of the college. Training programmes were on:

- Extraction and analysis of phytochemicals from selected medicinal plants
- Bioinstrumentation (Spectrophotometer & Centrifuge)
- Isolation of DNA and agarose gel electrophoresis



Six Hands-on Training Programmes were conducted during May 2015- April 2016.

1. Five days Training programme on Bioinstrumentation and demonstration on alcohol fermentation and curd preparation was organized for B.Sc.Vth Sem Zoology honours students, 7th-12th Oct., 2015.
2. Four days Training programme on Preparation of standard curve of protein (BSA) using Spectrophotometer and Separation of tissue extract using Centrifuge was organized for Teaching staffs of Zoology Department, 1st- 4th Dec., 2015.
3. Three days Training programme on Handling of Spectrophotometer and centrifuge was organized for teaching staffs of Botany Department, 10th-12th Feb., 2016.
4. Four days Training programme on Preparation of standard curve of protein (BSA) using Spectrophotometer and Separation of tissue extract using Centrifuge was organized for B.Sc VIth Sem Botany honours students, 16th – 19th Mar., 2016.
5. Three days Training programme on Handling of Spectrophotometer and centrifuge was organized for B.Sc VIth Sem Botany honours students, 21st -23rd Mar., 2016.
6. Four days Training programme on Separation of amino acids by paper chromatography was organized for B. Sc. VIth Sem Zoology honours, 11th- 14th Apr., 2016.



Awareness Programmes ...

Six one day awareness programme were organized for school students of class X, XI and XII science of Jawahar Navodaya Vidyalaya, Khumbong, Little Flower School, St. Joseph, T.G. Higher Secondary School and Johnstone Higher Secondary School, Imphal.

Lectures delivered on:

- Biotechnology: Its useful Trends
- Food Biotechnology
- Biotechnology and IPR
- Introduction to Biotechnology
- Enzyme Biotechnology
- Enzyme Biotechnology & its applications in everyday life
- Career prospects in Biotechnology

A total of 417 students were benefitted.



Invited Lectures:

Three Invited Lecture programme were organized

- **13th October, 2012**
Professor N. Rajmuhon Singh, Department of Chemistry, Manipur University gave lecture on “**Trace element analysis in food**”.

- **28th March, 2015**
Dr.Ch. Brajakishor Singh, Scientist C (Natural Product Chemistry) and **Dr. Lokesh Deb**, Scientist C (Pharmacology), IBSD, Takyelpat, Imphal delivered lecture on “**Alkaloids as Bioactive Molecules**” and “**Perspective of Manipur Traditional Medicine**” respectively.

- **12th March, 2016**
Dr. H. Birkumar Singh, Principal Scientist (Scientist-in charge), CSIR:NEIST, Lamphelpat, Imphal delivered a lecture on “**Biodiversity and Conversation**”.
L. Dinendra Sharma, Co-ordinator, IBT Hub, Pravabati College, Mayang Imphal talked on “**Plant tissue culture**”.



Other activities

National Science Day 2016 was observed and delivered lectures on lives of eminent Scientists like Sir. C.V. Raman, A. Smekel and K.S. Krishnan and other topics were Raman effect, Chemistry in our Life, Food Biotechnology, Recent Trends in Biotechnology and Gravitational force.

Theory and practical classes of Biotechnology as per syllabus of Manipur University were provided to Zoology honours students of our college.

Mentoring implementation of BLISS at Johnstone Higher Secondary School, Imphal.

Research activities

IBT Hub is currently carrying out research work on selected aromatic and vegetative plants found in Manipur.

Thirty UG students from Chemistry, Botany and Zoology Department of the college and one student from Delhi University have completed their project work utilizing IBT Hub facility.

Papers Published:

Five papers were published in International Journals:

- Comparative study of phytochemical constituents and total phenolic content in the extracts of three different species of genus *Hedychium*, Kh. Lemino Singh, L. Ranjit Singh, P. Grihanjali Devi, N. Romabati Devi, L. Somarjit Singh and G. C. Bag, International Journal of PharmTech Research, April- June 2013, 5(2), 601-606 (H Index: 11 upto 2013).
- Phytochemical analysis and determination of total phenolic content in water extracts of three species of genus *Hedychium*, Kh. Lemino Singh and G. C. Bag, International Journal of PharmTech Research, Oct-Dec 2013, 5(4), 1516-1521 (H Index: 11 upto 2013).
- Total flavonoid content and antioxidant activity of aqueous rhizome extract of three *Hedychium* species of Manipur Valley, Th. Bhaigyabati, P. Grihanjali Devi and G.C. Bag, Research Journal of Pharmaceutical, Biological and Chemical Sciences, September - October 2014, 5(5), 970-976 (Impact factor 0.35).
- Assessment of total flavonoid content and antioxidant activity of methanolic rhizome extract of three *Hedychium* species of Manipur valley, Th. Bhaigyabati, P. Grihanjali Devi and G.C. Bag, Int. J. Pharm. Sci.Rev. Res., 30 (1), January – February 2015; Article No. 28, 154159 (Elsevier's SCImago Impact factor = 0.65).
- Phytochemical screening and antioxidant activity of *Meyna laxiflora* species found in Imphal West District of Manipur, Th. Bhaigyabati, P. Grihanjali Devi and G.C. Bag, Int. J. Pharm. Sci.Rev. Res., 36(1), January –February 2016; Article No. 23, 137-143 (Elsevier's SCImago Impact factor = 0.65).

Papers presented:

- The paper entitled “Preliminary phytochemical study on the rhizomes of *Hedychium spicatum* Buch. Ham” was presented and published in the proceeding of National Seminar on Recent Advances in Natural Product Research organized by Pachhunga University College, Aizawl, Mizoram.
- The paper entitled “Antioxidant activity and total flavonoid content in the aqueous rhizome extract of three *Hedychium* species of Manipur valley” was presented at National Level Workshop on Toxicity of Medicinal Plants (September 26-27, 2014) organized by Department of Chemistry, Modern College, Porompat Imphal in Collaboration with Department of Chemistry, Manipur University, Canchipur, Manipur.
- The paper entitled “Assessment of Total Flavonoid Content and Antioxidant Activity of Methanolic Rhizome Extract of Three *Hedychium* Species of Manipur Valley” was presented at 1st National Bioresources and Sustainable Development Summit -2015 (February 19-20) organized by Institute of Bioresources and Sustainable Development, Takyelpat, Imphal, Manipur.
- The paper entitled “Preliminary phytochemical screening and antioxidant activity of aqueous, hexane and methanolic extracts of *Meyna laxiflora*” was presented at National Conference on Frontiers of Research in Chemical Sciences-2015 (March 13-14) organized by Department of Chemistry, D.M. College of Science in collaboration with Department of Chemistry, Manipur University, Canchipur, Manipur.

Plants studied under the research program, IBT Hub Imphal College



Hedychium spicatum



Hedychium coronarium



Hedychium rubrum



Meyna laxiflora Robyns



Oenanthe javanica (Blume) DC



Ipomoea aquatica Forssk

The Institutional Biotech Hub was established by DBT vide order No. BT/22/NE/2011, Dated 30/11/2011. After the establishment of IBT Hub, Zoology Dept. of the college become able to perform some of the practical experiments. Both the students and the teachers of the Dept. of Botany, Zoology and Chemistry have been trained in handling UV-Visible Spectrophotometer, Centrifuge machine, Soxhlet distillation, handling of micropipettes, vortex mixer etc. It has helped the students of science stream of our college to perform their practicals using Biotech Hub instruments.

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