

AmiHerb: Glorifying Indian Herbal Heritage

A Mission on Medicinal Plants Research



IN ALIGNMENT WITH THE MISSION OF :

GOVERNMENT OF INDIA

(HON'BLE PRIME MINISTER OF INDIA)

and

MINISTRY OF AYUSH

(Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy)





**Sh. Narendra Modi,
Hon'ble Prime Minister of India**

Hon'ble Prime Minister pitches for Ayurveda-led Health Revolution and affordable healthcare . He believes that India can become a leader in making affordable, holistic health care available to the world.

AYUSH in addition to the research related to Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy have the department, the National Medicinal Plants Board (NMPB), which promotes Conservation, Development and Sustainable Management of Medicinal Plants.



**Sh. Shripad Naik
Minister of State
(Independent Charge), AYUSH**



श्रीपाद नाईक
SHRIPAD NAIK

राज्य मंत्री (स्वतंत्र प्रभार)
आयुर्वेद, योग व प्राकृतिक चिकित्सा, यूनानी, सिद्ध एवं
होम्योपैथी (आयुष) मंत्रालय
भारत सरकार

**MINISTER OF STATE (INDEPENDENT CHARGE) FOR
AYURVEDA, YOGA & NATUROPATHY
UNANI, SIDDHA AND HOMOEOPATHY (AYUSH)
GOVERNMENT OF INDIA**

Date : 3rd June 2018

MESSAGE

It gives me immense pleasure to inaugurate the Herbal Garden and Medicinal Plant distribution Centre at Amity University Haryana, Manesar which has been established in collaboration with the National Medicinal Plant Board (NMPB), Ministry of AYUSH, Government of India.

Amity university has undertaken a number of initiatives towards the training of farmers in order to share the knowledge gained by the faculty members in the field the Organic farming, Biocontrol & Plant disease, Post-Harvest management. The present initiative will help in promotion of the National Mission of Green and clean India.

This garden will support in creating of the manpower who will take this ancient tradition to the next generations. I came to know that this herbal garden is being developed for cultivation and production of medicinal plants, seedlings, plantlets and will also assist in distribution of the plants and seeds to educational institutions which will further strengthen the mission of awareness generation amongst the youth.

My Best wishes to the team AMITY towards the success of this endeavour



Shripad Naik



FOUNDER PRESIDENT'S MESSAGE

Amity University Haryana (AUH), since its inception, has been taking several initiatives in agricultural farming, agricultural extension services, besides promoting herbal and medicinal plants to create awareness among the farmers for its cultivation as well as also by planting these at schools, colleges and universities to bring awareness for that, among the students, faculty members and teachers and staff etc. A large number of in-house training programmes as well as on-the-field programmes have been successfully organised for the benefit of farmers to adopt new and innovative techniques for higher yields and to derive maximum economic benefits. Planting herbal and medicinal plants can bring much higher revenue to the farmers.

It is a matter of immense satisfaction that the **AYUSH-AMITY Herbal and Medicinal Plants Distribution Centre**, being established in collaboration with the National Medicinal Plants Board (NMPB), Ministry of AYUSH, Government of India, is being inaugurated by Shri Shripad Yesso Naik Ji, Hon'ble Union Minister of State (Independent Charge) in the Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH). The esteemed presence of Hon'ble Minister as the Chief Guest to inaugurate AYUSH-AMITY Herbal and Medicinal Plants Distribution Centre and also launch the Amity Institute of Indian System of Medicine in the worthy presence of other distinguished dignitaries would be a great source of motivation for all at Amity in further propagating the benefits of traditional medicinal plants for healthy and joyful life.

India is the only country in the world having such rich biodiversity of herbal and medicinal plants and again the only country where through traditional knowledge, for millenniums, herbal and medicinal plants have been successfully used for medical treatment, thus providing effective medical help at minimum cost. It is our mission to further propagate the usefulness of herbal and medicinal plants not only in India but globally. I am sure that this **AYUSH-AMITY Herbal and Medicinal Plants Distribution Centre** would greatly promote the research and innovation in this area and also discover the new herbal and medicinal plants which have the potential to immensely benefit the humanity.

I appreciate Prof. P.B. Sharma, Vice Chancellor, Amity University Haryana and his dedicated team who, under the leadership and guidance of Dr Aseem Chauhan, Chancellor, Amity University Haryana, have put in their best efforts to develop this Centre. The most dedicated efforts of Dr. W. Selvamurthy, President, Amity Science, Technology & Innovation Foundation (ASTIF) and Dr. S.K Rajput, Director, Amity Institute of Indian System of Medicine and Professor at Amity Institute of Pharmacy (AIP) deserve special mention. The advice and guidance from Dr. Naval Kumar Verma has played an important role in the establishment of this Centre. The motivation from DGs/ Heads of all the Research Councils under Ministry of AYUSH is equally worth appreciating. I also deeply acknowledge the support received from the worthy officers and scientists of National Medicinal Plants Board in our joint endeavours in this direction.

I am confident that such initiatives will also help in creating awareness among all sections of the society about the benefits to be derived from such traditional plants.

Dr. Ashok K. Chauhan
Founder President

Ritnand Balved Education Foundation (RBEF)
(The Foundation of Amity Institutions &
Sponsoring Body of Amity Universities)



THE CHANCELLOR'S MESSAGE

It gives me immense pleasure that faculty members from Amity University Noida have collaborated with Amity University Haryana, Manesar for undertaking a project in association with National Medicinal Plant Board (NMPB), Ministry of AYUSH, Government of India. Amity University Haryana has established a beautiful Herbal Garden and Medicinal Plant distribution Centre. On behalf of Amity fraternity, I would like to thank Shri Shripad Yesso Naik, Minister of State, Ministry of AYUSH for inaugurating the facility on 5th of June 2018 in the august presence of various renowned persons and scientists working in the field of Herbal medicine.

Hon'ble Prime Minister of India, Shri Narendra Modi Ji has emphasized that "India can be a leader in making affordable, holistic health care available to the world" and with our rich knowledge of traditional medicine, we can spearhead the mission to promote natural and herbal method of medicine.

This would not only ensure the passing on of this ancient tradition to the next generation but also help in promotion of research and development, training of farmers to cultivate the herbs. In addition, this would support in creating a green environment. I am glad to know that the centre will also provide the plants to schools, colleges and Universities.

My heartfelt congratulation to the team and best wishes for success of this mission.



Dr. Atul Chauhan
Chancellor – Amity University
President- Ritnand Balved Education Foundation
CEO- AKC Group of Companies

New Delhi
June, 2018

AmiHerb: Glorifying Indian Herbal Heritage

A Mission on Medicinal Plants Research



सत्यमेव जयते

डा. मनोज नेसरी
DR. MANOJ NESARI

सलाहकार (आयुर्वेद)
Adviser (Ayurveda)

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E-mail : drnesari@gmail.com
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भारत सरकार
GOVERNMENT OF INDIA
आयुर्वेद, योग व प्राकृतिक चिकित्सा
यूनानी, सिद्ध एवं होम्योपैथी (आयुष) मंत्रालय
MINISTRY OF AYURVEDA, YOGA & NATUROPATHY
UNANI, SIDHA AND HOMOEOPATHY (AYUSH)
आयुष भवन, 'बी' ब्लॉक, जी.पी.ओ. कॉम्प्लेक्स,
आई.एन.ए., नई दिल्ली-110023
"AYUSH BHAWAN", B-BLOCK, GPO COMPLEX
INA, NEW DELHI-110023

MESSAGE

I am delighted to know that **Amity University Haryana, Manesar** has taken the initiative to establish the Herbal Garden and Medicinal Plant distribution Centre in collaboration with the National Medicinal Plant Board (NMPB), Ministry of AYUSH, Government of India which is being inaugurated on 5th June, 2018.

The University has set up its herbal garden which will help in popularization of the usefulness of herbal plants and to conserve the traditional knowledge associated with this ancient tradition for our future generations, Herbs have been used for centuries to help with a variety of ailments.

This initiative will help in inspiring young minds to work towards the promotion and protection of herbal medicine and make the environment conducive for future generations.

My Best wishes for the success all future endeavors of Amity Education Group.


(Dr. Manoj Nesari)

New Delhi
June, 2018

Gram : "AYUSH"



प्रो. वैद्य के. एस. धीमान
महानिदेशक
Prof. Vd. K.S. Dhiman
Director General

केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद्
आयुष मंत्रालय
CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES
Ministry of AYUSH, Govt. of India



MESSAGE

It gives me immense pleasure to know that **Amity University Haryana, Manesar** has established the Herbal Garden and Medicinal Plant distribution Centre in collaboration with the National Medicinal Plant Board (NMPB), Ministry of AYUSH, Government of India.

This initiative will help in the augmentation of research and development initiatives in the field of formulation development, coordination, development, and promotion of research on scientific lines in Ayurveda & Sowa-Rigpa system of medicine.

Medicinal plants have great potential to overcome various diseases and help in creating awareness amongst people towards environment as well as health. I appreciate the sincere and dedicated efforts of the Amity Education Group for spearheading this initiative of promotion of herbal medicine. I am confident that such activities will surely inspire many youngsters to achieve other milestones!

I extend my heartfelt congratulations on this occasion


Prof. Vaidya K. S. Dhiman

जवाहर लाल नेहरू भारतीय चिकित्सा एवं होम्योपैथी अनुसंधान भवन
61-65, संस्थानिक क्षेत्र, सम्मुख 'डी' ब्लॉक, जानकपुरी, नई दिल्ली-110058
Jawahar Lal Nehru Bhartiya Chikitsa Evam Homeopathy Anusandhan Bhawan
61-65, Institutional Area, Opp. 'D' Block, Janakpuri, New Delhi- 110058
Phones : 011-28524457 Tele-Fax : 011-28520748 Fax : 011-28525959
Website : www.ccras.nic.in E-mail : dg-ccras@nic.in, dr_ks_dhiman@yahoo.co.in



Rejoice Health Foundation

(Reg No. 498)

Dr. Naval Kumar Verma

M.D. (Hom.), B.H.M.S., Regd. No. BHSD 2313
PG. (Hom.), U.K., F.R.C.H. (U.K.), F.H.M.A. (U.K.),
M. Faculty (HCH&CTCH) U.K. & Dubai
Hon. Advisor Homeopathy to MOS (I/C) Ayush
Ministry of Ayush, Government of India




MESSAGE

I am overwhelmed with the innovative approach and enthusiasm of AMITY UNIVERSITY towards the development and Inauguration of herbal garden in Amity University Haryana, Manesar which will also be undertaking Medicinal Plant distribution in collaboration with the National Medicinal Plant Board (NMPB), Ministry of AYUSH, Government of India.

Growth and evolution are the hallmark of a vibrant organization. From this perspective the strides made by the University towards setting up of herbal garden are impressive. I am sure that the garden in the will play a very important role in educating people specially the farmers and serve as a training centre for the students and the herbal practitioners.

It is a responsibility of each and every citizen of India to make our mother planet green and beautiful. Amity University has taken the very positive step in this direction and developed the herbal garden with the medicinal valued plants and making the campus green and clean. I have witnessed the enthusiasm and passion put forth by Amity team in achieving this milestone with their consistent and persistent efforts. It is remarkable achievement.

I extend my heartfelt best wishes to Amity Education Group for the success of this important initiative.


(Dr. Naval Kumar Verma)

New Delhi
June, 2018

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New Delhi-110027 Ph.: 011-25410265, 25172076, Mob.: 9868210017
E-mail : drnaval.kumar@gmail.com, info@drnavalkumar.com Url: www.drnavalkumar.com



Prof. (Dr.) Balvinder Shukla

Professor - Entrepreneurship & Leadership
Vice Chancellor &
Senior Vice President, RBEF



MESSAGE

I am very happy and proud that Amity family has achieved one more milestone in creating the Herbal Garden with the support of the National Medicinal Plants Board (NMPB) under Ministry of AYUSH. This will not only help students to understand the significance of Indian herbal heritage but also make them responsible citizen to protect the environment. This Amity initiative will help in inspiring young minds to work towards the promotion and protection of herbal medicine and make the environment conducive for future generations. The Herbal Garden and Medicinal Plant Distribution Center will help the farmer to promote cultivation of medicinal plants and also to promote research for best use of medicinal plants for better health.

I congratulate the team for their successful approach in making this event possible. Best wishes to achieve more such glory to AMITY Universe.



Prof. (Dr.) Balvinder Shukla

Place : Noida,
Date : June 1, 2018

**AMITY UNIVERSITY**
GURGAON

Established vide Government of Haryana Act No. 10 of 2010

Prof (Dr) PB Sharma

Ph.D. (Birmingham, UK)
FIE, FAeroS, FWAPS
Vice - Chancellor

**Message**

It gives me immense pleasure that the Herbal Garden at Amity University Haryana is being inaugurated by the Hon'ble Minister of AYUSH on the World Environment Day, 5th June 2018.

Amity University as per the vision of our Founder President, Dr Ashok K Chauhan is firmly committed to strengthen the resolve of the Government of India and the Ministry of AYUSH to position India as a world leader in Herbal and Indian System of Medicines.

To meet this noble objective I am indeed very happy that the Amity University Noida along with Amity University Gurugram and with the support of the Ministry of AYUSH and the patronage of the Hon'ble Minister shall herald a new era of cultivation and propagation of Herbal & Medicinal Plants and higher end research and innovations towards accelerated growth of Herbal and indigenous medicines.

I wish the event a great success.

3rd June 2018



Prof PB Sharma
Vice Chancellor, AUH



AMITY UNIVERSITY
UTTAR PRADESH

DR. W. SELVAMURTHY, Ph.D., D.Sc.
FAMS, FABMS, FIMSA, FIANS, FIAY

President

Amity Science, Technology and Innovation Foundation (ASTIF),
Director General, Amity Directorate of Science & Innovation,
Chancellor, Amity University, Chhattisgarh and
Chair Professor for Life Sciences
(Former Distinguished Scientist and Chief Controller R&D(LS), DRDO)
Tel: 91(0)120 4392045 / 91-9871372441 / 91-9818801028
Fax: 91(0)120 4392114, E-mail: wselvamurthy@amity.edu

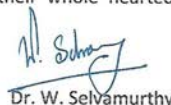


MESSAGE

Medicinal Herbs have played a significant role in Ayurveda to promote positive health and treat many ailments. Ministry of AYUSH has rightly focused to give profound impetus for Herbal Medicine by promoting research, education and cultivation.

Amity expresses our gratitude to Ministry of AYUSH for having supported Amity Group in Research and Development in the field of Herbal Medicine. The recent project of AYUSH on raising the "Herbal Garden and Medicinal Plant Distribution Centre" through National Medicinal Plant Board has been meticulously executed to cultivate more than 100 species of medicinal plants and this Centre will provide immense support to farmers through training and distribution of seedling and saplings of medicinal herbs.

We welcome Hon'ble Minister Shri Shripad Yesso Naik, Minister of State, Ministry of AYUSH in Amity University Haryana, Manesar on 5th June, 2018 to bestow his blessings for fruitful outcome of this Herbal Garden for providing support to farmers, scientists, faculty and students working in the field of herbal medicine. Amity is grateful to all members of AYUSH Ministry for their whole hearted support to our research endeavours.

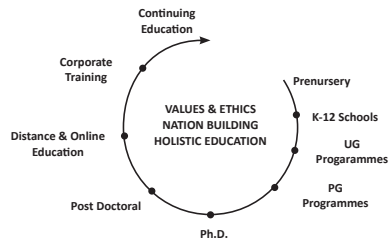


Dr. W. Selvamurthy

Noida,
5 June, 2018

AMITY PHILOSOPHY

Where Modernity Blends with Tradition



FACTS AT A GLANCE

Amity is one India's largest education groups

- **150,000** most brilliant students
- **6,000** faculty & scientists
- **10 Universities** in Delhi-NCR, Lucknow, Gurgaon, Jaipur, Mumbai, Gwalior, Kolkata, Raipur, Patna & Bangalore
- **150 + Institutions** in almost every facet of education
- **Overseas Campus** - In London, Singapore, New York, Dubai, Abu Dhabi, Amsterdam, Mauritius, South Africa, China & Romania
- **25 Schools & Preschools** - in Delhi-NCR and Lucknow
- **1,200** Acres of Campuses
- **6 Million** sq. ft. of buildings
- **300 Programmes** covering 60 disciplines
- **947 Patents** filed by faculty in the last years
- **1,800 Case studies** developed by faculty in the last years
- **300 Research Projects** funded by the Government
- **5,000** on-campus placement this year
- **50,000** on-campus placement in the last years
- **150,000** Alumni across the world
- **19** journals of Amity University campuses across India are UGC listed



AmiHerb: Glorifying Indian Herbal Heritage

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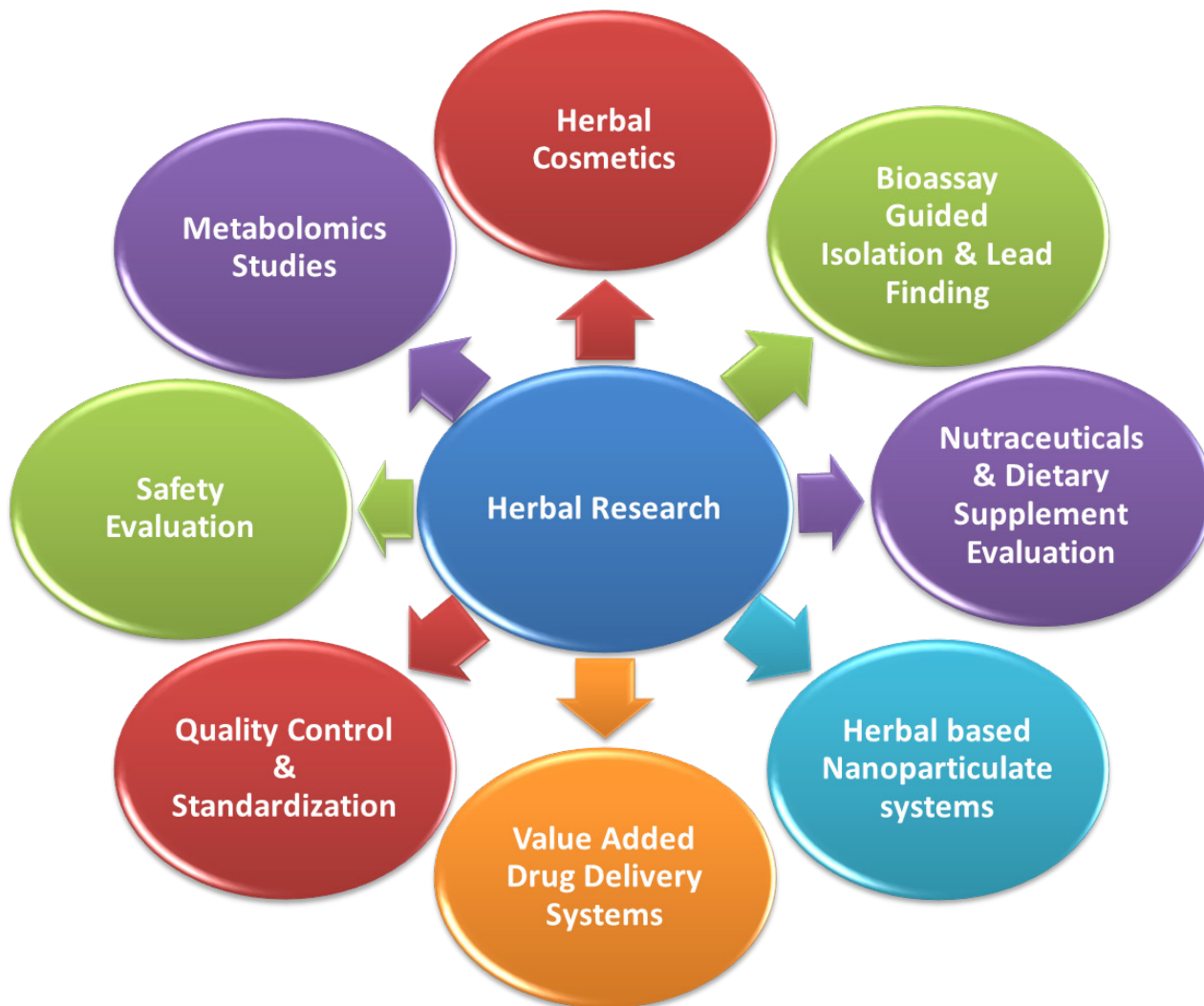
Amity's Contribution Medicinal Plants Research

- ◆ The National Medicinal Plants Board (NMPB) is fulfilling the mission of the “Government of India (Initiated by Hon’ble Prime Minister of India)” by promoting cultivation of Medicinal Plants.
- ◆ Amity University is carrying forward the said mission of the Hon’ble Prime Minister by doing active research and cultivation of the medicinal plants in its premises.
- ◆ A National Level Training of Trainers entitled, “Good Agricultural and Collection Practices for Medicinal Plants” was started on 8th January 2018 with an inaugural function at Directorate of Medicinal and Aromatic Plants, Anand, Gujarat – A task given by PMO to NMPB for Quality of Raw Drug material supplied to different Industries.
- ◆ Amity University participated in the training programme through three faculty members named Dr. Harsha Kharkwal, Dr. Deepak Ganjewala and Dr. Subhasha Nigam who are now Certified Trainers in the cultivation of medicinal plants.

Glimpse of Training of Trainers by DMAP -A task given by PMO to NMPB

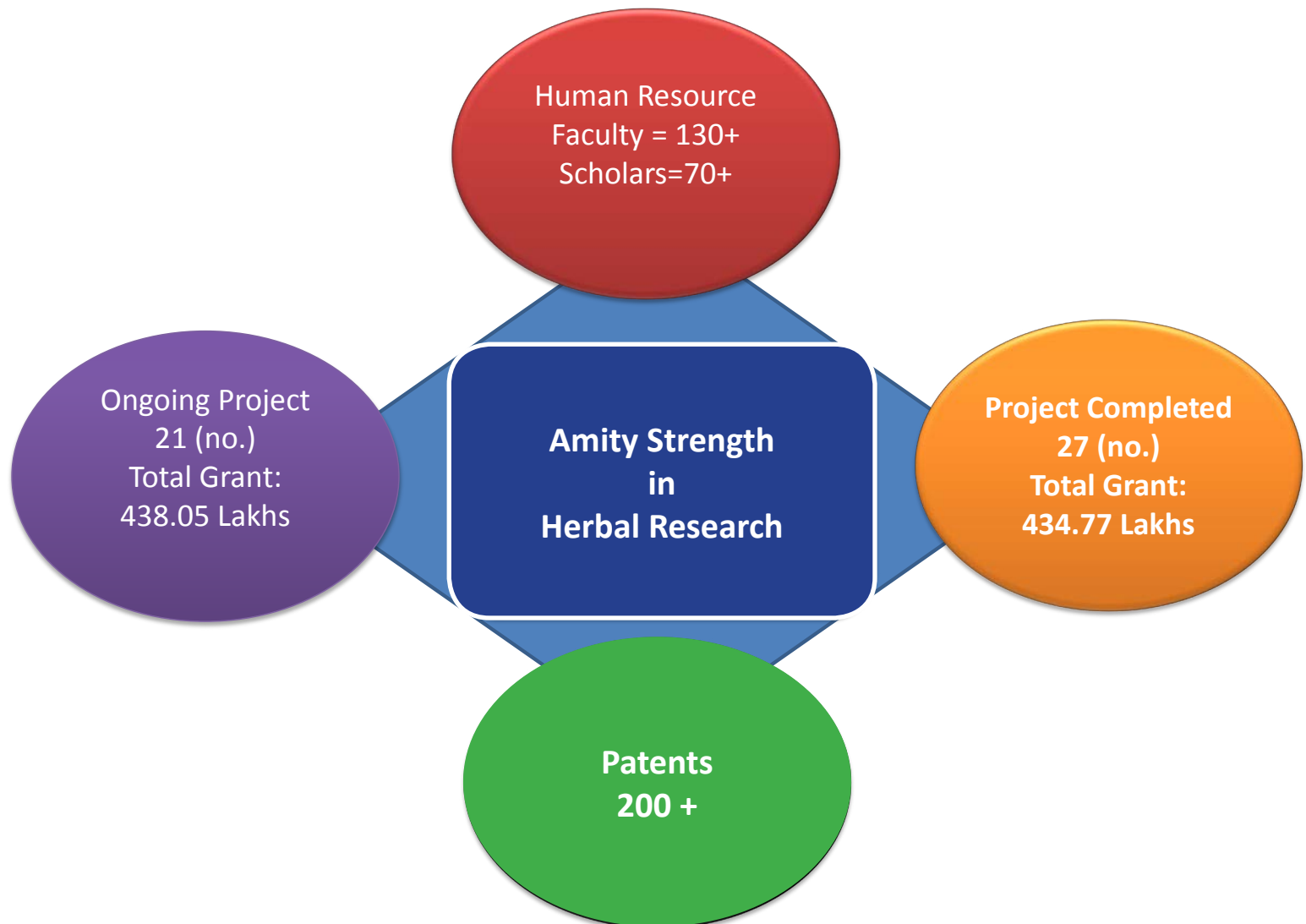


Amity: Herbal Research Areas



AmiHerb: Glorifying Indian Herbal Heritage

A Mission on Medicinal Plants Research



Funding Agencies Supporting Herbal based Research at Amity University



Department of AYUSH
Department of Indian Systems of
Medicine & Homoeopathy



सत्यमेव जयते

Department of Biotechnology
Govt. of India



सत्यमेव जयते

Ministry of Earth Sciences
Govt. of India



सत्यमेव जयते

Science and Engineering Research Board (SERB)
Department of Science and Technology (DST)
Govt. of India



India Space Research Organisation



भाभा परमाणु अनुसंधान केंद्र
BHABHA ATOMIC RESEARCH CENTRE

BILL & MELINDA
GATES foundation

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Antimalarial Drugs from Nature

Sr. No	Plant Name	Part used	<i>P. falciparum</i> IC ₅₀ (µg/ml)		HeLa TC ₅₀ (µg/ml)
			3D7	INDO	
1	<i>Cyprus rotundus</i>	Root	5	4 (0.8)	>100
2	<i>Glycyrrhiza glabra</i>	Root	6	4.5 (0.75)	22
3	<i>Murraya koenigii</i>	Leaf	15	18 (1.2)	90
4	<i>Parthenium hysterophorus</i>	Whole plant	6	2.1(0.35)	12.5
5	<i>Prunus cerasoides</i>	Wood	32	29 (0.9)	> 100
6	<i>Ziziphus jujuba</i>	Bark	25	16 (0.64)	> 100
7	<i>Zingiber officinale</i>	Rhizome	10	10 (1)	35

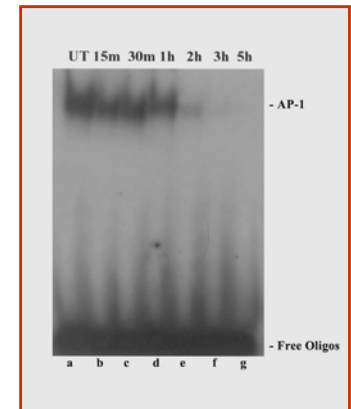


Antiplasmodial activity & Cytotoxic activity

Curcumin for Cancer Treatment



- Makes CSCs sensitive to chemo-radiotherapy
- Proved to be potent anti-HPV molecule
- Down regulates AP-1, miR21 binding activity & expression.
- Inhibits AP-1 binding activity in HPV18-infected cervical cancer cells



EMSA showing decrease in binding activity after 100µm curcumin treatment in HeLa cells.

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Methanolic Extract of *Myristica fragrans* (Mace) & *Myristica fragrans* HOUTT (Nutmeg) for the treatment of *Aspergillus fumigatus*



Myristica fragrans HOUTT



Myristica fragrans

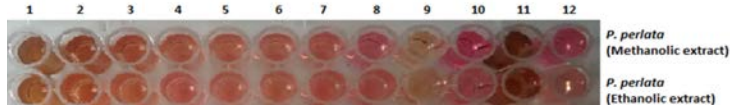
Antimicrobial activity of *Parmelia perlata* Against metronidazole resistant *H. pylori* strain



(a) Methanolic extract of *P. perlata*.



(b) Ethanolic extract of *P. perlata*.



Lane 1 to 8 :Five-fold serial dilution of lichen with constant cell count of *H. pylori*.

Lane 9 : Media control without cells.

Lane 10 :Cell control without lichen extract. Lane 11 shows extract control without cells.

Lane 12: Control in which the lichen extract dissolved with cells.

MIC⁹⁰ was observed at lane 4 & Lane 2 for methanolic and ethanolic extract of *P. perlata* respectively.



Free Curcumin

- Poorly dispersible in water
- Reduced Bioavailability
- Leads to alopecia
- Less absorptive in nature

Nanocurcumin

- Dispersible in water
- Sustained drug release kinetics
- ↑ Bioavailability, cellular uptake
- ↑ inhibition of clonogenicity of cancer cell lines

EFFECT OF NANOCURCUMIN IN SWISS ALBINO MICE FOR TREATING CANCER



Mice without treatment (Control)



Mice treated with nanocurcumin



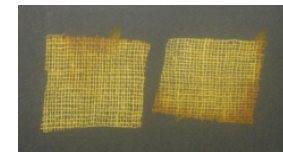
PREPARATION OF NANOCURCUMIN COATED BANDAGE



Normal Bandage



Nanocurcumin



Nanocurcumin Coated Bandages



HERBAL MOSQUITO REPELLENT FORMULATION

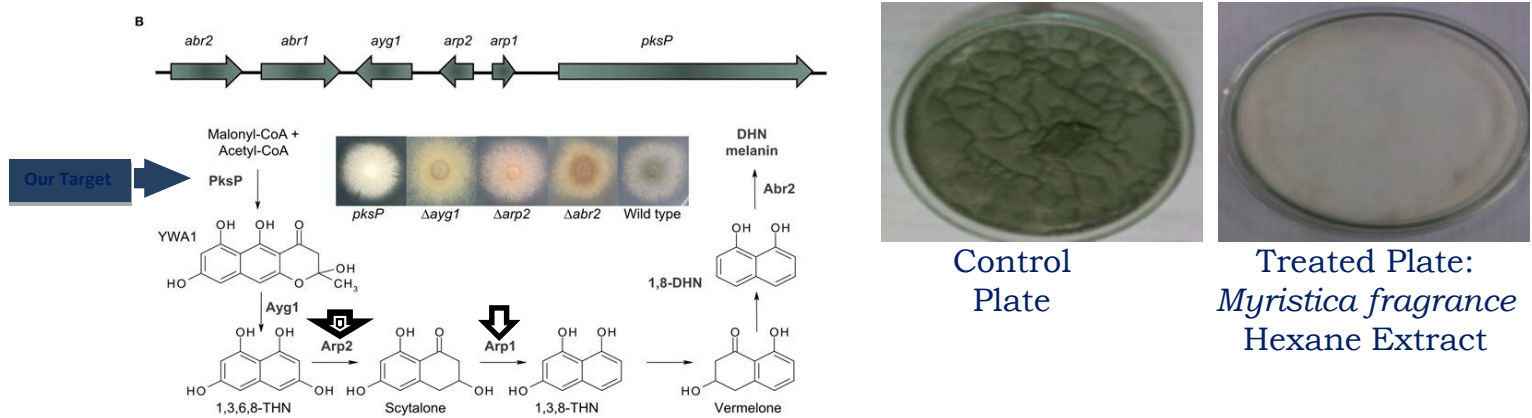


Evaluation of secondary metabolites of *Morinda coreia* against Leishmaniases

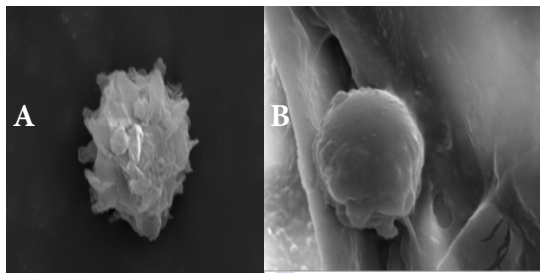
- Used for general & malarial fever.
- Antibacterial , Antifungal & antioxidant.
- Exhibited leishmanicidal effect (< 100 µg/ml).
- Antitubercular activity against *M. tuberculosis* H37Rv.



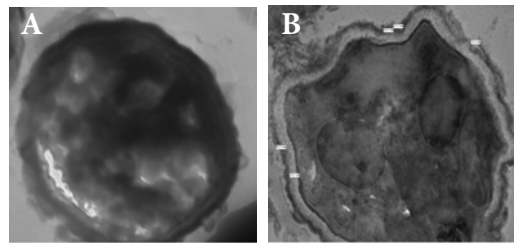
Target specific lead compound identification from natural sources against *Aspergillus fumigatus*



Melanin Synthesis Pathway in *Aspergillus fumigatus*.

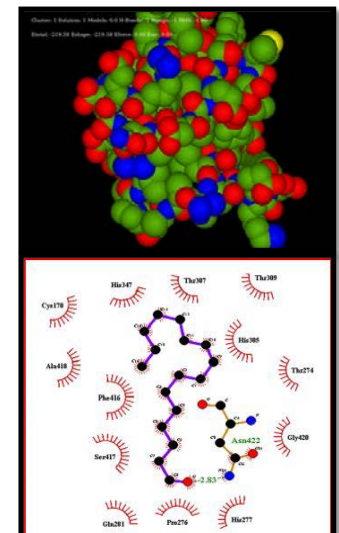


A. SEM image of control sample and **B.** the image of treated sample.



TEM images of LS of the conidia
A. Control Sample, **B.** Treated sample,

Molecular docking studies performed with Lead compound →



GREEN TEA EFFERVESCENCE TABLET



Preference over tea bags

- All natural, no artificial sweetener
- Proven fat burners
- Promotes weight loss
- Improves body's metabolism
- Faster dissolution
- Effective as antioxidant, hypolipidaemic
- Convenient to consume ,Easily palatable
- Ease of use & disposability

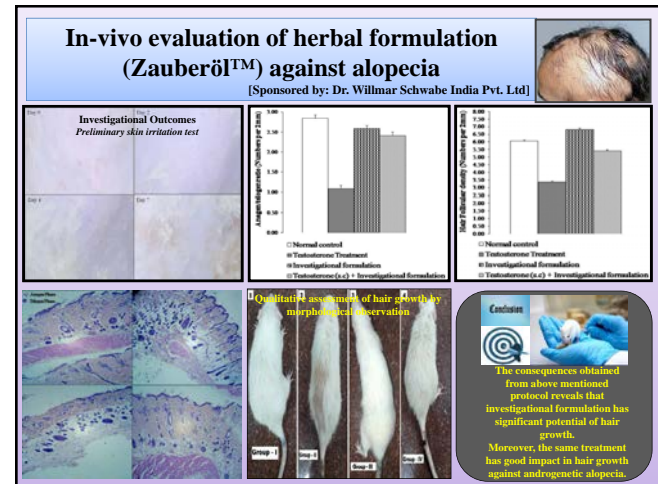
Herbal colours for Food and cosmetic industry



- **SAFE AND ECO FRIENDLY**
- **DIFFERENT SHADES**
- **RETAIN OF COLOUR AND TEXTURE**

- Provide an alternative to Synthetic Colours
- Provides varied range of colours whose intensity can also be varied.
- Widely used for Food items and in Cosmetics for Lipsticks, Hair Dyes, Powder, Gulal etc.

Therapeutic Evaluation of Zauberol in Experimental Induced Alopecia and Monocentric, Randomized, Double Blinded Clinical Trial for Skin Safety Profile



**Amity Institute for Herbal and Biotech Products Development
&
Amity Institute of Phytochemistry and Phytomedicine
Thiruvananthapuram, Kerala**

Amity Institute for Herbal and Biotech Products Development & Amity Institute of Phytochemistry and Phytomedicine, Thiruvananthapuram, Kerala have been established with the mission of sustainable utilization of the biodiversity of the Western Ghats for the benefit and welfare of the people of India. Keeping in line with its basic objectives of transforming the rich biodiversity and the associated traditional knowledge and wisdom of the country into useful products and processes that can improve the health and wellbeing of our people, AIHBPD and AIPP have been directing their efforts to the study of tropical medicinal and aromatic plants. Both the Institutes have been successful in attracting external grants from the Department of Biotechnology, Govt. of India, New Delhi. These funding have helped in strengthening the research capabilities of the Institutes.

Over the years these institutes have been successful in developing several herbal drugs and Nutraceuticals which has resulted in filing nearly 25 patents. As an outcome of the research activities of the Institute nearly 100 research papers have been published in reputed journals, about 70 chapters in books and a book entitled “Plants for Health and Nutritional Security” besides two edited books. The Institutes have taken up social outreach programmes and a number of people belonging to SC / ST and socially backward communities have been trained in the cultivation and utilization of medicinal and aromatic plants as an income generating activity.

Padma Shri Prof. Dr. Palpu Pushpangadan

Professor Palpu Pushpangadan is presently the Hon. Director General of Amity Institute for Herbal and Biotech Products Development (AIHBPD), Thiruvananthapuram and Senior Vice President of the Ritnand Balved Education Foundation (RBEF), New Delhi. Prior to the present assignment Prof. Pushpangadan served as Director, National Botanical Research Institute (CSIR-NBRI), Lucknow from Feb. 1999 to Feb. 2006; Director, Jawaharlal Nehru Tropical Botanic Garden and Research Institute (KSCSTE-JNTBGRI), Thiruvananthapuram from Nov. 1990 to Feb. 1999 and held additional charges of Director of Rajiv Gandhi Centre for Biotechnology (DBT-RGCB), Thiruvananthapuram and Central Institute for Medicinal & Aromatic Plants (CSIR-CIMAP), Lucknow. He has published over 500 original research papers (246 in Peer Reviewed Journals, 125 Chapters in books & 237 in proceedings of scientific seminars/symposia) and authored/ edited 34 books & 58 Reports. He has 261 patents (of 95 patents- 61 US patents & 65 European, French, German, Canadian and Japan patents awarded and rest in India) granted and 14 patents filed in India. Prof. Pushpangadan has received many national and international medals/ awards including the prestigious UNEP Borlaug Award in 1998, the UN-Equator Initiative Award-2002 at World Summit at Johannesburg, South Africa in September 2002, Ayurved Gaurav Award 2009 and Padma Shri Award in 2010.



INTERVIEW PADMA SHRI P PUSHPANGADAN

India need to get ahead in herbal race

Today China is the world leader in herbal medicines. India is far behind despite rich resources. Pushpangadan shares the reasons with Gulam Gilkar Jeelani during a chat. Excerpts

Many people are turning to herbal medicines in India. How do you see it?

We in India have been using herbal medicines since long. Increased side effects of modern medicines, lack of curative treatment for chronic diseases, high cost of drugs, microbial resistance and emerging diseases are some reasons for renewed public interest in the alternative medicines here. This calls for more focus on the sector. We

have innumerable plant species with medicinal values that can be put to use. Just two decades ago, we were on par with China. But, unfortunately, the sector is not getting the focus that it deserves. Today China is far ahead of India.

Any special reason behind China's getting ahead in the herbal race?

There are around

8,000 plant species in Indian forests (tribal areas) with medicinal value, which have not been documented till date. During my study, I have come across innumerable plant products that the tribals use as medicines, but cease to exist beyond jungles. In fact 40% of the allopathic medicines use plant products. We have come up with only one patent -- Trichopus zeylanicus-Arogyapacha. China has over 400 laboratories—a major driving force for being the world leader. India has not more than 15 laboratories.

Who is to be blamed for this?

The increasing use of traditional form of medicine demands more scientifically sound evidence for the principles behind therapies and for effectiveness of this form of medicines. Global acceptance of herbal medicine is going up and there has been a steep rise

in the demand for medicinal plants from India. Most of the times, three-fourth of the budget allocated to this sector is lapsed or sent back. This is the major problem. We do not know how to use this money.

Where does the solution lie then?

Many institutes, like NBRI, are coming up with some positive results. Still, we need to strive with more seriousness for regaining our position in the global herbal drug market. We can do it, I am confident. All the stakeholders (government and institutions) need to work out, the modalities of qualitative standards for herbal drugs and nutraceuticals. Besides, quality control as well as affordability and easy availability of these drugs assume paramount importance. The quality of education in many colleges needs to be improved. We also need to stabilise prices of these herbal products. Common herbs need to be researched and developed for herbal drug development at affordable prices.

What's the right strategy to get ahead of China again?

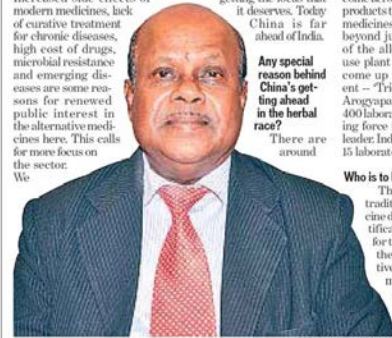
Coordinated collaboration of academia and indus-

MAN OF ACHIEVEMENTS

P Pushpangadan (born 23 January 1944) is director general of Amity Institute for Herbal and Biotech Products Development (AIHBPD) in Kerala. He has been former director of the Tropical Botanical Garden and Research Institute (TBGRI) in Kerala, National Botanical Research Institute (NBRI) in Lucknow and Rajiv Gandhi Centre for Biotechnology in Thiruvananthapuram. He received the Padma Shri Award in 2010.

HE HAS OVER 250 PATENTS TO HIS NAME Dr P Pushpangadan has over 44 years of research experience in plant sciences. His multidisciplinary training helped him gain better understanding of the biological systems and demonstrate exceptional skill, expertise and originality in the pursuit of basic and applied research in cytogenetics, plant breeding, bioprospecting, biotechnology, conservation biology, ethnobotany, ethnopharmacology and pharmacognosy.

try through a science-based approach to promote research ideas in herbal medicine. There is need to promote herbal alternative to allopathic drugs. In fact, that is the need of the hour. Make full use of the medicinal resources present in the form of ignored vegetation. Try for research based patents and things will improve gradually.



DEEPAK GUPTA/HT PHOTO

औषधि निर्माण एक बड़ी प्रक्रिया: डा. अनिल

नोएडा, (पंचाय केसरी): शोधार्थियों के लिए फार्मास्यूटिकल, हर्बल एंव सीएएमएस के क्षेत्र में नवोन्मेष के लिए प्रेरित करने के लिए फार्मास्यूटिकल, हर्बल एंव सीएएमएस प्रबंधन पर आयोजित संगोष्ठी में डा. एसके राजपूत द्वारा लिखी पुस्तक 'बैसिक ऑफ ड्रग डिस्कवरी' का विमोचन किया गया। इस मौके पर सोनीपत के आयुर्वेद रिसर्च फाउंडेशन के प्रमुख डा. अनिल कर्नीजिया ने कहा कि नए औषधि का निर्माण करना एक बड़ी प्रक्रिया है। औषधि निर्माण में गुणवत्ता, भूमिका एंव उसके प्रभाव पर विशेष ध्यान दिया जाता है। कई अच्छी कंपनियां वर्ल्ड हैल्थ ऑरगनाइजेशन के मानकों को अपना कर दवा बनाती हैं और अति-आधुनिक उपकरणों का उपयोग किया जाता है। वहीं, कनाडा के ओटावा विश्वविद्यालय के डिपार्टमेंट



एमिटी यूनिवर्सिटी में डाक्टर हरपाल सिंह को सम्मानित करते विधि के अधिकारी। (छाया-विमंगस)

ऑफ पैथोलॉजी एंड लैबोरेटरी मेडिसिन के प्रो. डा. हरपाल एस भुट्टर ने कहा कि पौधे बहुत ही साधारण से जटिल मॉलिक्यूल का उत्पाद करते हैं। पहले पेनिसिलिन भी माइक्रो ऑर्गेनिज्म से बनता है। उन्होंने कहा कि हर्बल उत्पादों के बारे में कुछ मिथक व्याप्त हैं, जैसे हर्बल उत्पाद प्राकृतिक होते हैं और उनको कोई दुष्प्रभाव नहीं होता। हर्बल उत्पादों को उपयोग 'सिद्धि' तक किया जा सकता है और हर्बल उपचार के सभी ब्रांड एंव खुराक की मात्रा एक जैसी होती है।

'हर्बल उत्पाद के दुष्प्रभाव नहीं'

नोएडा। सेक्टर-125 एमिटी विश्वविद्यालय में संगोष्ठी आयोजित हुई। इसमें छात्रों व शोधार्थियों को फार्मास्यूटिकल, हर्बल आदि के क्षेत्र में जानकारी दी गई। कनाडा के ओटावा विश्वविद्यालय के डिपार्टमेंट ऑफ पैथोलॉजी एंड लैबोरेटरी मेडिसिन के प्रोफेसर डॉ. हरपाल एस भुट्टर ने कहा कि पौधे जटिल मॉलिक्यूल का उत्पाद करते हैं। हर्बल उत्पाद प्राकृतिक होते हैं और उनका दुष्प्रभाव नहीं होता। एमिटी इंस्टीट्यूट ऑफ फार्मसी के प्रोफेसर डॉ. एस के राजपूत द्वारा लिखी पुस्तक 'बैसिक ऑफ ड्रग डिस्कवरी' का विमोचन किया गया। कार्यक्रम में पंजाब के नेशनल इंस्टीट्यूट ऑफ फार्मास्यूटिकल एजुकेशन एंड रिसर्च के फार्मास्यूटिकल टेक्नोलॉजी विभाग के डॉ. उत्तम चंद बनर्जी, आयुष मंत्रालय के सलाहकार डॉ. नवल कुमार वर्मा, एमिटी इंस्टीट्यूट ऑफ फार्मसी के निदेशक डॉ. तनवीर नावेद के साथ ही सिंफेथी इंस्टीट्यूट ऑफ होम्योपैथी बदरपुर, आइएएमटी कॉलेज ऑफ फार्मसी ग्रेटर नोएडा के छात्रों ने हिस्सा लिया। 22/01

एमिटी में संगोष्ठी का आयोजन

TECHNOLOGIES TRANSFERRED

- Herbal Mosquito Repellent - M/s. Tarini Herbal Company, Delhi
- Rootonics – M/ s. Sinon (Taiwan based company)
- Herbal Hair Dyes – Radico (NDA-MTA- In Process)
- Herbal Colors - M/s Shubh Laxmi Industries
- Biodegradable Plastic - MNC GXT Green Inc., Boston



AmiHerb: Glorifying Indian Herbal Heritage

A Mission on Medicinal Plants Research

INNOVATIVE HERBAL PRODUCTS MADE AT AMITY INSTITUTE OF PHYTOMEDICINE AND PHYTOCHEMISTRY (AIP&P)



HERBAL NAIL PAINT : Innovative product for maintaining healthy nail.

CAROTENOIDS: Helps in combating night blindness, Vitamin A deficiency.

SELF DEFENSE SPRAY: Innovative spray ; one drop of this spray leads to temporary blindness for 2 hrs.

INNOVATIVE HERBAL PRODUCTS MADE AT AMITY INSTITUTE OF PHYTOMEDICINE AND PHYTOCHEMISTRY (AIP&P)



FORMULATION FOR DAIBETES: Nutraceutical formulation for maintaining sugar level for daibetes patients.

FORMULATION FOR DIARRHEA : Nutraceutical formulation for effective treatment for chronic dairrhea.

FORMULATION FOR HAEMORRHOID: Nutraceutical formulation for overall immunity and for treatment of haemorrhoid.

HERBAL TEA: Reduces stress, boosts stamina, strengthens immunity, increases the body metabolism and helps in digestion of food. Rich in anti-oxidants it treats fatigue and tiredness.

HERBAL HAIR DYE: Pure herbal dyes prepared from different plant parts useful for colouring hair. Have shelf life more than 2 years.

HERBAL COLOURS: Pure colours prepared from traditional method using different hair parts. It can be utiized for gual, different cosmaceutical and pharmaceutical formulation.

INNOVATIVE HERBAL PRODUCTS MADE AT AMITY INSTITUTE OF PHYTOMEDICINE AND PHYTOCHEMISTRY (AIP&P)



HERBAL SHAMPOO : Innovative product for maintaining hair equal in strength and shine.

HERBAL MULTIPURPOSE CREAM: Innovative product for acne, pimples, rejuvenation and maintains requisite hydration of face.

SUNSCREEN CREAM: Innovative product for defense against harmful UV rays.SPF value of 30 and can be adjusted by increasing/decreasing concentration of active ingredient.

Inauguration of Herbal Garden and Medicinal Plants Distributions Centre Under the Project entitled, “Awareness and *ex-situ* conservation through establishing demo medicinal plants gardens, distribution of MAPs & extension activities”

Funding Agency: National Medicinal Plant Board (NMPB) Under the Ministry of AYUSH

Name of PI & Co-PI : Dr. Swati Madan & Dr. S K. Rajput

The project is aimed to create awareness about the identification and sustainable use of medicinal plants. The Herbal Garden and Medicinal Plant Distribution Center has been created with National Medicinal Plant Board (NMPB) AYUSH Ministry for production of medicinal plants, seedlings, plantlets, for distribution to primary schools, colleges, institution/ university. It will help in popularization of the usefulness of herbal plants and to conserve the traditional knowledge.

Herbal Medicinal Plants



Achyranthes aspera



Acorus calamus



Adhatoda vasica



Aegle marmelos



Aloe Barbadensis



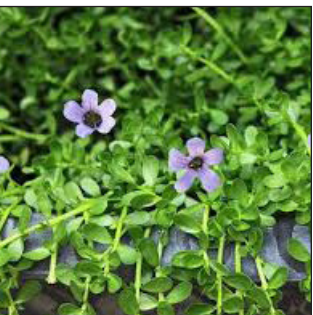
Anacyclus Pyrethrum



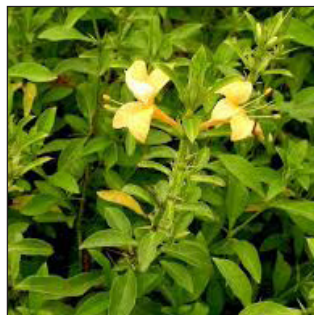
Argyreia nervosa



Asparagus racemosus



Bacopa monnieri



Barleria prionitis



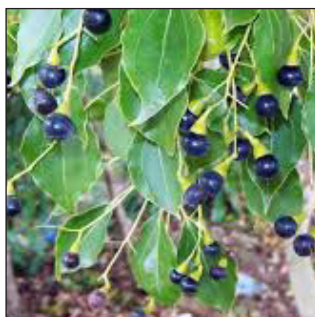
Carica papaya



Cassia angustifolia



Cichorium intybus



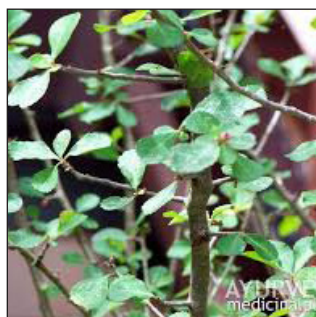
Cinnamomum camphora



Cinnamomum tamala



Cinnamomum zeylanicum



Commiphora mukul



Convolvulus pluricaulis



Curcuma longa



Cymbopogon citrates



Eclipta alba



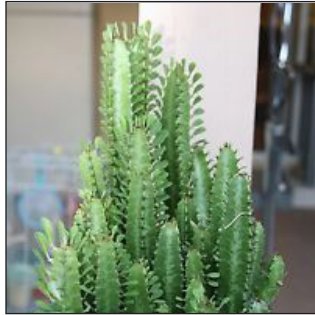
Emblica officinalis



Euphorbia hirta



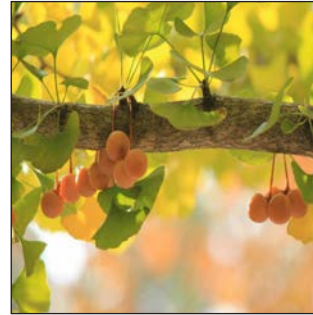
Euphorbia tirucalli



Euphorbia trigona



Ficus racemosa



Ginkgo biloba



Gymnema sylvestre



Jasminum officinale



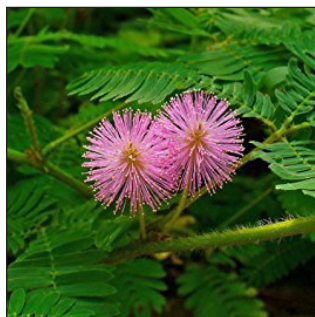
Kalanchoe pinnata



Lawsonia inermis



Mentha piperita



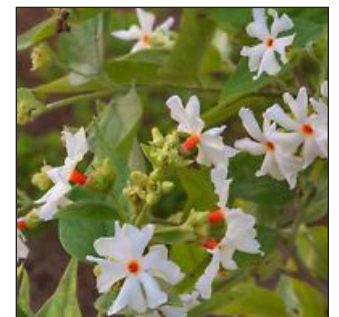
Mimosa pudica



Mucuna pruriens



Murraya koenigii



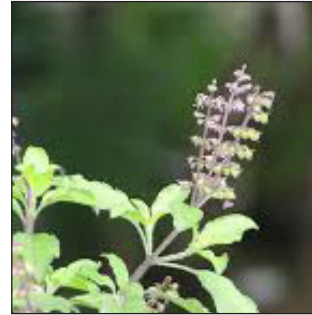
Nyctanthes arbor-tristis



Ocimum gratissimum



Ocimum sanctum



Ocimum tenuiflorum



Opuntia ficus indica



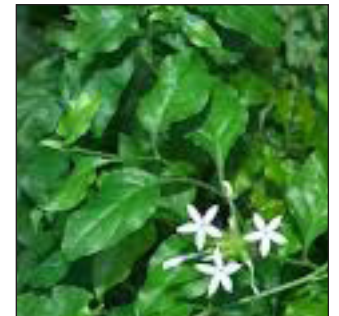
Phyllanthus niruri



Piper nigrum



Plantago ovata



Plumbago zeylanica



Plumeria rubra



Psidium guajava



Punica granatum



Rauwolfia serpentina



Rosa indica



Sansevieria trifasciata



Sansevieria zeylanica



Sesbania grandiflora



Solanum virginianum



Stevia rebaudiana



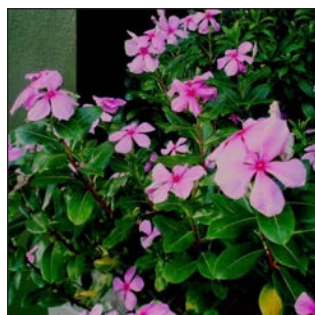
Syzygium cumini



Terminalia arjuna



Tylophora indica



Vinca rosea



Vitex negundo



Vitis vinifera



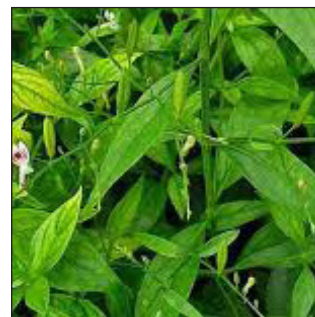
Abelmoschus manihot



Adansonia digitata



Alocasia macrorrhizos



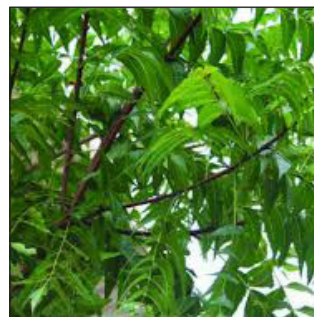
Andrographis paniculata



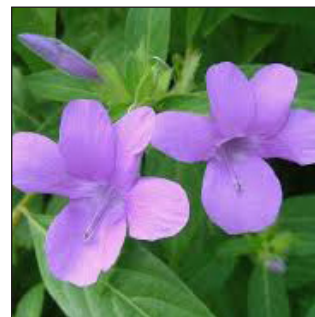
Annona reticulata



Aristolochia bracteolata



Azadirachta indica



Barleria cristata



Bixa orellana



Centella asiatica



Vachellia nilotica



Zingiber officinale



Chlorophytum comosum



Cissus quadrangularis



Cymbopogon martinii



Cyperus rotundus



Euphorbia tithymaloides



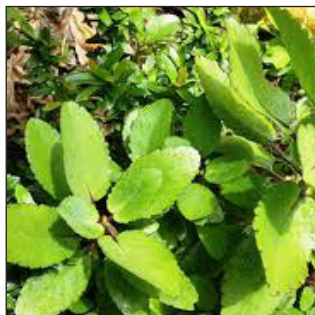
Gmelina arborea



Hemidesmus indicus



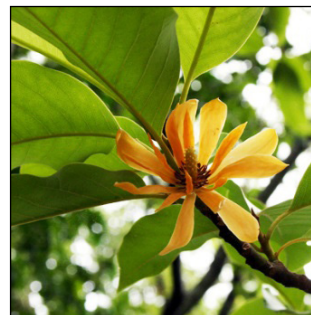
Barleria cristata



Bryophyllum pinnatum



Jatropha cuneata



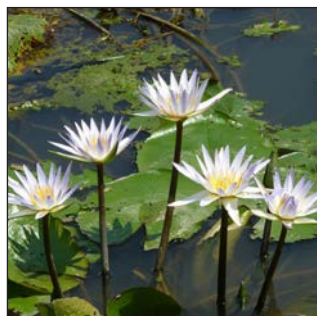
Magnolia champaca



Mentha longifolia



Moringa oleifera



Nymphaea nouchali



Plectranthus barbatus



Polyalthia longifolia



Prunus dulcis



Ricinus communis



Sambucus nigra



Santalum album



Senna auriculata



Tabernaemontana divaricata



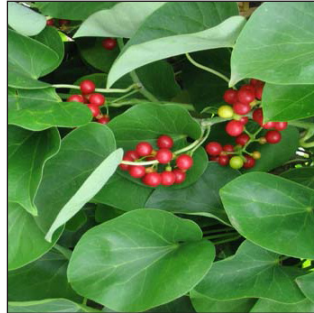
Tamarindus indica



Tephrosia purpurea



Terminalia chebula



Tinospora cordifolia



Trachyspermum ammi



Tribulus terrestris



Abrus precatorius



Abutilon indicum



Acacia catechu



Allium sativum



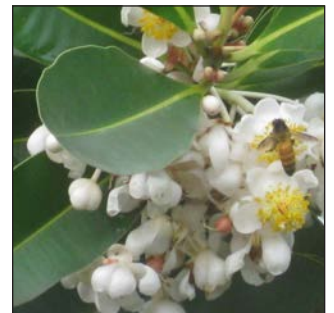
Aristolochia indica L.



Biophytum sensitivum



Boerhavia repens



Calophyllum inophyllum



View: Herbal Garden



AmiHerb: Glorifying Indian Herbal Heritage

A Mission on Medicinal Plants Research

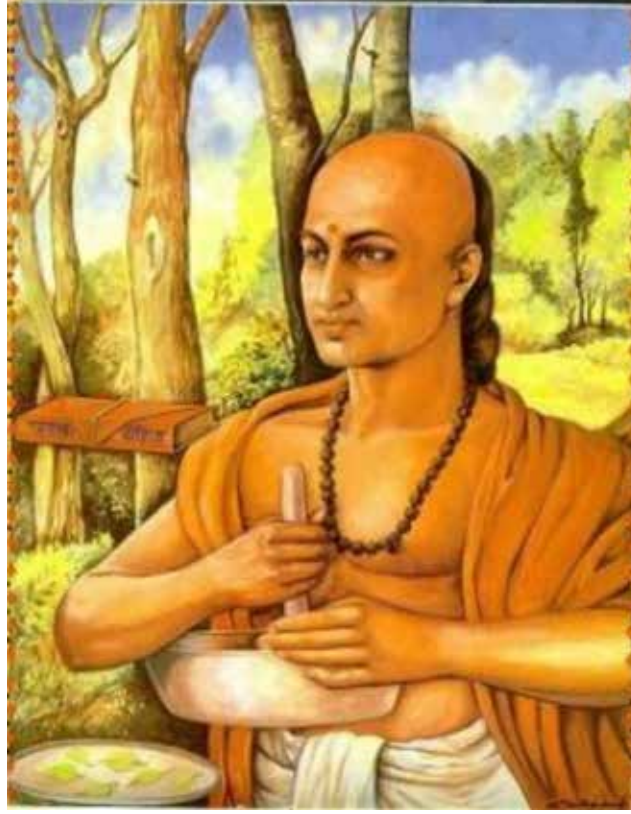
INDIA 2020 KNOWLEDGE SUPERPOWER

“And I can say with pride that my scientists, my researchers move with this confidence that they will do wonders and will add to the growth of the nation and this will help making India not only a knowledge superpower but also a general superpower”



- Dr. Ashok K. Chauhan





**Father of Medicine is an Indian.
CHARAKA...**

चिकित्सा चतुष्पाद -

भिषक् द्रव्याणि उपस्थाता रोगी पादचतुष्टयम् ।

गुणवत् कारणं ज्ञेयं विकारव्युपशान्तये ॥३॥



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