



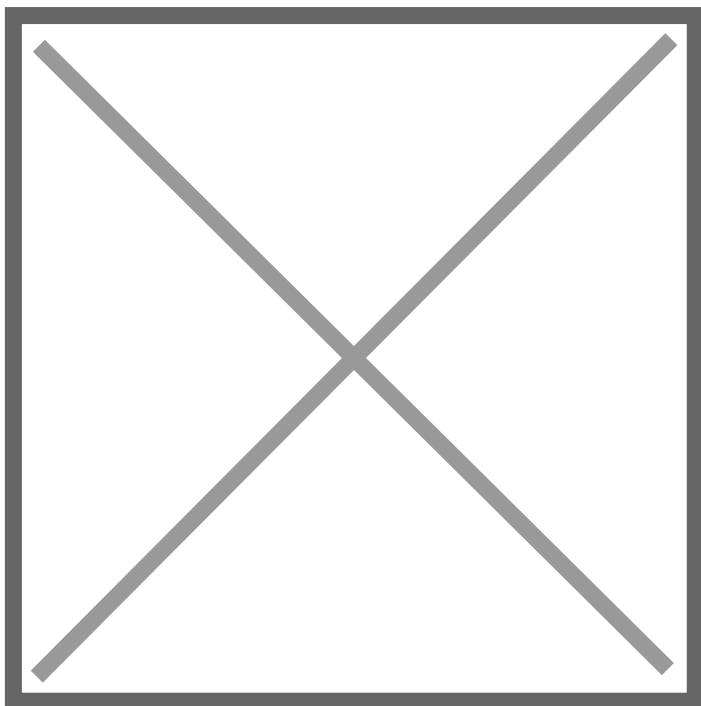
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Reaping Natures Bounty

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Reaping Natures Bounty

President Kalam and his Bio Garden

When the Indian President, Dr APJ Abdul Kalam visited CIMAP he was very keen to know about the research work being done here. At that time, the President felt the need of some thought provoking plants for his garden. He wanted plants that can deliver truckloads of compounds. And the scientists at CIMAP selected some aromatic and medicinal plants for his garden.

Expressing his thoughts about CIMAP's work at the President's house, Dr Khanuja said, "It is not just a herbal garden that we have created in the President's Mughal Garden. We have also set up a processing unit in that premises. The President calls it his Bio-Farm. Around 42 plants having medicinal, aromatic and industrial values are there. And we all love and respect his affection for plants."

The President also calls experts from CIMAP, including Dr Khanuja, to inform children about the magical qualities of plants. "He loves to go to the basics. Usually he informs children about some primary, though very important qualities of plants," said Dr Khanuja.

CIMAP is coming up with a range of herbal products. Its herbal floor cleaner 'Flomop' is all set to enter the Indian market.

What makes a laboratory popular among its community? Certainly the outcome! In case of the Central Institute of Aromatic and Medicinal Plants (CIMAP), its venerable image has been established due to its wide product range.

Cutting edge technologies, innovative ideas and societal needs are the priority focus areas at CIMAP. Informing about some recent developments at the centre, Dr SPS Khanuja, director CIMAP said, "CIMAP has come up with a good range of molecules like the bioenhancers. These can enhance the killing action of antibiotics by increasing their availability. Bioenhancers also improve the availability of vitamins. They can increase the efficacy of anticancerous drugs. Lysergol, Glycyrrhizin and Niaziridin are the three bioenhancers that have been developed at CIMAP. Animal trials have already been started."

The institute has also developed a few novel antibacterial and antifungal compounds. For example, "Oenostacin" which is active against vancomycin resistant *Staphylococcus epidermidis* from the roots of *Oenothera biennis*. 'Thymol' isolated from *Trychyspermum ammi* (Ajwain) to control multi-drug resistant (mdr) and complex resistant microbial pathogens. It has

formulated synergistic combinations of plant essential oil components and commercial antifungals to control candidiasis.

The various molecules, processes, herbal formulations, agro technologies and agro-product and process packages developed by CIMAP are available for licensing / transfer to industry and entrepreneurs.

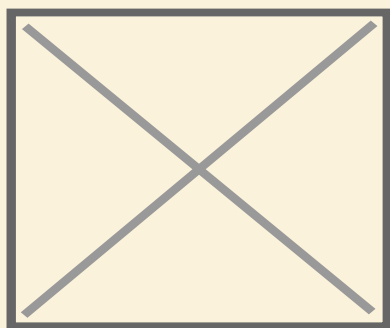
Broadly the research areas at CIMAP pertain to scientific and industrial facets of medicinal, aromatic and other important natural product yielding plants—right from development of new varieties to processing and marketing thereof. Development of agro technologies and chemical and processing technologies for economically important medicinal and aromatic plants, both indigenous and exotic, is an important goal of the institute.

Basic research in the areas of genetic resources, biotechnology, cytogenetics, phytochemistry, plant physiology, biochemistry, plant protection, pharmacognosy and molecular biology forms an important and integral part of the overall R&D program of the institute. And the latest improved varieties and agro technologies developed by CIMAP are available for farmers.

Dr Khanuja highlighted CIMAP's "Plant Geranium project" as one of its most important ongoing activity. "India is able to produce a meager quantity of about 5 tonnes geranium oil per year. Therefore, most of the 140 tonnes requirement of geranium oil of the Indian industry is being met through imports. In India, geranium is cultivated as a rain fed perennial crop in some pockets of cool agro-climatic conditions of South Indian hills.

Looking at the high demand of this oil for Indian cosmetic and perfumery industries, efforts have been made by CIMAP to introduce as an annual crop in the north Indian plains. Experiments conducted by CIMAP have suggested that it can be successfully cultivated in Uttranchal on an economical basis. The fragrant geranium oil can be successfully used in various formulations such as mosquito repellent, herbal skin cream, anti-stress oil, in addition to its uses in perfumery, toiletry and even pharmaceutical applications," informed Dr Khanuja.

"Synergize and standardize the herbal industry"



Plants form an indispensable part of Dr SPS Khanuja's life style. Completely in sync with plant psychology he enjoys talking about them not only within the scientific community, but also with school kids. In an exclusive chat with BioSpectrum Dr Khanuja talks about the future of herbal technologies.

What are the technologies that CIMAP has so far delivered to the society?

Till date, we delivered many technologies, products and services to the society. Today we are proud to have a wide range of products in the market. The major services that are available at CIMAP include, domestication and development of improved cultivars and agronomic practices for indigenous medicinal and aromatic plants. In addition, we have

also introduced exotic medicinal and aromatic plants that have commercial importance. In terms of dealing directly with farmers, we have developed process technologies and extension of know-how among the farmer's community, entrepreneurs and industry.

CIMAP's "Flomop" is all set to enter the Indian market. What is the current status of this product?

The development phase of "Flomop" is over now. We have also transferred this technology to an Indore based company—Sana Herbals Pvt Ltd. The market name of "Flomop" will be "BioShine". This product is for floor cleaning with some additional aromatic values. Within a couple of months this product will reach the Indian market.

What have been the recent developments at the National Gene Bank facility of CIMAP?

I am satisfied with the pace of work of this project. And we are witnessing good results. A repository of 303 pure compounds and 461 plant extracts from more than 80 medicinal and aromatic plant species are being maintained here to serve as reference materials. Rapid analytical procedures have also been developed for major biologically active ingredients of some important medicinal plants.

More than 182 accessions of 118 plant species are being maintained in the live gene bank at CIMAP. About 120 dried plant materials were added to the already existing herbarium for future reference. 9 extracts (these include Stigmasterol, Stigmasterol B-D-glucopyranoside from *Centella asiatica*, Oleanolic acid from *Panax quiquefolium* and Tricentanol from *Stellaria media*) have shown more than 90 percent feeding deterrence against the Bihar hairy caterpillar (*Spilarctia oblique*).

CIMAP operates in the niche sector of medicinal and herbal plants. At present the size of this industry is small in India, what opportunities you foresee in the future?

Due to our rich biodiversity and availability of high value herbal/medicinal plants, the Indian herbal industry holds many opportunities. These opportunities ranges from healthcare, daily use home-based product and many more. But to avail these opportunities, at the moment, we require synergy. A high level of synergy is essential between the industry, government bodies, research institutes and every stakeholder of the herbal industry of India. There is also a need to standardize the quality of Indian herbal products. As of now, we do not have much faith on herbal medicines; this common refrain is only because of lack of proper quality standards. We have to maintain single Indian standard pharmacopoeia. Educating the masses about these techniques is a most important area that we should focus on. After all awareness is a vital aspect of anything that reaches to the end users.

In your sessions and lectures you often raise the issue of spreading awareness about the latest technologies. What has been CIMAP's role in educating the masses?

I am a strong believer of spreading science. I also believe that the society has the right to know about the new sciences. At CIMAP, we always attempt to introduce our scientific work to the masses. Interaction with the users of science is ultimately an important aspect. These days at CIMAP, we are working on organizing a series of thirteen seminars on the topic of "Improved production technologies for economically important medicinal and aromatic plants". The first seminar of this series was held at Lucknow from May 24 - 27, 2004. We had a good gathering comprising of scientific community, farmers and those people who are interested in science.

Lucknow is becoming a hot destination for biotechnology. The Lucknow Biotech park project is among the top attractions of the city to attract biotech entrepreneurs. Your comments.

The Lucknow Biotech Park Project is a great initiative. The city always had an attractive image for the biotech industry. But this particular initiative will certainly act as active agent for establishing biotech business in Lucknow. A good synergy of four CSIR and three ICAR labs will be an obviously driver for the Lucknow biotech park. The government is also showing good interest in this project. This park will be a different and better attraction for the industry. There is a big difference between doing laboratory tests and industrial preparation. Scientists do not have the capacity to perform high volume tests at their level, which are indispensable for the industry. So the biotech park will be a single place where an industry can experience

CIMAP has five field stations of which two are in the Uttranchal region.

Dr Laiq-Ur-Rehman is the scientist in-charge of CIMAP's field station at Purara, Bhageshwar in Uttranchal. Informing about the "Geranium Biovillage Mission Project" Dr Rehman said, "So far, we have established 8 distillation units for the extraction of geranium for farmers. Within this short period of two to three years farmers are very satisfied with its performance. CIMAP's geranium variety is reaching the various districts and regions of Uttranchal including Nainital, Bhageshwar, Champavat, Almora, Chamoli and few others.

CIMAP also boasts of a national gene bank for medicinal and aromatic plants, which comprises medicinal and aromatic plants herbarium, conservatory, gene banking and repositories of extracts and chemicals supported by the CSIR and DBT.

Faiz Askari

Available Herbal technologies

- Bio-safe, eco-safe, skin friendly and effective against dry cracks "Cracknil", anti-crack cream.
- Formulation for scented mosquito repellent spray "Mospray".
- Balm for headache and sprain "Pain Chhoo..."
- "Swabee" a super strong surface disinfectant
- The coolest way to handdisinfection "Hankool"
- Broad spectrum antifungal cream "Skinpro"
- Herbal based broad-spectrum antifungal cream "Myconil".
- "Herbal tooth powder" a formulation effective against plaque formation and gingivitis