

Healing plants – some comments

In his article, Valiathan attributed the popularity of herbal drugs (HD) to 'their effectiveness, minimal side effects in clinical experience and moderate prices'¹.

At present, medical scientists even in the developed countries, regard HD as a potential candidate to complement western medicines. HD with exaggerated claims are, however, considered a potential threat to public health. The media all over the world is successfully used by the manufacturers of HD to make lofty promises of curing intractable ailments. The debate over the regulation of HD advertised in 'vague and sometimes misleading language' in the US was highlighted last year².

HD, in many cases, are released for sale without being adequately tested for toxicity. Detection of toxic materials in HD is reported in medical journals from time to time. Influx of such unregulated

HD into the market is a matter of serious concern not only in India but also in other countries of the world. Various dangerous side-effects reported to be associated with the use of HD were discussed earlier^{3,4}.

It is also not a fact that all HD are cheap. Recently some investigators from King's College Hospital (London) while reporting the detection of a steroid admixed with a Chinese herbal remedy for eczema, mentioned that many of their patients, after using the cream for some time, had to come back to the hospital because of their inability to bear the cost of the cream (up to 35 pounds per week)⁵.

It is our tendency to blindly embrace anything attached to our heritage. A policy for the regulation and rigid quality control of HD, is the need of the hour, to successfully exploit the vast resource of

the medicinal plants, available in this country.

1. Valiathan, M. S., *Curr. Sci.*, 1998, **75**, 1122–1127.
2. Stix, G., *Sci. Am.*, February 1998, pp. 22–23.
3. Chattopadhyay, M. K., *Curr. Sci.*, 1996, **71**, 5, and references therein.
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5. Keane, F. M., Munn, S. E., du Vivier, A. W. P., Taylor, N. F. and Higgins, E. M., *Br. Med. J.*, 1999, **318**, 563–564.

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NEWS

Technology Day invention awards for meritorious non-military inventions presented

On the anniversary of Pokharan-II (11 May), as part of 'Technology Day' functions held in several locations and scientific institutions throughout the country, the Minister for Science & Technology, Dr Murli Manohar Joshi gave away NRDC's awards for meritorious inventions at a function in New Delhi.

Significantly, in a welcome re-orientation away from recognizing and rewarding only military-related technology, six of these seven awards have recognized inventions in welfare-oriented (erstwhile 'appropriate') technology.

R. U. Kanitkar and Sandeepa Inamdar Kanitkar of Kumar Krishimitra Bio-Products (I) Pvt Ltd, Pune have been jointly awarded Rs 1 lakh for the development of a bio-inoculant in liquid form with plurality of strains used as liquid fertilizer and bio-foliar sprays for augmentation of crop yield.

R. V. K. Singh, Salil Kumar Ghosh and Bharat Bhushan Dhar of the Central Mining Research Institute (CMRI), Dhanbad have been jointly awarded Rs 75,000 for the development of inexpensive and suitable fire protective coating materials for preventing spontaneous heating in open cast mines. These low cost protective coating materials have been used effectively in the Jhingurdah Open Cast Project, Singrauli.

R. K. Datta, M. Baig, T. Selvakumar, M. B. V. Subbiah, B. Nataraju and M. M. Ahsan of the Central Sericultural Research & Training Institute, Mysore have been jointly awarded Rs 40,000 for the development of Vijetha – a silkworm body and rearing seat disinfectant. This disinfectant which is used for rearing of silkworm is very effective in prevention of all silkworm diseases.

Uma Sankar Sarma and Anita Ravindranath Das of the Central Coir

Research Institute, Alleppey, have been jointly awarded Rs 35,000 for the development of a process for reducing the period of retting of coconut husks and upgrading the quality of unretted green husk coir fibre by treatment with bacterial cultures. The 'Coirret' bacterial formulation is used for extracting coir fibre from the coconut husk. The Coirret reduces the retting period from 9 to 11 months to only 3 months.

K. P. Daga of Daga Hospital, Solapur (Maharashtra) has been awarded Rs 30,000 for the development of an intramedullary interlocking nail – a new design for joining fractures of the tibia (leg bone). This new intramedullary interlocking nail is not only cost effective but also reduces the healing time of fractures of tibia as also the operation time.

Surendranath Singh of Manipur Science & Technology Council, Imphal has been awarded a sum of Rs 25,000 for

the development of pedal-operated rice mill. The pedal-operated rice mill can overcome the drudgery of rural women.

R. K. Syal, Suresh Baburao Tale-

gaonkar, Suresh Krishna Saudi, Krishna Digambar Borole and Jayant Ramchandra Peshave of High Energy Materials Research Laboratory,

Pune have been jointly awarded Rs 75,000 for the development of combustible cartridge cases for tank gun ammunition.

TIFAC's Home Grown Technology Scheme yields commercial launch of rapid diagnostic kits

On 11 May, the first National Technology Day, Dr Murli Manohar Joshi, Union Minister for Science & Technology and HRD released a do-it-yourself advanced diagnostic kit for poultry and cattle farmers. Developed by Bharat Agro Industries Foundation (BAIF), Pune under the Home Grown Technology Programme of TIFAC/DST, the kit is being commercialized.

Cattle and poultry farmers are in constant dread of infectious diseases which lead to large scale mortality and economic losses. If the farmer is able to diagnose an infectious disease early enough, then veterinary professionals can be called immediately to vaccinate all the farm animal population to prevent spread of the disease.

A reliable, easy to-use and inexpensive diagnostic kit is an essential aid to the

farmer, to regularly screen cattle or poultry. At present, even for diagnosing the disease it is necessary to take an afflicted animal to a hospital, which is both expensive and effortful.

Under its Home Grown Technology (HGT) Scheme, TIFAC of DST supported BAIF's project with both financial support on 'soft' terms and as well as with technical inputs through a group of experts nominated by TIFAC.

Contemporary issues in olfaction

The meeting* on olfaction was an informal symposium attended by speakers from India and abroad. New work highlighting both the rapid advances in the field, and the contributions of olfaction in understanding major issues in neuroscience, were presented in six sessions.

Session 1: Receptors

Nirao Shah introduced the molecular aspects of mammalian olfactory transduction. Buck and Axel¹ found a family of 7-pass transmembrane olfactory receptors which are expressed in a scattered manner in the mammalian main olfactory epithelium, though a given receptor is restricted to one of four broad zones. Peter Mombaerts *et al.*² showed specificity of projection of neurons expressing a given receptor to specific glomeruli in the olfactory bulb. The current work relates to the expression of receptors in the septal organ (SO) which separates out from the main olfactory epithelium during development. Possible

roles of the SO include suckling and alerting behaviour. At least three serpentine receptors were found to be expressed in the SO. Interestingly, these receptors are expressed in a larger fraction (between 5 and 50% of neurons per receptor) of neurons in the SO. By contrast, only 0.1–1% of the neurons in the main olfactory epithelium express any given receptor. One of the SO receptors has been genetically targeted by Nirao Shah and Michelle Kim to reveal its projections into the olfactory bulb.

Leslie Vosshall introduced insect olfactory reception, with particular reference to *Drosophila* which is a very powerful system for studying chemoreception. It has excellent genetics, molecular biology, electrophysiology and behaviour. Despite these advantages, the olfactory receptors in *Drosophila* had not been identified even seven years after the mammalian receptors were cloned. This report³ describes a breakthrough in cloning *Drosophila* olfactory receptor proteins. Initially, a very large screen of an antennal-specific library in collaboration with Hubert Amrein revealed a single protein which met the criteria (expression in antenna/maxillary palp, 7-pass transmembrane protein) for a putative odour receptor. In collaboration with Andrey Rzhetsky and Pavel Morozov, this

was used to scan for homologous genes from the available data from the *Drosophila* Genome project, which is 10–20% complete. Several such genes were found, exhibiting very low homology but some conserved residues. Based on statistics of expression, there are an estimated 100–200 such genes in *Drosophila*. Expression of the receptors identified to date was not seen in larvae, but was seen in pupae. A large number of behavioural, genetic and electrophysiological studies are now feasible to further study *Drosophila* chemoreception.

Emily Troemel described olfaction in *C. elegans* which has only 302 neurons, but has a well-developed olfactory system. *C. elegans* detects hundreds of chemicals using only 11 pairs of chemosensory neurons and it also exhibits several kinds of olfactory responses, including attraction and repulsion⁴. Using a chemotaxis screen, an odourant receptor called ODR-10 was identified. ODR-10 is a predicted 7-transmembrane domain protein that is required for responses to the attractive odourant diacetyl. *C. elegans* may have about 500 chemosensory receptors in total, based on information from the genome project and expression studies. The ODR-10 receptor is subcellularly localized to the cilia of

*Held at Orange County, Coorg, 28 Nov.–2 Dec. 1998. Organized jointly by the Indian Academy of Sciences and the National Centre for Biological Sciences, Bangalore.