

10. Belkin, J. N., *Mosquitoes of the South Pacific*, Univ. of California Press, Berkeley, 1962.

VAS DEV

*Malaria Research Centre (ICMR),
P.O. Sonapur, Kamrup,
Assam 782 402, India*

Response:

Our studies and observations with *Drosophila* are through long-range hybridi-

zation experiments under controlled laboratory conditions. Results of the last one and a half decade have all the indications of immense potential of inter-racial hybridization to result in the evolution of new races, therefore raiation. Observations of Vas Dev are mostly from natural populations of mosquitoes, and it is compatible with our studies. In fact, in *Drosophila*, we are simulating the evolutionary events of raiation through the catalytic act of hybridization, that might have occurred

or is occurring in nature on an evolutionary time scale.

H. A. RANGANATH

*Drosophila Stock Centre,
Department of Studies in Zoology,
University of Mysore,
Manasagangotri,
Mysore 570 006, India*

Recognizing biodiversity and indigenous knowledge system under new intellectual property regime

The recognition of sovereign right of nations over their genetic resources is an advantage to the gene-rich yet technologically poor developing countries like India. These countries are being pressured under the World Trade Organization (WTO) to extend the scope of their IPR laws. This gives India which holds most of the genetic material and indigenous knowledge base an opportunity to get maximum benefit.

Our existing indigenous knowledge base is derived from the people who lived in forests over thousands of years. CBD recognizes the close dependence of many indigenous traditional and local communities embodying traditional lifestyles on biological resources and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biodiversity and the sustainable use of its components. Article 8, which provides for *in situ* conservation, requires each of the contracting parties, 'as far as possible and as appropriate... subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices' of indigenous and local communities, 'promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices', and encourage the equitable sharing of the benefits arising from instruments or standards which adequately recognize

and protect indigenous and local communities rights over their knowledge, innovations and practices. However, there exists no mechanism to determine the scope and nature of indigenous rights and the attributes of an effective benefit sharing regime.

The first case reported in India for IPR benefit sharing is the Kani tribe (of the Agastyar Hills, S. Kerala). Tropical Botanic Garden and Research Institute (TBGRI), Thiruvananthapuram, successfully developed an antifatigue drug from a local herb, *Trichopus zeylanicus*, marketed under the trade name JEEVANI. On the contrary, to cite development of Memory Plus from *Centella asiatica* by CDRI, Lucknow, tapping our traditional knowledge from *Atharvavedas* leads us to discuss the critical issue of benefit sharing mechanism. Traditional knowledge innovations have attributes of collectiveness and continuity over generations. These are different from the attributes for IPR protection, particularly, patent protection. What protection can be conceived for these? There appears to be growing interest in the screening of Indian genetic resources for commercial as well as academic purposes by multinational companies. There is a pressing need for formal arrangement of transfer of genetic material from one country to another under the Material Transfer Agreement (MTA). In the multilateral negotiations, India along with other developing

countries is arguing for disclosure of: (i) source of genetic material, and (ii) prior knowledge and adherence to the MTA in the patent application. As per CBD, the respective national government has the authority to determine access to genetic resources. The CBD provides that a donor country should be benefited through any of the three mechanisms: (i) participation in research (Article 15.6), (ii) sharing in the results of research and proceeds of commercial exploitation (Article 15.7) and (iii) access to and transfer of derived technology (Article 16.1).

IPRs do not cover the traditional knowledge base of local communities. This allows MNCs to exploit the resources and use the knowledge of indigenous communities to manufacture high-value products without acknowledging traditional communities. Robert Larsen, timber importer from US got a clearance for the pesticidal neem extract called margosan-0 from the US Environmental Protection Agency (EPA) and sold its patent to W. R. Grace & Co. This led to a furore in India especially in our scientific community, industries and NGOs which asserted that MNCs have no right to exploit our indigenous knowledge and research commercially. Similarly, a Japanese company has bagged the patent for a plant, *Gymnema silvestra* used as an anti-diabetic drug in traditional remedy in Assam. A recent landmark verdict of revocation of a pat-

ent on the use of turmeric as a healing agent prompts us to take steps in protecting traditional knowledge from being used for corporate profit. This case brings out the importance of proper documentation and public availability of records of traditional knowledge in a systematic manner. Normally a patent is granted for an invention if it fulfills the criteria of novelty, non-obviousness and utility. The patent on turmeric was revoked on the basis of novelty.

The fact remains that foreign patenting cannot be challenged if a written/published credible document is not available. We should, therefore collect and classify all documents bearing our traditional knowledge and wisdom on medicinal and other plants as well as our biological resources. These can be made available to US and European patent offices in the form of CD ROMs, an electronic form of Gadgil's People's Biodiversity Register², minimizing the chances of biopiracy. India has been elected the first Chairperson of the Standing Committee recently set up by the World Intellectual Property Organisation (WIPO) on Information Technology in relation to IPRs. All the 165 members of the WIPO and intergovernmental organizations like European Patent Office would pay attention to strength to IPRs in developing world. The Government of India has through a Gazette notification of 2 December 1998, promulgated the rules for filing patent applications under the PCT and

the rules have become effective from 7 December 1998. The Patent (Amendment) Ordinance issued on 8 January 1998, does not allow Indian Medicine System Patentable. Currently traditional knowledge systems fall under public domain and are not included in the Indian system of medicine. India should, therefore, include medicinal plants used by the tribals and indigenous community under Indian Medicine Central Council Act, 1970. In the 4th Conference of Parties (COP) to the CBD held in Bratislava recently, the focus was on the sharing of benefits derived from biological resources with indigenous and traditional communities. An *ad hoc* working group has been constituted to study Article 8 (J) and present a report before the next COP.

The Government of India is under obligation to the WTO – Trade Related Intellectual Property Rights (TRIPS) Article 70(8) and (9) to amend its patent act of 1970 so that it can meet international requirements. The Patent Amendment Bill of 1995 was a step in this direction. Having failed to amend the Patent Law, the US took India to the Dispute Settlement Body (DSB) for non-compliance of TRIPS agreement. India had to oppose the adoption of a panel report by the WTO's DSB in July 97, according to which India had failed to establish a mechanism in respect of obligations for product patents in Pharmaceuticals and Agriculture Chemicals. In response, India asked the WTO's

appellate body to review issues of law covered by the panel and interpretations developed by it relating to the establishment of a mailbox and the granting of exclusive marketing rights³. India should therefore, take necessary action to amend its Patent Law. We should also forge strategic R&D alliances with companies highly skilled in floating tradable goods. R&D institutions should encourage filing of patents. Currently India's share of the world patent is only 0.25%, while Japan has 25% followed by the US with 12%. Filing of patents in India has drastically improved recently. Currently 8,000 to 12,000 patents are being filed annually of which 80 to 90% are from abroad. India should adopt the policy of selective prioritization of research and scientific screening of plant products/natural resources-based products as the world market for pharmaceuticals, agrochemical and seeds exceeds \$250 billion.

1. Krattiger A. F. *et al.*, *Widening Perspective on Biodiversity*, Natraj Publishers, Dehra Dun, 1994.
2. Gadgil, M., *Survey of the Environment*, Chennai, 1998, p. 117.
3. *Indian Express*, New Delhi, 23/24 October 1997.

RAJENDRA DOBHAL

M. P. Council of Science and Technology,
Kisan Bhavan, 26, Arera Hills, Jail Road,
Bhopal 462 004, India

Banana and hypertension

I read with interest the comments by Balaram in the 'In this issue' section (*Curr. Sci.*, 1999, 76, 4) and the paper entitled 'Angiotensin converting enzyme inhibitors from ripened and unripened bananas' by Rao *et al.* (*Curr. Sci.*, 1999, 76, 86–88). I have certain reservations about the comments made in the 'In this issue' section that hormonal regulation of blood pressure is well understood. It should be noted that essential hypertension is still considered as a multifactorial polygenic disease without the shape. The statement that

the renin angiotensin system occupies centre stage is not strictly true. All hypertensives taken together are divided into low, normal, and high renin hypertensive groups. ACE inhibitors are effective in the hypertensive population because of their additional effects on other systems including local pressure peptide hormones in the endothelial and neuronal cells in the central nervous system. There are several metals which inhibit the ACE (Puri, V. N., *Biochem. Pharmacol.*, 1992, 44, 187–188). I do not know the elemental profile of a banana. It may

be possible that metals or some chemical constituents may be responsible for the weaker inhibitions of ACE. Banana is known to have high contents of 5-hydroxytryptamine.

Rao *et al.* have tested captopril as reference standard and 10 μ M dose level in the method has blocked 99% of ACE. However, it is well-known and established that captopril *in vitro* blocks the ACE in nano molar concentration and IC_{50} is determined and the comparison is made on molar dose to dose basis. Such data have not been reported and