

common in the landscapes of the Peninsula

In view of the past misuse of forest resources, it should be our prime endeavour to conserve the biodiversity. Use of a resource should match its reproductive potential.

*Myristica* spp. (nutmeg), after which some evergreen forest types of the Western Ghats had been named earlier, have become a rarity today because of the over-exploitation of the fruits. In Coromandel region old trees of Tamarind and *Borassus* (palmyra palm) dot the countryside but their saplings are seldom seen as the seeds are consumed in large numbers.

The handsome periwinkle herb (*Catharanthus roseus*), which once ran wild over the sands of Mahabalipuram-Pondicherry, practically disappeared once the medicinal value of its root alkaloid was discovered, the plants were uprooted ruthlessly without any attempt at their regeneration, which was a simple operation: scattering seeds from mature fruits.

Rural development has to be on sustainable lines.

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*Ranjit Daniels and Vishwanath Patil reply:*

We entirely agree with Dr Meher-Homji's remarks. This brief communication was aimed at stimulating all readers to consider such issues while proposing conservation plans for biodiversity without having to sacrifice on rural economy and development.

*Calophyllum inophyllum* – the Indian laurel, locally called *Pinnai*, *Honnai*, etc., in south India – is, as rightly pointed out, a common tree all over our coasts. It is traditionally grown in home gardens in southern India. However, the population of this species is gradually dwindling due to development in most of its original habitat, viz beaches and lowland canal banks. Trees of this species have been removed for a number of reasons. In the Kanyakumari district, where the senior author hails from, it used to be so common. In fact, there is a small part of the town of Nagercoil which in Tamil is called 'Pinna-kaatuvilai', meaning 'a grove of Indian laurel'. This area has lost much of its trees during the last 10 years or so. Although people locally still use the fruits of the trees for making domestic crude oil and relish the fragrance of its white flowers,

in many parts of the town they do not wish to have the tree anymore in their backyards since the older trees develop a lot of crevices and cavities in their trunks which are often colonized by the dreaded giant catleg spider (*Ischnocolus* species). This is a general observation meant only to highlight the subtle factors that can lead to the destruction of species and not a factor to be directly correlated as a significant threat.

Fruits of the Indian laurel are bat-dispersed and they grow easily and widely. Large nurseries can be raised by local villagers along the south Indian coasts. Replanting the species wherever appropriate will enhance the population and protect it and the rarer forest relatives in the long run

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## Comments on 'Melanophore indexing: A quick bioassay technique for detection of heavy metal toxicity' (*Curr. Sci.*, 1994, 67, 48–50)

Banerjee and Mukherjee<sup>1</sup> rightly observed the toxic effect of a heavy metal on the fish melanophores. Earlier too, many workers studied the toxic effects of heavy metals, pesticides and other chemicals on different fish and amphibian melanophores<sup>2–14</sup>. In all the reports<sup>1–14</sup> the toxic effect of the substance under investigation was evaluated by comparing the morphological characters of melanophores between control and treated groups, either by simple descriptive methods or with the help of statistical analysis. However, 'melanophore indexing' is a method which describes the morphological state of the melanophores numerically. Many methods are in practice nowadays. One

of the most well-known methods has been described by Hogben and Slome<sup>15</sup>. Others include the one described by Bhattacharya *et al*<sup>16</sup>, which is based on actual measurement of the melanophores. Therefore, the title of the paper<sup>1</sup> seems inappropriate with respect to the contents of the paper. Secondly, the authors claimed alteration in the population of melanophores, which may not be correct. The authors<sup>1</sup> may have counted the intact melanophores that remained unaffected by the toxic substance, while the others disintegrated but did not disappear. Therefore, population has not changed but the number of affected cells has varied.

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## SCIENTIFIC CORRESPONDENCE

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*T. K. Banerjee and D. Mukherjee  
reply:*

It appears that Ovais has overlooked the word 'quick' while reading the title of our paper (entitled Melanophore indexing: A quick-bioassay technique for detection of heavy metal toxicity), where we have only claimed that melanophore indexing (morphologi-

cally/statistically) can be used as a bioassay technique for evaluating quickly the toxicity of certain heavy metals. This technique does not need much expertise and facility. Further, we have studied the lysis of melanophores of exposed fish serially at regular intervals, morphologically as well as statistically, and found that great lysis takes place after 96 h of exposure, when counting of individual melanophores was not possible. It appears that Ovais has failed to note that we have compared the experimental values not only with control ones, but also with different treated groups according to Duncan's multiple range test (Table I of our paper). This we had done because we have noted that certain cells of fishes have the ability to regenerate even under continued acute stress of xenobiotics<sup>1-5</sup>, before they again show degeneration or lysis. That is why these cells show cyclic alterations of increases followed by decreases in their density and activity. This was not described by many workers and hence they did not care to study serially the alterations induced by various xenobiotics at different stages of exposure. Without knowing the stage of increased or decreased density, how can one know whether the sampled tissue represents increased or decreased density of the cell or tissue? Hence, results can always be misleading. So one must study the toxicopathological alterations systematically as suggested by us

We agree that there are several well-known methods (many more than what Ovais cited). But there is always scope

for accepting/rejecting/improving/refining of any or all of them.

The sentence 'The authors...' is hypothetical and perhaps contradictory. Ovais may consult the following papers in this context:

- 1 Visconti, M *et al*, *Pigment Cell Res*, 1989, **2**, 213-217
- 2 Yoshizaki, K, *Jpn Soc Sci Fish*, 1979, **45**, 305-311,
- 3 Karlsson, J O, *Atla*, 1990, **18**, 201-224
- 4 Grundstrom, N, *Zool. Sci.*, 1988, **5**, 959-964

We must stress here that lysed/destructed/dead cells do not form a part of an active population. This is true even for disintegrated/dead human bodies.

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