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Essential oils in turmeric leaves

Turmeric, the yellow colouring agent found in diverse recipes of Indian cuisine, also has use as a traditional medicine. On **page 1312**, Behura *et al.* describe the composition of essential oils obtained from leaves of two varieties of turmeric plants, *Curcuma longa* L. and *C. aromatica* Salisb. These samples were collected from research stations in Orissa and the hydrodistillate of the chopped leaves was analysed using chromatographic methods. The major compounds are alpha-phellandrene and C-8-aldehyde in *C. longa*, and 1,8-cineole and linalool in *C. aromatica*. Results show that the exact composition of the leaf oil depends on the geographical and climatic conditions; the varieties from Nigeria and Assam differ significantly from the cultivars reported in this paper.

Nori in India

Sahoo *et al.* (**page 1313**) introduce the readers of *Current Science* to *Porphyra*, known as 'Nori' in Japan, which is a type of marine alga, popularly used as a wrapper in the Japanese delicacy 'sushi'. It is also the source of the pigment phycoerythrin. Its commercial importance calls for large-scale cultivation, making cultivation of *Porphyra* one of the largest aquaculture industries in Japan. *Porphyra* has also been used in integrated aquaculture and pisciculture systems to reduce excessive nitrogen and phosphorus from the medium. The genus *Porphyra* is simple in morphology, growing 5 to 35 cm in length and can be round, obovate or linear in shape. Its heteromorphic life cycle alternates between the gametophyte macroscopic thallus and a diploid filamentous sporophyte, also called the conchocelis phase. The plant can reproduce both by sexual and asexual modes of reproduction. The conchospores, that give rise to young thalli, are usually released into the sea for large-scale cultivation in the wild. Large-scale cultures of free conchocelis in bioreactors can replace the labour-intensive cultures in the wild. Laboratory cultures also permit the manipulation of the life cycle by modulating the temperature and photoperiod. Several studies show that the duration of the life cycle could vary between less than a month to several months, depending upon the environmental conditions. Availability of several pure lines, the small genome size (about 2.6×10^8 bp), only three chromosomes and a short generation time of one to a few months make this plant ideal for experimental genetics. The system has the potential to become the *Arabidopsis* of higher plants. With seven species being reported from India, Nori can no longer remain only a Japanese delicacy.

Biological control: leech on snail

North American sewage snails, *Physa acuta*, are now as abundant in the sewage gutters in Kolkata as they are in other parts of Europe, Asia, Australia and Africa. They destroy greenery and crops by feeding on vegetation, and also disrupt the sewage by blocking the filters. Aditya and Raut (**page 1317**) explore the option of using leeches, *Glossiphonia weberi*, that suck the fluids of the snail destroying the entire population. The laboratory experiments suggest that 'rate of predation increases with the increasing size of the predator'. The authors are hopeful that leeches can be successfully used to control the menace caused by the snails.

Man and mangrove

Upadhyay *et al.* (**page 1328**) draw attention to the urgency of maintaining the mangrove ecology, despite the greed of men. Indian mangrove forests include the world's largest, in the Gangetic Sunderbans, West Bengal, River basins of Brahmaputra, Mahanadi, Godavari, Krishna and Kaveri are also rich with mangrove biodiversity. According to estimates, mangrove forests are found in 117 countries in the world, India contributing about 3% of the world mangrove area. According to one estimate, the mangrove forest reserve in India dwindled from over 4500 km^2 in 1953 to below 3000 km^2 in 1989. Mangrove forests are rich economic sources of fuel wood, timber, fodder, dyes, chemicals, honey and indigenous medicine. Expanding human population encroaching upon the forest areas, indiscriminate over use of supply of forest resources and natural causes like erosion and deposition, have affected the Indian mangrove ecology adversely. The authors present several strategies to preserve the mangrove heritage in India.

Chaperonins

Bhutani and Udgaonkar (**page 1337**) review the specific functioning of GroEL and GroES as chaperones in enteric bacteria, *Escherichia coli*. The discovery of chaperonins added a new dimension to the problem of folding proteins *in vivo*. While Anfinsen's dictum that primary amino acid sequences contain all the information necessary to permit protein chains to fold correctly, the chaperonins act as watchdogs along the folding pathway, preventing unproductive events like aggregation of partially folded structures.

Seed gene bank

Phartyal *et al.* (**page 1351**) review the option of maintaining seed gene banks as a strategy for *ex situ* conservation of rare and valuable forest resources in the face of indiscriminate abuse, and destruction by biotic and abiotic factors, leading to virtual extinction. The authors hope that vulnerable plants can be preserved by seed storage, since *ex situ* banking might be safer in view of the natural variations in environmental conditions.

High throughput NMR

Atreya *et al.* (**page 1372**) report an improved algorithm for magnetic resonance assignments for the high throughput determination of structures of proteins. Test cases with four proteins within molecular weight ranges 18–42 kDa demonstrate the efficacy of the improved algorithm in comparison to the older version.

The clue from ethanol

The mechanism of incorporation of naked DNA into bacterial cells, naturally or by artificial means, has been studied for decades. Sarkar *et al.* (**page 1376**) discuss the putative role played by ethanol during the entry of DNA into the *Escherichia coli* cells. Based on the differences in the transformation efficiencies in the presence and in the absence of ethanol during transformation, the authors argue that ethanol perturbs the cell wall facilitating the entry of plasmid DNA into the cell. Stability and shelf-life of the competent cells under storage conditions, and variation of transformation efficiency with the size of the DNA incorporated would elucidate the mechanism of transformation further. Apparently, ethanol specifically leaches out lipopolysaccharide layers, facilitating entry of DNA into the cell. Further physical evidence, for example electron microscopic studies, is required to confirm the hypothesis.

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