In this issue

Herbal medicines for diabetes

Diabetes mellitus is one of the leading killers in the developing world. According to an estimate by the World Health Organization, the number of diabetics will increase from 140 million to 300 million in the next 25 years (http://www.who.int/ncd/dia). Most patients in the developing world cannot afford the medical costs. Currently, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDKD), USA recommends insulin shots and seven different categories of pills for treatment of diabetes. No cheaper alternative is in sight. The US Food and Drug Administration provides no specifics on herbal alternatives. Commenting on alternative therapy, NIDDKD notes: 'Alternative therapies are treatments that are neither widely taught in medical schools nor widely practised in hospitals .... Many alternative treatments remain either untested or unproven through traditional scientific methods' (http://www.niddk.nih.gov). The website recognizes acupuncture as an alternative therapy, but failed to catalogue herbal alternatives. Among the rural alternatives, an extract from the plant *Pterocapus marsupium* (Vijayasar in Hindi) is known to regenerate damaged beta-cells in experimental assay systems. Water-soluble alcoholic extracts of *Gymnema sylvestre* (Gurmar in Hindi) have also been reported to release insulin from beta-cells in different animal models. Several other Indian plants such as *Zizyphus jujuba*, *Trigonella foenum-graceum* (Methi in Hindi) and holy basil (Tulsi in Hindi) are traditional sources of antidiabetics. 'Plant insulins' – flavanone and flavanol glucosides – are obtained from a Brazilian plant, *Myrcia multiflora*. Tiwari and Rao (**page 30**) review these exciting opportunities for alternative therapeutics derived from traditional medicinal plants.

S.G.

Micelles

Micellar structures are interesting models for self-aggregating enclosures in aqueous medium. Joshi *et al.* (**page 47**) report the effect on micellar size of several surfactant molecules (dodecyl sulphates) as the counterion on the micelle varies in the group of alkali metal ion series and the dodecyl tail. The counterion usually stays near the micellar surface. Small Angle Neutron Scattering (SANS) data using a SANS diffractometer at the Dhruba Centre, Trombay were used to calculate the micellar size, aggregation number and the fractional charge on the head group, assuming a monodisperse micellar system. Analysis of the experimental data suggested that the micelle size and the aggregation number increase as the counterion is changed from Li through Cs; while the head-group charge decreases in the same direction.

S.G.

Cephalochordate ubiquitin

Ubiquitin (Ub) is a highly conserved 76-amino acid protein, ubiquitously found in eukaryotes. Liu *et al.* (**page 50**) report the cloning and sequencing of a ubiquitin protein, AmphiUbf80, from a cephalochordate amphioxus. Amphioxus (literally meaning sharp at both ends) is typically a small marine animal pointed at both ends with fins, but with no limbs or definite brain. Adult specimens of amphioxus *Branchiostoma* were collected from the sea, cultured in aerated tanks in the laboratory and then the total RNA was isolated from the gut of the organism. Later, adult gut cDNA library was constructed, cloned into *E. coli* vectors, and sequenced. The sequence comparison with available similar sequences confirmed that Ubs are highly conserved throughout evolution. Amphioxus Ub sequences appear to be equidistant from invertebrate and vertebrate sequences, justifying the branching-off from the chordates in the phylogenetic tree.

S.G.

Fluctuations follow rules

An understanding of fluctuations of water level in aquifers is important in the management of groundwater resources. Water levels could possibly vary due to evapo-transpiration, ocean tides, rainfall, pumping of ground water, etc. In addition, the earth tides caused by visco-elastic deformation and dilatation of the earth, primarily due to specific positions of the moon and the sun, could generate cyclic fluctuations. On the basis of observations of the variations in the water level in an aquifer in Hyderabad, and the time series analysis of the variations of earth tide and other parameters, Maréchal *et al.* (**page 61**) conclude that water level in the aquifer fluctuates with a cyclic periodicity in a direct linear relation with the tidal fluctuations.

S. Ganguli