In this issue

More than Money in Honey

Wound healing, anti-inflammatory

The Tualang Tree – *Koompassia excelsa* – is one of the tallest trees in Asia. It grows to about 80 meters. In the forests, you may only see its fluted buttresses and smooth, white bark. Branching starts after about 30 meters – far above most other trees. So, quite often, you may not even notice the disk-shaped honeycombs which hang from its horizontal branches.

Asian rock bees – *Apis dorsata* – seem to prefer this tree to nest. The honeycombs can grow undisturbed at this height. Multiple nests can be seen on some branches, some measuring up to 6 feet across and housing up to 30,000 bees. The vantage view point high up in the forest allows the bees to collect honey from a large number of sources. No wonder, then, that the honey collected from these high places seems to have many medicinal properties. Literature, both folklore and scientific, has been extolling the virtues of Tualang Honey: antimicrobial, antimutagenic, antioxidant, anti-inflammatory, anti-diabetic, anti-tumour… the list grows longer with research.

Commercial exploitation of the honey for its medicinal uses is highest in Malaysia where a larger number of Tualang trees are found – especially in the rainforests of the country's North Eastern regions. Scientists from Universiti Putra Malaysia provide us with a review that focuses specifically on the anti-inflammatory and wound healing properties on **page 47** of this issue.

Quiet Flows the Vaigai

But louder hum the mosquitoes

The Vaigai river originates in the Cumbum valley of the Western Ghats. Racing North-West and then turning South, it flows more than 100 kilometers and slows down by the time it reaches Madurai, one of the oldest cities in Tamil Nadu. And where there are lentic water bodies, mosquitoes breed.

Since Madurai is the second largest in terms of population in Tamil Nadu, the mosquitoes have enough human blood to feed on. The happy hum of mosquitoes becomes louder than the gurgle of water. The people there are not happy with the situation.

Mosquitoes are known to transmit more than a dozen diseases, some very fatal. Mosquito larvae of several species are found in the river. But which species of mosquito are more abundant? Are they the same in urban, semi-urban and rural areas? Does the number vary in pre- and post-monsoon seasons, when the flow of water is slower? Do the numbers change depending on human and cattle wastes that flow into the river? Since male mosquitoes are primarily plant-sap feeders, would there be a difference in the numbers in terms of the aquatic and terrestrial plants found in the area? Does the pattern remain the same year after year? These questions are important for taking pre-emptive action on mosquito-borne diseases in the area.

In order to estimate the threat to human populations, scientists from the Centre for Research in Medical Entomology and the Department of Plant Sciences, Madurai Kamaraj University, teamed up and collected the data for two years, trying to answer the questions. And now, on **page 57** of this issue, they present their results.

The data is useful for public health officials, and even concerned citizens, to take necessary action. And the methods used in the investigation are useful for scientists to repeat the study in other rivers. Turn to page 57.

A Model for the Mosquito

Fruit fly in focus

Mosquitoes were here on earth much before humans entered the picture. In fact, they were here before mammals and birds, probably feasting on the now extinct dinosaurs. So they have had time to evolve along with us, to develop a taste for human blood. The many odours that emanate from us are clues for the little creatures to home in on us.

Drosophila, the fruit fly, might have evolved after modern humans. And it does not share the food habits of mosquitoes. But it seeks food through chemo-sensation just like the mosquito.

Both mosquitoes and fruit flies share the mechanism of seeking food using the sensory organs in their antennae as well as in their labial and maxillary appendages. Since the *Drosophila* is a much studied laboratory animal, perhaps it could be used as model for the host-seeking behaviour of mosquitoes. Since there are more *Drosophila* labs than mosquito labs, and many more scientists working on fruit flies than on mosquitoes, perhaps a large number of chemo-attractants and repellents can be identified to tackle the disease vector in a shorter time…

As an initial step in provoking scientists working on fruit flies and mosquitoes to collaborate, scientists in CCMB, Hyderabad, explore the neurons that detect CO_2 in both mosquitoes and fruit flies in a General Article on **page 44** of this issue.

Pulsed Protons to See Oil in Seeds

Oilseed production in India has gone up in the last two decades. From a net importer of oilseeds in the 1980s to a net exporter in the 1990s to a net importer again in this decade, oilseed production has yo-yoed. Since the production cannot meet the rising demands, the Government had to liberalize imports.

To become self sufficient in cooking oil (as well as in oil for soap, paint and other oil-dependent industries), there is now a choice of the various high yielding cultivars. To test the oil content in the seeds, one could extract the oil from the seeds of different cultivars and compare them. But then, it is a destructive method of testing, consuming time and effort. Though near-infrared spectroscopy has been used for testing the oil content in seeds, it is not very accurate since near infrared cannot penetrate the seeds. Nuclear magnetic resonance spectroscopy has recently emerged as a technique to test the oil content of seeds in a non-destructive, accurate and easy manner. However, the temperature of the seeds at the time of testing is a parameter that affects the results. So it demands calibration of the NMR spectroscopy under different seed temperatures. This is what scientists from Hyderabad have done, to present the results on **page 73** of this issue.

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