

EDITORIAL**MEDICINAL PROPERTIES OF NEEM TREE (*AZADIRACHTA INDICA*)**

An article appearing in this issue of the journal on neem oil by Nyamwange *et al.* forms the basis of this editorial. Neem tree is to Indians what ginseng is to Chinese. It was widely used in India's Ayurveda and Unani systems of medicine as far back as 2000 BC. Ancient Indians referred to neem as *Sarva Roga Nivardini* meaning 'the cure of all ailments'. In the Sanskrit, neem is called *Arishtha*, meaning 'reliever of sickness'. To the ancient Indians, neem was an omnipotent panacea, a type of village dispensary. All parts of the plant are used, a unique feature rarely encountered in medicinal plants. In more recent literature, neem is described in superlative terms such as 'wonder tree' and 'a tree for solving global problems'. In his book, *Living in the Environment: Principles, Connections and Solutions*, page 213; George T. Miller observes that 'The neem tree would eventually benefit almost everyone in the planet'. The tree is versatile and can be used for quick reforestation of degraded dry lands. Although the tree originated in India, it is now being grown in more than 50 countries worldwide. In East Africa, it is known by the Swahili name 'Mwarubaini' implying that it can be used to treat 40 diseases.

Neem oil has been used as medicine for itching, all skin diseases, leprosy, blood disorders, worm infestation, diabetes, haemorrhoids, dysentery, jaundice, Vomiting, all types of fever, sexually transmitted diseases and malaria. Neem oil is occasionally mixed with other oils. For example, several skin care products in the market contain neem oil mixed with oil from *Karanja (pongamia gambra)*, another important Indian medicinal plant. A worldwide foundation known as Neem Foundation promotes the use of neem products.

The number of patents on neem products in the USA, Japan, Australia and India are 54, 35, 23 and 14 respectively. Out of the 54 patents granted in the USA, 31 are for crop protection. During the last 20 years, more than 2000 research papers have been published on neem in journals, books and conference proceedings. More than 150 chemical components have been isolated from neem but only a few of them have been fully characterised. For example, irocin A, gedunin (a limonoid) and quercetin (flavonoid) were found to be potent antimalarials which act on asexual (trophozoites, schizonts) and sexual (gametes) forms. These antimalarial compounds have been shown to be effective against chloroquine-resistant malaria parasites. Results of animal experiments in which mice, duck and chicken were used proved inconsistent with some showing no malaria activity. For a medicinal plant used for thousands of years, results of *in vitro* experiments and those obtained with laboratory animals should not take precedence over clinical observations in humans. In other experiments, antimalarial effects of neem appear greater in the body than on petri dish leading to speculation that it may stimulate the immune system. A more plausible explanation is that the natural chemicals in neem are converted into more active metabolites in the body. It is claimed that drinking neem teas or chewing a few neem leaves a day reduces the possibility of contracting malaria. A common prescription is one glass of neem tea three times a day for about one week. The tea is made by boiling 30 g of leaves in 3 litres of water for about 20 minutes.

There is conclusive evidence that neem extracts repel mosquitoes, biting flies, sand flies and ticks. Several insect repellent dermatological products are in the market. Neem seed cake, a by-product from oil extraction processes has been used as organic fertilizer. Clearly, such use would only be of sentimental value in those who promote organic farming as it would not be possible to get enough of the material to make it commercially viable and replace synthetic fertilizers. When all is said, there is compelling argument to accept neem as a wonder tree or at the very least unique among medicinal plants.

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