

Article 7

Nature helps, from lab to the market

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Traditional or natural medicine is as old as human development of cultural activities. The insight into real or believed activities of plants or minerals was surely obtained by chance as mankind searched for their daily food. Some open-minded individuals of the wandering groups of *Homo erectus* and later the dominant *Homo sapiens* – modern man dating back 100,000 years – noted by experience that eating a particular plant or fruit had good or bad effects. At first this knowledge was only orally transmitted among groups of nomadic humans and later – after development of writing in the early high cultures (e.g., the Babylonians, the Egyptians, or Greeks) – fixed in early textbooks of Herodot, Hippocrates or Plinius; so that there exist in the literature many lists of regional plants that may be used for therapeutic purposes (Tagboto and Townson 2001; Rates 2001; Mehlhorn et al. 2005; Hussain et al. 2008; Semmler et al. 2009; Oliveira et al. 2009; Schmahl et al. 2010).

Some of these plants have obtained worldwide importance and are used today either still in traditional formulations or in highly sophisticated pure synthetic recombinations. Examples include quinine (found in the tree *Cinchona* sp.). Another example is the neem tree, this fast-growing tree was first described by the French botanist Adrian Henri Laurent de Jussieu in the year 1830 as *Azadirachta indica*.

The book by Schmutterer (2002) includes reviews and experiences of more than 55 scientists reporting that oils of seeds, crushed leaves, different extracts of leaves, bark pieces, and/or seed have an extremely wide range of activities, which probably led in traditional medicine to the admiring descriptions of the neem tree as the “wonder tree,” “holy tree,” or “all-can-treat-tree.” Before 1900, when the later Nobel Prize winner in medicine (1908) Paul Ehrlich (1854–1915) and other international colleagues started to introduce chemotherapeutics, all medicaments and medicinal remedies had been developed from plant extracts (Brown 1996). Some of those plants had been used for many centuries, and even today many of them are known and used as “medicinal plants” (Schmutterer 2002; Fajimi and Taiwo 2005; Baumler 2007). Since long ago, such extracts have also been used against endoparasites (e.g., worms) and ectoparasites (such as mosquitoes, ticks, mites, flea, bugs etc.) of humans or animals (Athanasiadou et al. 2007; Amer and Mehlhorn 2006). With respect to skin penetration by blood-sucking ectoparasites, many plant extracts have been screened either for a

defined biocidal (killing efficacy) or for strong repellency activity (prohibiting arthropods from landing on a host). In increasing numbers, papers appear daily that describe hundreds of plant extracts, which are more or less well characterized. However, in most cases, this knowledge remains at a rather theoretical level, since the authors do not try to develop a product from their findings (Oladimeji et al. 2000; Michaelakis et al. 2009). Such a process is often blocked just for legal reasons:

1. Research results cannot become the basis for a patent, had their publication appeared before a patent was submitted. Exclusivity, however, is needed since no trade company will develop and distribute a product that can be produced easily by another company.
2. The regulations of the European Community have placed repellents onto list 19 of biocides and, in addition, limited the number of compounds on this list. Therefore, it is rather difficult and very costly for newly detected plant ingredients to be produced and officially registered among those already known compounds within a reasonable time. On the other hand, list 18 of the European community includes compounds that act as insecticides or acaricides and are characterized as biocides, too; their number is also reduced.

The neem tree and its fruits contain numerous ingredients that can become eluted by different methods (acetone, aqueous, methanolic, ethanolic, chloroform, acetonitrile extracts etc.) which deliver different amounts and different components of the typical contents of this plant.

Besides its famous “all healing” efficacies neem trees are used worldwide in fruit farms to repel pests from monocultures, they are eaten as vegetables, sold as components of cosmetics, and occur in Ayurveda products and Ayurveda activities. Thus, a worldwide industry has been developed around the rearing of this tree that is known in India also as “Holy tree” or “Nature’s drugstore.”

Two products were developed and are distributed as “Picksan Lice Stop” (Fa. OTC Pharma, Gorinchem, The Netherlands) and as “Wash-Away Louse” (Fa. Alpha-Biocare, Dusseldorf, Germany and Fa. DEEF, Saudi Arabia). These products have proved to have high effectiveness against head lice (Abdel-Ghaffar et al., 2008, 2009, 2010; Abdel-Ghaffar & Semmler, 2007).

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