

Medicinal and Ethnobotanical Utilities of Neem (*Azadirachta indica* A. Juss.)

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Abstract: Considered a mainstay of South Asian folk medicine over centuries and still of interest to scientists today, neem, *Azadirachta indica* A. Juss., has a long tradition of being a central subject in folk medicine. This review is an assemblage of botanical, phytochemical and ethnobotanical data around the species, especially highlighting the traditional systems of Ayurveda, Siddha and Unani, where almost every component of the tree, including the bark and seed oil, has been given a medical use. Modern pharmacology screening has already started to support most of these applications: extracts and isolated limonoids in the form of azadirachtin, nimbin and nimbolide are antimicrobial, antioxidant, anti-inflammatory, anti-diabetic and anti-cancer in the laboratory and in animals. Applications outside the field of human medicine such as pest control in agriculture, veterinary practice and formulation of cosmetics are also taken into consideration in the review, and the fact that clinical validation in humans is limited, and that toxicity, especially in children who are exposed to neem oil, has been observed. Lacuna in standardization, dosage and long term safety information are the areas of priority in future research. It is hoped to provide a fair representation of what is actually known, what is realistic, and what remains that which requires stringent research before neem-derived compounds can make the transition to data-driven folk remedy and become a fully legitimate therapeutic agent.

Keywords: Neem, Ayurveda, *Azadirachta indica*, Pharmacology, Ethnobotany etc.