NEEM (AZadirachta INDICA): TRADITIONAL MEDICINE FOR HOUSE-HOLD REMEDY AGAINST VARIOUS HUMAN AND ANIMAL AILMENTS: REVIEW

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ABSTRACT

Various parts of the neem tree have been used as traditional ayurvedic medicine in India from time immemorial. The medicinal utilities have been described, especially for leaf, fruit and bark. Neem oil and the bark and leaf extracts have been therapeutically used as folk medicine to control leprosy, intestinal helminthiasis, respiratory disorders, constipation and also as a general health promoter. Its use for the treatment of rheumatism, chronic syphilitic sores and indolent ulcer has also been evident. Neem oil finds use to control various skin infections. The bark, seeds, leaves, fruit, gum and oils of the neem tree contain pharmacological constituents which offer some impressive therapeutic qualities.

Keywords- traditional medicine, folk, helminthiasis, health promoter, Gum, oil and leprosy.

INTRODUCTION

Medicinal plants are part and parcel of human society to combat diseases, from the dawn of civilization. Azadirachta indica A. Juss (syn. Melia azadirachta) is well known in India and its neighbouring countries for more than 2000 years as one of the most versatile medicinal plants having a wide spectrum of biological activity. Neem is an evergreen tree, cultivated in various parts of the Indian subcontinent. Every part of the tree has been used as traditional medicine for house-hold remedy against various human ailments, from antiquity1–6. Neem has been extensively used in ayurveda, unani and homoeopathic medicine and has become a
cynosure of modern medicine. The importance of the neem tree has been recognized by the US National Academy of Sciences, which published a report in 1992 entitled ‘Neem – a tree for solving global problems’.

In a hot and humid climate like India, Summer is the season when people traditionally contract fevers and flu. Indians still call the neem “The Village Pharmacy” and use it to treat many ailments that continue to challenge modern medicine, including viruses like the flu and common cold. Modern research is confirming those traditional uses and while none of it specifically focuses on human beings with colds or flu, reports exciting results in treating the viruses that cause disorders ranging from genital herpes to dengue fever. The neem leaf extract has been used successfully in the past to combat/control various Sexually Transmitted Diseases (STDs). Studies show that a neem-based cream used as a vaginal lubricant is effective against organisms such as Trichomonas, Candida, and Giardinella vaginalis that cause vaginal infections (Khan and Wassilew, 1987) (Garg, et al, 1993)

**Pharmacological actions of neem extract**

Gedunin, isolated from neem seed oil has been reported to possess both antifungal and antimalarial activities. Azadirachtin, highly oxygenated C-secomeliacins isolated from neem seed and having strong antifeedant activity, has been demonstrated to have antimalarial property as well. It is inhibitory to the development of malarial parasites. Mahmoodin, a deoxygedunin isolated from seed oil, has been shown to possess moderate antibacterial action against some strains of human pathogenic bacteria. Condensed tannins from the bark contain gallic acid, (+) gallocatechin, (–) epicatechin, (+) catechin and epigallocatechin, of which gallic acid, (–) epicatechin and catechin are primarily responsible for inhibiting the generation of chemiluminescence by activated human polymorphonuclear neutrophil (PMN), indicating that these compounds inhibit oxidative burst of PMN during inflammation.

Several pharmacological activities and medicinal applications of various parts of neem are well known. Biological activity of neem is reported with the crude extracts and their different fractions from leaf, bark, root, seed and oil.

**Medicinal value**

**Immunity Booster**

The aqueous extract of neem bark possesses anticomplement activity, acting both on the alternative as well as the classical pathway of complement activation in human serum.
Recently, an aqueous extract of stem bark has been shown to enhance the immune response of Balb-c mice to sheep red blood cells in vivo. The aqueous extract of leaf also possesses potent immunostimulant activity as evidenced by both humoral and cell-mediated responses. Neem oil has been shown to possess immunostimulant activity by selectively activating the cell-mediated immune mechanisms to elicit an enhanced response to subsequent mitogenic or antigenic challenge.

The fact that neem affects the cell-mediated immune system is particularly important to most people. Led by "Killer T" cells, the cell-mediated immune system is the body's first defense against infection. Killer T-cells are able to destroy microbes, viruses and cancer cells by injecting toxic chemicals into the invaders. Neem also boosts the body's macrophage response, which stimulates the lymphocytic system, and boosts production of white blood cells. Neem oil acts as a non-specific immunostimulant and that it selectively activates the cell-mediated immune system.

**Antifungal**

Neem extracts are some of the most powerful antifungal plant extracts found in Indian pharmacopoeia against certain fungi (Khanna and Chandre, 1972). In particular, research has shown that the compounds gedunin and nimbidol found in the neem leaf control several fungi which attack humans, including those that cause athlete's foot, ringworm, and even controls Candida, an organism that causes yeast infections and thrush (Kher, 1972). Compounds found in neem leaf called quercetins (flavanoids) are effective antimycotics (Khan et al,1988). Two researchers, basing their study on the ancient tradition of using neem to purify the air around the sick, have found that neem smoke exhibited extreme suppression of fungal growth and germination (Upadhyay and Arora, 1975). Neem oil and leaf extracts are effective treatments for candidiasis (Garg, et al, undated). A strong neem leaf tea made with 50 neem leaves can be used for douching or a neem-based cream applied internally daily for a week A neem-based cream may clear up Chlamydia trichomatous infections in one to three weeks (Garg, et al, undated). Chlamydia is implicated in many cases where women are unable to conceive due to scarring of the fallopian tubes.

**Anticarcinogenic activity:**

Neem leaf aqueous extract effectively suppresses oral squamous cell carcinoma induced by 7,12-dimethylbenz[a]anthracene (DMBA), as revealed by reduced incidence of neoplasm.
Neem may exert its chemopreventive effect in the oral mucosa by modulation of glutathione and its metabolizing enzymes. That neem leaf extract exerts its protective effect in N-methyl-N′-nitro-N-nitrosoguanidine (MNNG) (a carcinogenic material)-induced oxidative stress has also been demonstrated by the reduced formation of lipid peroxides and enhanced level of antioxidants and detoxifying enzymes in the stomach, a primary target organ for MNNG as well as in the liver and in circulation.

**Hepatoprotective activity**

The aqueous extract of neem leaf was found to offer protection against paracetamol-induced liver necrosis in rats. The elevated levels of serum aspartate aminotransferase (AST), alanine aminotransferase (ALT) and gamma glutamyl transpeptidase (GGT) indicative of liver damage, were found to be significantly reduced on administration of the neem leaf aqueous extract.

**Powerful Anti-Viral Herb**

Neem is one of just a few known anti-viral agents. In a study on neem’s effectiveness as an anti-viral agent, neem seemed to interact with the surface of cells to prevent infection by the virus thereby inhibiting multiplication of the virus (Rai and Sethi, 1972). Similar results have been observed in studies of other viral pathogens indicating a unique property of neem to prevent viral disease (Rao, 1969) (Singh, 1981) (Saxena, 1985).

Several researchers report using neem poultices directly on the pox of small pox, chicken pox, measles, mumps, and other eruptive viral skin diseases.

In 1972, Rae and Sethi postulated that neem leaves and extracts affect the absorption of the pox virus.

In 1969, Rao et al found tender leaves most effective in fighting viruses. Neem also works against the viruses that cause foot-and-mouth disease in cattle, against the mosaic virus in beans, and against the potato virus. Laboratory research into neem’s anti-viral properties showed that leaf extracts of the plant inhibited replication of two aggressive viral strains. Studies were conducted to evaluate the effect of neem compound on the replication of the Dengue virus type-2. The extract of neem leaves completely inhibited the virus’ ability to replicate itself in an in vitro experiment. In laboratory animals, neem leaf extract also inhibited viral replication, as confirmed by the absence of any virus-related symptoms.
Parasites and Neem
Historically, neem has been used to rid the body of all forms of parasites. Scientists have since proved that neem quickly kills external parasites and may kill internal parasites as well (Singh et al., 1979) (Obaseki and Jegede-Fadunsin, 1986) (Rochanakij, 1985)

CONCLUSION
As the global scenario is now changing towards the use of nontoxic plant products having traditional medicinal use, development of modern drugs from neem should be emphasized for the control of various diseases. In fact, time has come to make good use of centuries-old knowledge on neem through modern approaches of drug development. For the last few years, there has been an increasing trend and awareness in neem research. Quite a significant amount of research has already been carried out during the past few decades in exploring the chemistry of different parts of neem. Several therapeutically and industrially useful preparations and compounds have also been marketed, which generates enough encouragement among the scientists in exploring more information about this medicinal plant. An extensive research and development work should be undertaken on neem and its products for their better economic and therapeutic utilization.

REFERENCES