

# Pharmacological Review on *Azadirachta indica*

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**Abstract:** *Glahanddical practice seek merge alternative medicine with evidence had medicine for a better underdig of the metabolic process and its effects in the human body. An example is the use of complementary medicine like phytotherapy. Neem has become valuable plant in the world which shows the solutions for hundreds to thousands problems. Neem has become important in the global context today because it offers answers to the major concerns facing mankind. Neem has been extensively used in Ayurveda. Unani and Homoeopathic medicine. Neem and known as Neemba in devbhasha Sanskrit.*

**Keywords:** Antibiotic, Antiviral, Antimicrobial and Antifungal

## I. INTRODUCTION

*Azadirachta indica* has been used medicinally. *Neem* (*Azadirachta indica*) commonly called Indian Lilac' or 'Margosa', belongs to the family Meliaceae, subfamily Meloideae and tribe Meliceae. *Azadirachta indica* has been used medicinally. The Persian name of neem is Azad- Darakth- E- Hind' which means 'Free tree of India'. The number of benefits of neem is listed in ancient documents like 'Charak-Samhita' and 'Suruta-Samhita'. There are an estimated 25 million trees growing all over India (15) of which 5.5% are found in Karnataka and it is in the third place next to Uttar Pradesh (55.7%) and Tamilnadu (17.8%) occupying the first two places respectively. The other states of India where neem tree is found growing includes Andhra Pradesh, Assam, Bihar, Delhi, Gujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, West Bengal along with Andaman and Nicobar Islands. The plant product or natural products show an important role family, commonly found in India, Pakistan, Bangladesh, and Nepal has therapeutics implication in diseases cure and formulation based on the fact that neem is also used to treat various diseases. *Azadirachta indica* has complex of various constituents including nimbin, nimbidin, nimbolide, and limonoids and such types of ingredients play role in diseases management through modulation of various genetic pathways and other activities. Quercetin and S-sitosterol were first and were known to have antifungal and antibacterial activities. Numerous biological and pharmacological activities have been reported including antibacterial, antifungal, and anti-inflammatory. Earlier investigators have confirmed their role as anti-inflammatory, antiarthritic, antipyretic, hypoglycemic, antigastric ulcer, antifungal, antibacterial, and antitumour activities and a review summarized the various therapeutics role of neem. This review summarizes the role of neem and its active ingredients in the diseases prevention and treatment through the modulation of various in diseases prevention and treatment through the enhancement of antioxidant activity, inhibition of bacterial growth, and modulation of genetic pathways. The therapeutics role of number of plants in diseases management is still being enthusiastically researched due to their less side effect and affordable properties. It has been accepted that drugs based on allopathy are expensive and also exhibit toxic effect on normal tissues and on various biological activities. It is a polyphenolic flavonoids purified from fresh leaves of neem largely accepted fact that numerous pharmacologically active drugs are derived from natural resources including medicinal plants. Various religious documents such as Bible and Quran also supported the herbs role in health care and prevention. Islamic perspective also confirms the herbs role in diseases management and Prophet Mohammed (PBUH) recommended various plants/fruits in the diseases cure. Neem ingredients are applied in Ayurveda, Unani, Homeopathy, and modern medicine for the treatment of many infectious, metabolic, or cancer diseases.<sup>[1,2,3,4]</sup>



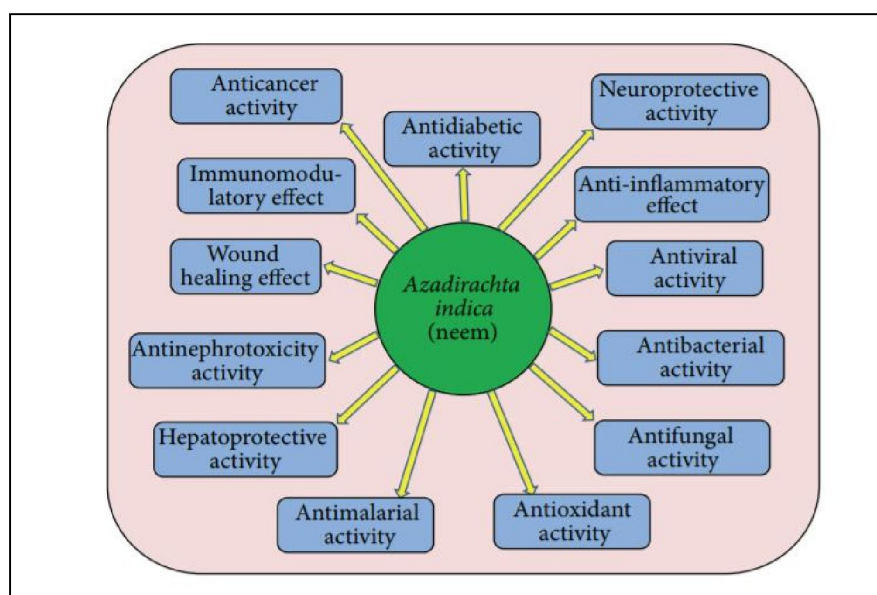
Neem Leaf



Neem Bark



Neem Fruit



### 1.1 Anti-Carcinogenic and Anti-Mutagenic Effect inhibited the atoxymethane-induced aberrant crypt foci (ACF) of Neem

That neem extract possess potent ability to move cancerous thelium in rats. The preventive action of neem Blowers has been Thu noem e po potent while to seniovecanarrow phenotype (range commonly seemed as "aasoor"), has long been demonstrated by several research groups against the neoplastic known to people in Asia, particularly in India. During the last two developments due to chemicals including DMBA and Ba decades, researchers in India and abroad have gathered convine- These results indicate that dietary use of extracts from various ing data to suggest that the onset of cancerous phenotype due to parts of A. lics may play a promising role in future drug dis certain mutagens and pro-carcinogens may be treated effectively covery and development programs as far as chemoprevention by extracts obtained from various parts of the neem tree. The of cancer is concerned. Most of the ethnomedicinal and early chemgeeventive effects of dietary doses of aqueous neem leaf studies on neem with respect to its anticancer properties suffered extract was studied on in vivo murine system againa 'H-B-n-P from lack of cendibile mechanistic principles. Serious attempts at (Beng-a-pyrene)-induced initiation of cancer measured in term unraveling the possible scientific interpretations of the chemo of H-B-P-DNA adduct.<sup>[7,8,9]</sup>

### 1.2 Antidiabetic & Antihyperlipdermic

Bopanaetal (1997) reported antidiabetic and anti hyperlipaemic effects of neem seed kernel powder on alloxan diabetic rabbits. In alloxan diabetic rabbits there was a significant ( $P < 0.001$ ) increase in fasting blood glucose and urine sugar and there was a significant decrease ( $P < 0.001$ ) in body weight and total haemoglobin content. There was a significant

increase in body weight and haemoglobin level, and a significant decrease in Fasting Blood Glucose (FBG) and urine sugar in diabetic rabbits treated with NP, glibenclamide, insulin and in combination of NP and glibenclamide.<sup>[10,16,17,18]</sup>

### 1.3 Herbal Cosmetics

Herbal Cosmetics: "The curer of all ailments": Neem's role as a wonder drug is stressed as far back as 4500 years ago. Some of its health restoring benefits. Effective in skin infection, rashes and pimples, immunity booster, anti obesity, blood purifier for beautiful and healthy skin, piles, hair disorder and oral disorders".

Also known as margosa or nim, neem is a fast-growing tree, belonging to the family of mahogany. Native to the Indian subcontinent and some parts of South Asia, neem has also been introduced in certain other parts across the globe including the Caribbean, Africa, and Central and South America. Neem has been valued for its amazing medicinal properties. It has been used in Ayurvedic, organic farming applications, and cosmetics.

Use of Neem Extract in Cosmetic Products

Neem has been used as a raw material in the beauty and wellness industry since time immemorial. Given its wide range of medicinal properties, neem is considered to work wonders for the skin and hair. Hence, it is used in the manufacture of a number of cosmetic products.<sup>[21,23]</sup>

### 1.4 Antiviral Activities

Galhardietal. studied the in vitro antiviral property of Azadirachtaindien polysaccharides for poliovirus. The study of Saha et al. showed water extracted polysaccharides from Aindion leaves with anti-bovine herpes virus type 1 BoHV-t activity. The research of Xu et al. showed the in vitro antiviral activity of neem seed kernel extracts against duck plague virus. Towars et al. showed the in vitro antiviral activity of neemAindica La bark extract against herpes simplex virus type-1 infection antiviral activity.<sup>[5]</sup>

### 1.5 DNA Fingerprinting

The two plants were subjected to RAPD assay of their genomic DNA; this was performed using five different primers. The number of RAPD-PCR fragments indicates that the five were reproduced. In this study, the presence of same bands in DNA of A indica and Meliaazadirachta indicates degree of taxonomical relationship between the tested plants; also the presence of characteristic bands in DNA of each plant may help for differentiation between these plants. The OP-C13 primers were found to be the most effective in generating polymorphic bands on application of RAPD technique followed by OP-CO3 primer as compared to the total number of RAPD fragments it generates high level of polymorphism.<sup>[19,20,21]</sup>

### 1.6 Wound Healing

This study was carried out to evaluate the wound healing ability of ethanoic leaf extract of Azadirachtaindica, incorporated into the feed of albino rats. Twenty-four (24) albino rats of both sexes weighing between 90 to 125g were randomly selected and divided into three (3) groups of 8 rats each. Animals in each group were divided into four (4) replicates of two (2) rats per replicate. Group A had penicillin, group B had neem ointment and group C had Neem incorporated in the feed. The ethanoic leaf extract of Azadirachtaindica showed a significantly higher ( $p < 0.05$ ) contraction rate and shortened wound closure time. The healing was 92% ( $p < 0.05$ ) on 10th day compared to 75% and 82% of healing with ground leaf of A. indica incorporated into the feed (neem + feed) and procaine penicillin, respectively. The complete wound closure took place on the 12th day in the case of ethanoic leaf extract of Azadirachtaindica while, neem + feed and procaine penicillin the wounds persisted than 12th day. The study concluded that the ethanoic leaf extract of A. indica had better potential wound healing activity for excision wounds; justifying its use in the traditional and orthodox medicine.<sup>[23]</sup>

### 1.7 Skin Disorder

Neem has a remarkable effect on chronic skin conditions Acne, psoriasis, eczema, ringworm and even stubborn warts are among the conditions that can clear up easily when high quality, organic neem oil is used. Neem oil and leaves has been used in Siddha medicine for the treatment of skin diseases In addition, neem oil can be used as an excellent component of cosmetics to help clear, beautify and rejuvenate the skin.<sup>[7]</sup>

### 1.8 Parasite Disorder

Historically, neem has been used to rid the body of all forms of parasites. Neem quickly kills external and internal parasites. Neem extracts have hormone mimics that interfere with the life cycle of parasites, inhibit their and postulations had been correlating well. ability to feed and prevent the eggs from hatching Abdel et al. studied the efficacy of a single treatment of head lice nations and although with a neem seed extract found that neem leaf slurry is a sustainable, natural product and anophelinelarvicide in west African Village.<sup>[11,12]</sup>

## II. CONCLUSION

Popularity of natural products or their derivatives role in diseases cure and prevention is increasing worldwide due to less side effect properties. Neem and its ingredients have therapeutics implication and have been traditionally used worldwide especially in Indian Subcontinent since ancient time Clinical based studies confirmed that neem plays pivotal role in prevention of various diseases. The role of active ingredients as chemopreventive effect has been noticed in various tumour via modulation of numerous cell signaling pathways.

## III. FUTURE PERSPECTIVE

Health Organization (WHO) The global marker for herbal medicine alone is pegged at \$5 trillion with an annual growth rate of about 11 per cent." The rapidly growing market of the herbal/alternative medicine shows its world-wide popularity and acceptance. A. indica (Neem) is a discovery of the pristine civilizations that has withstood trial of time and wisdom ver the generations for treatment of various types of wounds (naso) in the body, particularly those with poor prognosis and diagnosis. Convincing pre-clinical observations on the efficacy of its various extracts and purified products against most types of cancer have been made on suitable systems. There is no doubt that the products of this plant enshrine bright prospects as a reliable cure for cancer, but its protocol needs fine run ing for use in the clinical trials. One of the important mons is its nominal side effects. A multi-institutional trial may be set up to spruce up chances for its speedy acceptance in the clinics, particularly where cancer medicines are scarcely afford able. However, this suggestion may not find warm favor from companies that invest sumptuously to produce costly cancer medicines.

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