



Therapeutic Potential Of Neem:A Review Of Traditional And Modern Uses

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Abstract

Neem, *Azadirachta Indica* A. Is a tree, which has a wide application in animal kingdom[1]. The neem is a tropical evergreen tree traditionally well known for its medicinal value[2]. The neem has a vital role in various problems associated with human health. The chemical constituents present in the neem plant make it a Doctor Tree because of its broad range of biological activities connected to it, and has become an international phenomenon presently. The neem tree is said to be safe for humans, animals, birds, beneficial insects, and earthworms and has been approved by the US Environmental Protection Agency for use on food crops [3]

keyword : Neem, *Azadirachta Indica*, Meliaceae, pharmacological activity of Neem.

INTRODUCTION

Neem is a natural herb that comes from the neem tree [4]. Neem is Biological and Scientific name is *AZADIRACHTA INDICA*. The neem leaves and the neem oil are used mainly as Antiseptics and Insecticides and it is used as a treatment of AIDS, and neem leaf is used for leprosy, eye disorders and liver problems. The neem leaves contain Nimbostrin and Quercetin. The seed contains Salannin, Maliantriol, Azadirachtin, and Meliain. Neem leaves are 20-30 cm in length [5]. *Azadirachta Indica* is being considered as the most important and useful medicinal and fast growing evergreen popular tree found in India [6], Pakistan, Bangladesh and Sri Lanka. Neem has been used in Ayurvedic medicine for thousands of years. It possesses various medicinal properties in its leaves, fruits and seeds. Neem is a natural insect repellent, therefore it is employed as an anti-insect agent against mosquitoes among others. You can mix pounded neem leaves with water to use as acne cream. Also, it has traditionally been used as a toothbrush.

The neem tree is an evergreen native to India that belongs to the mahogany family (Meliaceae). In India, the neem tree has been regarded for ages; countless people have used it to brush their teeth, squeezed its leaves and applied on the affected area of skin; drank its tea as a tonic; put sprigs in their beds, books, granaries, cupboards and wardrobes to deter insects.[7].

Morphology

Leaves: Imparipinnate 20-37 cm in length. Leaflets are opposite or alternate, obliquely falcate-lanceolate, serrate, dark green to greenish yellow in colour and bitter in taste.

Flower: Fragrant white blossoms, five-parted, 5mm long pentamers, staminode teeth and introrse anthers.

Fruit: Drupe 1.2-1.8 cm long slightly obtuse, oblong; yellowish-green in colour with a smooth peel (one-seeded). Very sour to taste.

Bark: Rough, greyish to brownish in colour, channelled in shape, about 10 mm in thickness - whit scaly to fissured surface. Internally yellowish in colour laminated and fibrous [8] .



Nomiclechar

1. Kingdom :Plantae
- 2 .Division : Magnoliophyta
3. Class : Magnoliopsida
- 4.Order : Rutales
5. Sub order : Routine
6. Family : Meliaceae
7. Genus : Azadirachta
- 8 .Species : A .indica

9. Scientific Name : Azadirachta Indica

10. Other Name : Nimba, Aristha(Sanskrit)

Pharmacological Effect

1 Abortive effect: seed and leaf extract

2 Analgesic effect: Leaves

3 Anti- dermatophytic effect: Leaves

4 Antifertility effect: Neem oil

5 Anti- inflammatory effect: Leaves

6 Gastric antiulcer effect: Leaves

7 Hypotensive effect: Leaves

8 Immuno modulatory effect: stem bark

9 Larvicidal effect: Isolated hydrocarbon fraction from dried leaves

10 Metabolic effect: seed

11 Neuropsychopharmacological effect: Leaves

12 Toxic effect: Neem oil



Various pharmacological Activity of Neem

1 Antioxidant activity of neem: Different parts of Nrm plant such as leaf, bark, root, seed and flowers show biological activities[9]. Antioxidants stabilize/ -manage to deactivate free radicals, constantly before they attack focus in biological cells and further take part in the activation and anti oxidative protein that takes part in

the regulation of damage brought about by [10] free radicals / receptive oxygen species are some of the primary cause in the genesis of various diseases. However, the human body manages to 6 of free radical activity is one of the important step in the diseases prevention [11]

2 Anti-malaria activity of neem : the antimalarial activities of the tablet suspension of the bark and leaf of *Azadirachta Indica* were evaluated on plasmodium yolli nigeriensis infected mice. The tablet suspension exhibited high prophylactic ,mode- reatsuppressive and a very minimal curative schizonticidal effect [12].

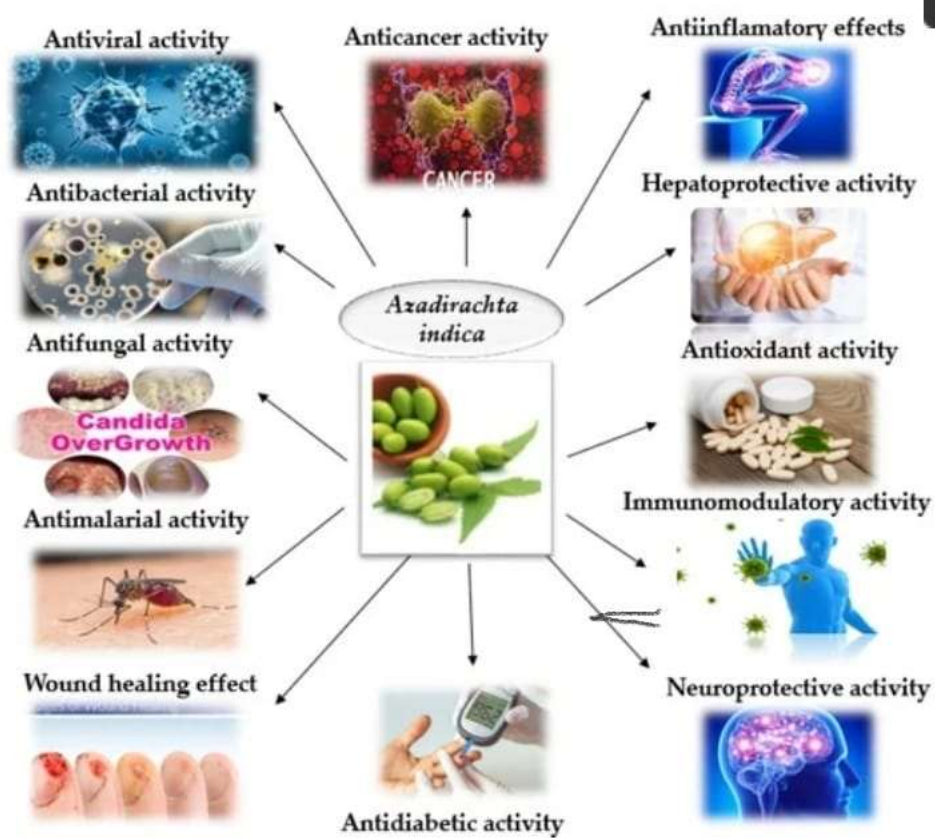
Another experiment was done to assess the in vitro anti-malaria activity of extracts using *Plasmodium berghei* infected 7 albino mice and results revealed that neem leaf and stem bark extracts reduced the level of parasitemia in infected mice by about 51-80% and 56-87% respectively and other limonoeds available in neem extracts are active on malaria vectors [13] .

3 Anti-bacterial activity of neem : The petrolium ether , methanol and aqueous extract of the leaves is *Azadirachta Indica* (Meliaceae), bulbs of *Allium cepa* (Leliaceae) and methanol extracts of gel of *Aloe Vera* (Leliaceae) were evaluated for their anti-microbial activity by cup plate agar diffusion method [14]. The survey of antimicrobial efficacy of herbal alternatives as endodontic irrigants was done and differentiated and the standard irrigants sodium hypochlorite and result confirmed that leaf concentrates and grape seed extricates demonstrated zones of restriction priscrbing that they had antimicrobial properties.

4 Anti- viral activity of neem : Results exhibited that neem bark (NEB) remove basically blocked HSV-1 entry into cells at obsessions stretching out from 50 to 100 ug/ml. Furthermore , blocking development of NEB was seen when the concentrate was preincubated with the disease anyway not with the objective cells proposing a quick enemy of HSV-1 property of the neem bark [15]. Leaf extract of neem (NCL-11) shown virucidal activity against coxsackievirus virus B-4 as suggested via virus inactivation and yield reduction assay besides interfering at an early event of its replication cycle.

5 Anti- fungal activity of neem : A study showed the antimicrobial role of aqueous extract of neem cake in the inhibition of spore germination against three sporulating fungi such as *C. lunata*, *H. pennisetti*, and *C. gloeosporioides* f. sp. *Mangiferae*, and the result of the study revealed that methanol and ethanol extract of *Azadirachta Indica* showed growth inhibition against *Aspergillus flavus* , *Alternaria solani* , and *Cladosporium* [16]. Investigation was made to assess the adequate of different concentrates of neem leaf on seed borne parasites *Aspergillus* and *Rhizomes* and results affirmed that development of both the contagious species was fundamentally repressed [17].

6 Anti- inflammatory activity of neem : Different studies have reported the anti- inflammatory effect of neem plants. In an experimental study based on rat models, the nimbidin from neem trees was used orally to evaluate its anti- inflammatory response [18]. Results of a study related that the neem leaf extract showed a significant anti- inflammatory effect, but is less efficacious than that of dexamethasone, and study results suggest that nimbidin supperesses that function of macrophages [19]. Plants or their isolated derivatives are in the practice to treat/ act anti- inflammatory agents .An examination result has affirmed that concentrate of *A. Indica* leaves at dose of 200 mg /kg,p.o., demonstrated huge anti - inflammatory activity in cotton pellet granuloma test in rodents [20].



Important Formulation

A. Important Unani formulations containing Azadirachta Indica are as follows:

1. Sharbat Musaffi
2. Zimad Mahasa
3. Marham Jadeed
4. Rawghan Awaq
5. Neem oil
6. Gaza Bahar-e Husn

B. Important Ayurvedic formulations containing Azadirachta Indica are as follows:

1. Neembadi Churna
2. Neembadi Toil
3. Poncho Tikto ghrigugul
4. Brihat Horidra Khanda[21]

Conclusion

The plant (Green leaves, Ripe fruits and its coat, neem seed, root, bark, Uncrushed twigs, stem bark, root bark, fresh whole fruit and dry leaves) of *Azadirachta Indica* (neem) have been in use since times immemorial to treat the wide range of disease [22]. Plants are one of the most important source of medicines. The role of medicinal plants in promoting the ability of human health to cope with the unpleasant and difficult situations is well documented from ancient times till date all over the world [23].

In this article, the authors review the individual components of neem leaf and their possible uses as antivirals, anti-inflammatories, antibiotics, antifungals, or antioxidant effects. Multifaceted therapeutic implications of neem leaf has been accepted traditionally all over the world, particularly in India. Inexpensive and easily accessible in terms of exposure to minimal toxic effects have made this area become a subcontinent for over two millennia years. Although, phytochemicals are increasingly being used as potential therapeutic agent for different disease [24].

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