

To review on the Neem plant

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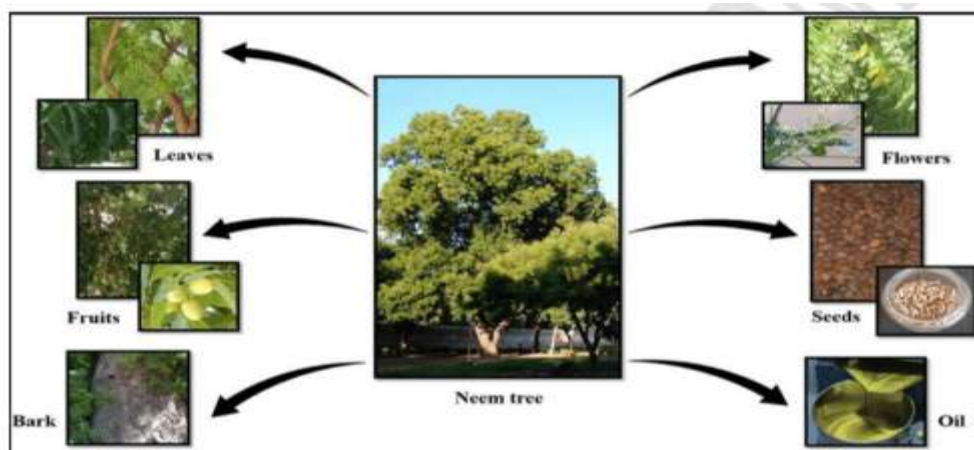
ABSTRACT - Neem has become valuable plant in the world which shows the solutions for hundreds to thousands problems. *Azadirachta indica* (Neem) is a rapidly growing evergreen well known tree found Pada generally in various regions of world like America, Africa and India. It has been widely used in Chinese, Ayurveda and Unani medicines across the world especially in Asians countries for the prevention and treatment of diseases. The different parts of neem plant contain biological compounds responsible for antibacterial, antiviral and antifungal activities. It is considered as safe medicinal plants and modulates the numerous biological processes without any adverse effect. Neem tree produces some active compounds which contain biological activities, parts of neem tree such as Root, bark, leaf, flower, seed and fruit together possesses biological activities. Various compounds have been obtained from various parts of neem. Biological activities of few of them have been studied. Hence, the article is aims to utilize the medicinal properties of whole neem plant in various disorders of mankind.

Key words: *Azadirachta indica*, Antibacterial, Antifungal, Natural products, Natural antibiotics.

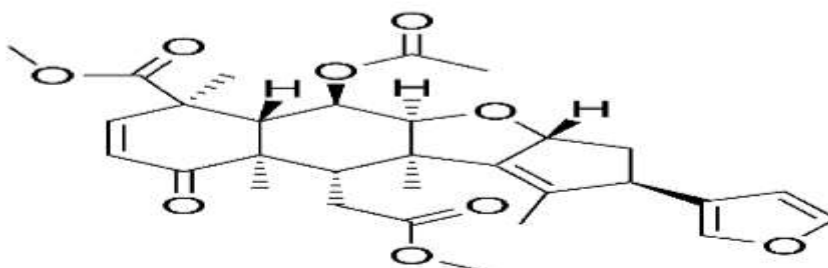
I. INTRODUCTION

Plants have many biologically active compounds which have latent for development as medicinal agents. Herbal medicines already form the basis of beneficial use in the developing countries, but of recent, there has been rise in the use of herbal medicines in the developed world.¹ Plants provide an alternate approach in search for new treatments. There is a plenty of plants reputed in traditional medicine to hold protective and therapeutic properties. It is likely that plants will continue to be a valued source of new molecules which may, after possible chemical manipulation, provide new and improved drugs.³ Bacterial resistance to antibiotics represents a serious problem for clinicians and the therapeutic industry and great efforts are being made to reverse this trend, and one of them is the widespread screening of medicinal plants from the traditional system of medicine hoping to get some newer, safer, and more effective agents that can be used to fight infectious diseases.

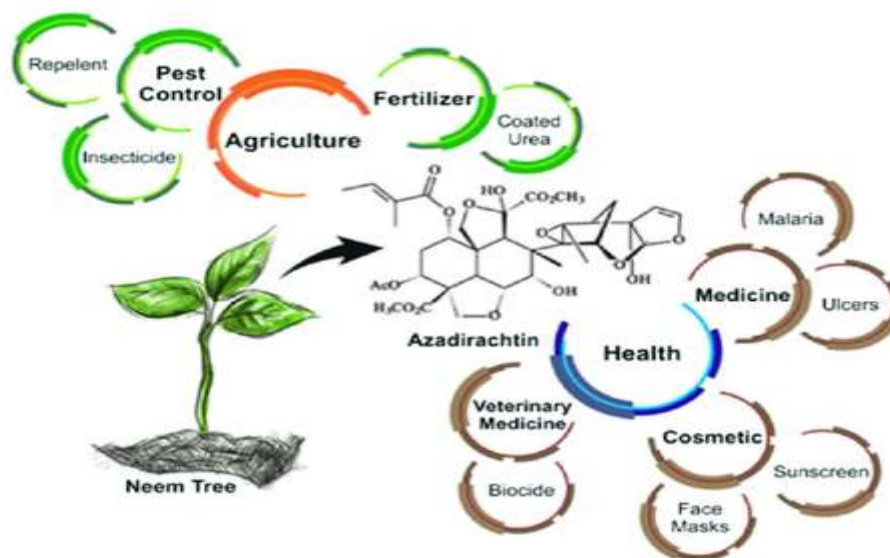
Flowers: Neem flowers have analgesic and stimulant properties.



Structure



Digrammically representation



CLASSIFICATION



- Common Name – **Neem**
- Botanical Name – *Azadirachta Indica*
- Kingdom – Plantae
- Division – Magnoliophyta
- Class – Magnoliopsida
- Order – Sapindales
- Genus – *Azadirachta*
- Species – *A. indica*
- Family – Meliaceae

ANTIMICROBIAL ACTIVITY OF NEEM

Neem has great Antimicrobial activity it contains 35 biological active compounds. Neem leaf juice and twigs are used to clean teeth and used as a tonic and people of India used to place Neem leaves in their beds, books and cupboards to prevent bugs.⁷

A number of potent pharmaceutical compounds limnoods and triterpenoids have been isolated from the fruits and bark of neem tree. Neem extracts and its different constituents play essential role in the inhibition of several microbes which includes viruses, fungi and bacteria. The extracts of methanol and hexane chloroform of *Azadirachta indica* were selected against antibacterial activity on *Escherichia coli*, *Proteus vulgaris*, *Klebsiella pneumoniae*, *Bacillus subtilis*, *Micrococcus luteus* *Streptococcus faecalis* and *Enterococcus faecalis*. It was revealed that methanol extract was the most effective, chloroform reasonably effective and hexane extract showed little antibacterial activity

Antibacterial action of neem

Neem usually used in medicine and pharmaceuticals. The stem and bark of Neem has great antibacterial activity against *Klebsiella*, *Serratia* species and *Streptococcus*.⁹ The methanolic extracts of Neem has antibacterial activity against *Vibrio cholera* and chloroform extracts against *E. coli*, *Bacillus subtilis*, *Enterococcus faecalis* and *Streptococcus faecalis*. The extraction of neem oil has strong activity against Gram positive and Gram negative bacteria like *Mycobacterium tuberculosis* and streptomycin-resistant strains. Mahmood et al. (2013) determined in his study that the crude extraction of Neem has antibacterial activity against infection of eyes and ear.¹¹ The petroleum ether and methanol extract has highest effect against *Candida albicans*.

Antifungal action of neem

Azadirachta indica leaves ethanol and aqueous extracts have exhibited anti-dermatophytic activity in contrast to dermatophytes from 88 clinical separates by agar dilution technique. These studies revealed that ethanolic extracts showed more visible activity as compared to aqueous extracts.²³ *Azadirachta indica* methanolic and acetone extracts were tested for antifungal activities against two fungal strains i.e. *Aspergillus fumigatus* and *Aspergillus niger*. Results showed that methanol extracts of plant provide supreme

antifungal activity as compared to acetone extracts. The leaf and seed extracts of neem screened for antifungal activity against dermatophytes. *Azadirachta indica* seed extracts Minimum inhibitory concentration (MIC) was lower than that of neem leaf extracts when tested against various species of trichophyton and Epidermatophyton floccosum

Antimalarial activity

Ball shaped wood scrapes that is saturated in 5 percent oil of neem (*Azadirachta indica*) diluted with acetone and in 45 days the propagation of *Anopheles stephensi* and *Aedes aegypti* were organized, when it is placed in water storage overhead containers.³³ Growth of plasmodium falciparum inhibited by the compound nimbolide isolated from neem extracts that shows the antimalarial activity.³⁴ Neem seeds oil possess gedunin which also showed antimalarial activity.³⁵ Leaves and bark aqueous and alcohol extracts are very effective antimalarial agents, especially on resistant strains chloroquine

Antitumor and antiviral activity

Europe, Japan and Indian scientist found the compounds limonoids and polysaccharides present in neem seed oil. Neem leaves and bark reduced cancers and tumors and also very effective against lymphocyticleukemia. Leaf extracts mitotic inhibition activity was detected. Several results have also showed the significant antiviral effect of neem leaf aqueous extracts against Small Pox, Fowl Pox, Polio and HSV as evaluated by virus inhibition assay (98100). Neem Aqueous leaf extracts and also some oils of neem fraction (Nim-76) showed antiviral action against Polio Viruses and HIV.

Anti-inflammatory, antipyretic and analgesic activities

The stem bark chloroform extracts of neem show efficiency against carrageenan –which induced paw edema in rats and ear inflammation in mouse. Bark extracts is also used to treat inflammatory stomatitis in children. Neem oil holds antipyretic activity, its leaves extracts showed antipyretic effect when injected into male rabbits. Various extract effects as Antipyretic and Anti-inflammatory have been studied.

Antiulcer activity

Nimbidin was known to be responsible for antiulcer effect which prevents acetylsalicylic acid, omethacin, serotonin-induced gastric lesions

and duodenal ulcers or histamine.⁴⁰ Azadirachta indica (neem) leaf extracts shows antiulcer effect and mucus depletion inhibition and most cell defragmentation as possible mechanism. Researcher isolated the phenolic glycoside as an active constituent. Furthermore, Azadirachta indica offers good option for active antiulcer and harmless drug

II. CONCLUSION

Azadirachta indica (Neem) plant acts as a medicinal plant have been found effective in the treatment of bacterial, fungal, viral and other diseases and revealed the antibacterial, antifungal, antiviral, antimalarial, antiulcer and other biological activities. Due to increasing antibiotic resistance in microorganisms and side effects of synthetic antibiotics neem plant are now growing popularity in the treatment of many infections. Neem plant is considered as clinically effective and safer alternatives to the synthetic antibiotics. Extensive research in the area of isolation and characterization of the active principles of neem plant is essential so that better, safer and cost effective drugs for curing various diseases and infections can be developed.

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