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Research Article

Neem (*Azadirachta Indica*) In Oral Hygiene- An Update

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ABSTRACT

Herbal Medicines are a fast emerging trend in recent times, as they provide safer, effective and economical treatment to patients. Azadirachta indica (neem) has been an integral part of health and oral care since times immemoral. It has shown to be an effective antimicrobial ant inflammatory and anticancer agent. In india it has been an indespensible part of oral care and is still a popular dental care agent in rural india. Incorporation of neem extract in oral health care products provides a natural solution to oro-dental problems and in maintaining oral health.

Key Words: *Herbal Medicines, Azadirachta indica, neem extract.*

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INTRODUCTION

Azadirachta indica (Neem) belongs to the mahogany family meliaceae and is a species of genus Azadirachta. Neem has two species: A. Indica, A. Juss and M. Azedarac which are known as Indian neem (margosa tree) or Indian lilac and Persian lilarespectively [1]. Neem is a perinenial plant found in tropical and semi-tropical regions of India, Pakistan, and Bangladesh [2]. Azadirachta indica is derived from Persian "Azad" meaning free and "dirakat" meaning tree, indica means of Indian origin hence it signifies" free tree of india". Neem has been indespensible herb in ayurveda, unani and other traditional medicine therapies since prehistoric times. Neem continues to be a cheap and effective drug for various health ailments in indian folk medicine and thereby popularly termed as "village dispensary"[3]. Siddiqui was first to identify medicinal properties of neem in 1942. He isolated Nimbin and nimbinin along with a bitter component nimbidin from neem. He stated that nimbidin has anti-arthritic, antiulcer and anti-inflammatory properties whereas former two had antipyretic and anti inflammatory properties[4]. Various parts of neem plant have shown medicinal properties such as anti-inflammatory, antipyretic, analgesic, antimicrobial, anti-tumourogenic, antioxidant, antiulcer and immunostimulant activity [5].

Taxonomic positions of neem

Order Rutales
Suborder Rutinae
Family Meliaceae
Subfamily Melioideae
Genus Azadirachta
Specie Indica
Latin Azadirachta indica

Fig.1; Neem Leaf And Fruits

Fig.2; Azadirachta indica

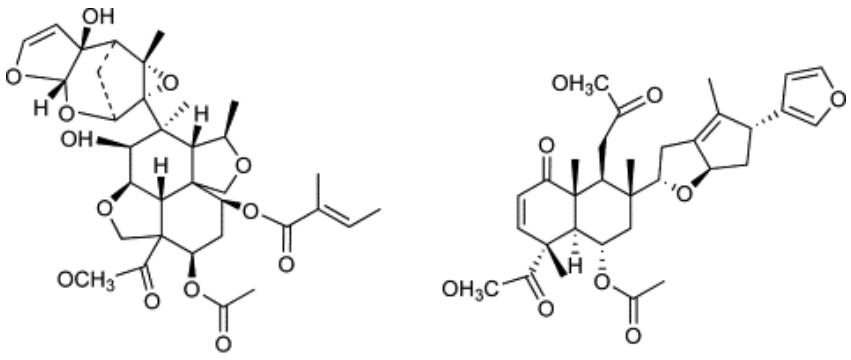
Therapeutic Effect of Neem in Oral Diseases

Anti-bacterial action- Azadirachtin and nimbinin are principal constituents of neem extract responsible for its antibacterial properties [6]. Neem leaf extract has shown significant reduction in plaque index and bacterial count especially S.mutans and lactobacilli species [7]. Elavarasu et al also demonstrated in their study definite anti plaque activity of neem oil [8]. Hedge & Kesaria compared antimicrobial efficacy of neem, propolis, turmeric, liquorice and sodium hypochlorite as root canal irrigants against E. Faecalis and C. Albicans in their study. They showed excellent efficacy of neem extract in inhibition of most resistant species E. fecalis and candida in root canal disinfection [9]. Adyanthaya et al studied antimicrobial effect of methanol extract of neem twig. They found efficacy of neem extract in reducing cariogenic as well as periodontal disease causing bacteria and suggested incorporation of methanol extract of neem twig into oral care products[10] Antifungal Properties- Neem oil and leaves have demonstrated antifungal properties and have been effective in reduction of candida induced denture Stomatitis [11]. Mahmoud et al. conducted a study to evaluate the effect of aqueous, ethanolic and ethyl acetate extracts from neem leaves on growth of various fungi (Aspergillus flavus, Aspergillus fumigatus, Aspergillus niger, Aspergillus terreus, Candida albicans and Microsporum gypseum) in vitro. They found that alchol based neem extract have excellent inhibitory effect on fungi and can be used as an antifungal agent[12].

Chemical constituents and properties

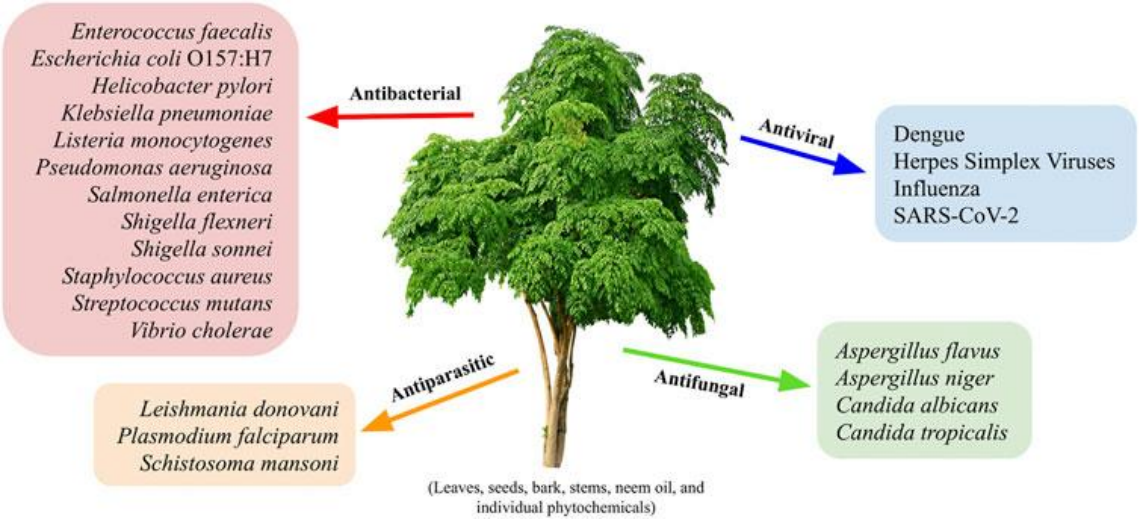
Neem contains a bitter fixed oil, nimbidin, nimbin, nimbinin and nimbidol,
Tannin and uses are: Antiinflammatory (nimbidin, sodium nimbidate, gallic acid, catechin, polysachharides).
Antiarthritic, hypoglycemic, antipyretic, hypoglycemic, diuretic, anti-gastric ulcer (nimbidin)
Antifungal (nimbidin, gedunin, cyclic trisulfide)

Antibacterial (nimbidin, nimbolide, mahmoodin, margolone, margolonone, isomargolonone) Spermicidal (nimbin, nimbidin)



Azadirachtin Nimbin

Medicinal Properties



Medicinal properties of neem have been known to Indians since time immemorial. The earliest Sanskrit medical writings refer to the benefits of neem's fruits, seeds, oil, leaves, roots and bark. Each of these has been used in the Indian Ayurvedic and Unani systems of medicine.In Ayurvedic literature neem is described in the following manner:-

Neem bark is cool, bitter, astringent, acrid and refrigerant. It is useful in tiredness, cough, fever, loss of appetite, worm infestation. It heals wounds and vitiated conditions of kapha, vomiting, skin diseases, excessive thirst, and diabetes.

Neem leaves are reported to be beneficial for eye disorders and insect poisons. It treats Vatik disorder. It is anti-leprotic. It's fruits are bitter, purgative, antihemorrhoids and anthelmintic'

The oil is used for skin diseases such as scrofula, indolent ulcers and ringworm.

Antibacterial Compounds: Recent reports focus on antibacterial activities in the mouth, specifically in gum disease and cavities, as well as preventing sexually transmitted diseases and as a vaginal contraceptive.

Antifungal Properties: The current research proved its antifungal properties which control fungi that can cause athlete's foot, ringworm and Candida, the organism that causes yeast infections and thrush.

Anti-Inflammatory: Nimbidin, a component of Neem, has been show to posses potent antiinflammatory and antiarthritis activity. Nimbiden suppresses the functions of macrophages and neutrophils involved in inflammation

Oral Diseases: Another traditional use of neem has been to chew the neem sticks. It is still used to clean teeth in rural parts of India.

Antimicrobial properties -that help to reduce plaque and gingivitis. Dental Care: People used Neem twigs as tooth brushes for centuries. Neem twigs contain antiseptic ingredients necessary for dental hygiene and prevents tooth decay, periodontal diseases, Infections, tooth decay, bleeding gums and sore gums.

Therapeutic Uses Treating scalp conditions, including dandruff, itchiness and head Treating acne Providing relief for skin disorders such as eczema and psoriasis

CONCLUSION

Neem is an omnipotent tree and nature's gift to mankind for prevention and treatment of various health ailments. In past years extensive research on therapeutic benefits of neem in oral and dental problems had proved its efficacy as an excellent and cheap antimicrobial, antinflammatory and anticancer agent. It's time that neem extracts are incorporated in present day oral and dental care products as well as in treatment of various oral premalignant and malignant lesions.

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