International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 10 Issue 5 ǁ 2022 ǁ PP. 342-345

Theraupatic Role of Neemin Prevention of various Disease Treatment

AUTHOR

ABSTRACT
Neem, Azadirachta indica A. is a tree, which has a wide application in animal realm. Azadirachta indica is quickly developing evergreen well known tree tracked down ordinarily in India, Africa and America. In the use of Neem, Neem utilized as Fertilizer, Manure, urea covering specialist, fumigant, pesticide, Soil Conditioner and Neem bother control is exceptionally valuable for legitimate harvest and bug the board. This survey is primarily centred around use of neem.

Date of Submission: 17-05-2022 Date of acceptance: 31-05-2022

I. Introduction

The neem tree Azadirachta indica A. belongs to family Meliaceae, is a tropical evergreen related to mahogany, Native to east India and Burma Neem leaf and its constituents have been demonstrated to exhibit immunomodulatory, anti-inflammatory, antihyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic properties.[1]
Its taxonomic position is as follows:
Order: Rutales
Suborder:Retinae
Family: Meliaceae
Subfamily: Meliodeae
Tribe: Melieae
Genus: Azadirachta
Species:Indica [1]

Morphology Neem is a large evergreen tree that may grow up to 20 m in height. The leaves are alternate and the leaflets contain8-19 leaves that may appear in March-April. The leaves are bitter in taste [2].More than 140 active substances that are chemically diverse and structurally complex have been isolated from different parts of neem. The compounds have been divided into two major classes: isoprenoids and non-isoprenoids. The isoprenoids include diterpenoids, triterpenoids, vilasinin type of compounds, limonoids and its derivatives, C-secomeliacins. The non-isoprenoids include proteins, polysaccharides, sulphurous compounds, polyphenolics such as flavonoids and their glycosides, dihydrochalone, coumarin and tannins and aliphatic compounds. Some of the phytochemical constituents present in neem leaf are listed.it is used as cosmopolitans over the world. In present pandemic time every house use neem as corona warrior. Used in various ways like kadas ,mix with bathing water etc.

Pharmacological actions of neem leaf extract

Neem is widely utilised in Ayurveda, Unani, and Homoeopathic treatment, and has become a modern medicine focus. The leaves, flowers, seeds, roots, and bark of the neem tree have all been utilised in traditional medicine as home treatments for a variety ofhumandiseases.outlines the pharmacological properties of several neem components. However, the therapeutic properties of neem leaf have been discussed in detail. Because of their year-round availability, neem leaves have been employed extensively in traditional medical formulations.and the simplicity with which the chemical may be extracted Neem leaves have a diverse set of pharmacological properties and therapeutic uses. The discussion of pharmacological actions that follows will be limited to neem leave [3-5].

Role of neem in various diseases activity

- Antibacterial Activity
- Antimalarial Activity
- Antifertility Activity
- Antiulcerogenic Activity
- Antihypertensive and Anti hyperglycaemic Effects

- Hepatoprotective Effect
- Immunostimulant Activity
- Antioxidant and Antigenotoxic Effects
- Anticancer Activity
- Antiviral activity

Anti bacterial activity

Oil extracted from the leaves, seeds, and bark has a broad range of antibacterial activity against Gram-negative and Gram-positive bacteria, including M. tuberculosis and streptomycin-resistant strains.[6] It inhibits Vibrio cholerae, Klebsiella pneumoniae, Tuberculosis, and Mycobacterium pyogenes in vitro. Neem extract has been shown to have antiseptic effect against Mutans and Streptococcus faecalis. The growth of several pathogens, including bacteria, fungus, and virus, was inhibited by NIM-76, a novel vaginal contraceptive made from neem oil. The antibacterial activity of neem seed oil was recently tested in vitro against 14 harmful bacteria types.[7]

Antimalarial Activity

Malaria parasites are sensitive to neem seed and leaf extracts. Components of alcoholic extracts of leaves and seeds are efficient against chloroquine-resistant and chloroquine-sensitive malarial parasite strains. The growth and development of asexual and sexual phases of drugs sensitive and resistant strains of the human malarial parasite P. falciparum have been found to be inhibited by neem seed extract and its purified fractions recently. in homes for malarial parasite the smoke of neem leaves areused. [8,9]

Antifertility Activity

In vitro, neem oil was found to be spermicidal against rhesus monkey and human spermatozoa. In vivo investigations have shown that using neem oil intra vaginally before to coitus can prevent pregnancy. The antifertility effect of neem oil has also been investigated, with the possibility of it being used as a novel way of contraception. In mice, an aqueous extract of neem leaves given orally has an antifertility effect. When given orally, purified neem seed extract (Praneem) has been shown to prevent pregnancy in both baboons and bonnet monkeys. An active fraction including six components derived from the hexane extract of neem seed has been proven to totally abort pregnancy in rats when administered orally up to a dose of 10%, with no obvious adverse effects [10]

Antiulcerogenic Activity

By reducing mucus depletion and mast cell degranulation in rats subjected to restriction – cold stress or ethanol orally, neem leaf aqueous extract has an antiulcer effect.[11] Our team discovered that an aqueous extract of neem bark has extremely powerful antiacid secretory and antiulcer action, and the bioactive ingredient has been confirmed as a glycoside.[12].

Antihypertensive and Anti hyperglycaemic Effects

Neem have antihistamine which dilate the blood vessels and cause lowering in blood pressure, it has been scientifically proved that neem reduces body cholesterol level in effective way, Aqueous extract of neem leaves lowers blood sugar levels and protects against adrenaline and glucose-induced hyperglycaemias.[13] When given orally, the aqueous leaf extract causes hypoglycaemia in normal rats and lowers blood glucose levels in animals with experimentally induced diabetes. In streptozotocin diabetes, aqueous leaf extract reduces hyperglycaemias, which may be attributed to the presence of a flavonoid termed quercetin. Fasting rabbits were given neem oil, which had a strong hypoglycaemic impact. Leaf extract and seed oil have recently been found to have a hypoglycaemic impact in both normal and alloxan-induced diabetic rabbits. The probable processes behind the aqueous leaf extract's hypoglycaemic action have also been considered.[14]

Hepatoprotective Effect

Both aqueous and alcoholic neem leaf extracts have been demonstrated to protect against paracetamol-induced liver damage.[15] Marker enzymes such aspartate transaminase (AST), alanine transaminase (ALT), and alkaline phosphatase (ALP) were raised 24 hours after paracetamol therapy, but rats given neem extract prior to paracetamol treatment had significantly decreased enzyme activity. Neem leaves were shown to prevent rats from hepatotoxicity caused by antitubercular medicines,Antitubercular medications such as isoniazid, rifampicin, and pyrazinamide caused alterations in blood bilirubin, protein, AST, ALT, and ALP, which were greatly reduced by aqueous neem leaf extract.[16]

Immunostimulant Activity

The immune stimulant effect of neem leaf aqueous extract is mediated by both humoral and cell-mediated responses. Larger levels of IgM and IgG,[17] as well as a higher titer of antiovalbumin antibody, are induced by oral administration of leaf extract (100 mg/kg body weight). The TH-1 component of the lymphocyte population is selectively activated by neem leaf, which is thought to stimulate and increase the cell-mediated immune response.[18] Neem leaf extracts have been demonstrated to inhibit both the traditional and alternative C pathways, as well as increase macrophage phagocytic activity.it is very use full in present time of corona pandemic condition.

Antioxidant and Antigenotoxic Effects

The radical scavenging capabilities of neem leaf were discovered by Chattopadhyay. The use of neem leaf has been shown to reduce lipid peroxidation. Experiments in lab have revealed that both aqueous and 70% ethanolic neem leaf extracts effectively decrease Nmethyl-N'-nitro-N-nitrosoguanidine (MNNG)-induced lipid peroxidation by increasing glutathione-dependent antioxidants such superoxide dismutase (SOD) and catalase (CAT) activity.[19] MNNG-induced rat bone marrow micronuclei and chromosomal abnormalities were reported to be reduced by aqueous neem leaf extract. In mice and hamsters, pre-treatment with an ethanolic extract of neem leaf provided considerable protection against the genotoxic effects of the carcinogens MNNG and 7,12-dimethylbenz[a]-anthracene (DMBA).

Anticancer Activity

A cancer cell's ability to proliferate uncontrollably and continuously is its defining feature. As a result, one of the most important anticancer therapy techniques is the capacity to block cellular growth. The effects of neem oil components on the cell membranes of HeLa cervical cancer cells have been demonstrated in previous research to be useful in reducing cancer cell growth[20]. Neem leaf extracts have been demonstrated to exhibit anti-proliferative activities in hamster buccal pouch models caused by [a]Anthracene (DMBA). The expression of proliferating cell nuclear antigen (PCNA) is significantly decreased, while cytokeratin expression is modulated. These data clearly show that neem components have the ability to inhibit proliferation and promote differentiation, resulting in an improved prognosis.[21]

Antiviral activity

In vitro, aqueous leaf extract has antiviral activity against the Vaccinia virus, Chikungunya virus, and the measles virus. [22] The antiviral and virucidal activities of the methanolic extract of neem leaves (NCL-11) against group-B Coxsackie viruses have recently been established. At a dosage of 1 mg/ml, NCL-11 prevents plaque formation in distinct antigenic types of Coxsackie virus B in vitro for 96 hours. Further research revealed that NCL-11 is particularly effective as a virucidal agent in Coxsackie viral B-4, in addition to interference with the virus's multiplication early on.[23]

II. CONCLUSION

Neem Azadirachta indica is a important and beneficial plant in kingdom plantae,According to the above studies we find that neem play a very hightherapeutic role in various diseases, which are given above .as the present condition it plays a effective role in boosting the immunity and the hundreds of diseases are cured by the neem ,and its extract is an effective blood purifier and many of times used as pesticides.

References

[1]. Wikipedia.com
[2]. Puri, H.S. In Neem. The divine tree. Azadirachta indica; Harwood Academic Publishers: Singapore, 1999, pp. 9-21.
[3]. Keher, N.D; Negi, S.S. In Cultivation and Utilization of Medicinal Plants; Atal, C.K; Kapur, M.; Regional Research Laboratory: Jammu Tawi, 1949, pp. 483-494.
[4]. Devakumar, C; Dev, S. In Neem Research and Development. Randhawa, N.S; Parmar BS.; Society of Pesticide Science: India, 1993, pp. 63-96
[5]. Biswas, K.; Chattopadhyay, I.; Banerjee, R.K.; Bandyopadhyay, U. Curr. Sci., 2002, 82, 1336.
[6]. Chopra, I.C.; Gupta, K.C.; Nazir, B.N. Indian J. Med. Res., 1952, 40, 511.
[7]. Satyavati, G.V.; Raina, M,K.; Sharma, M. Medicinal plants of India, ICMR, New Delhi, 1976.
[8]. Badam, L.; Deolankar, R.P.; Kulkarni, M.M.; Nagsampgi, B.A.; Wagh, U.V. Indian J. Malariol., 1987, 24, 111.
[9]. Vasanth, S.; Gopal, R.H.; Rao, R.B. J. Sci. Ind. Res., 1990, 49, 68-70.
[10]. Kasturi, M.; Ahmed, R.N.; Pathan, K.M.; Shaikh, P.D.; Manivannan, B. Indian J. Physiol. Pharmacol., 1997, 41, 234.
[11]. Febry, W.; Okema, P.; Ansorg, R. Chemotherapy, 1996, 42, 315.
[12]. Garg, G.P.; Nigma, S.K.; Ogle, C.W. Planta Med., 1993, 59, 215.
[13]. Koley, K.M; Lal, J. Indian J. Physiol. Pharmacol., 1994, 38, 223.
[14]. Murty, K.S.; Rao, D.N.; Rao, D.K.; Murty, L.P.G. Indian J. Pharmacol., 1978, 10, 247.
[15]. Bhanwra, S.; Singh, J.; Khosla, P. Indian J. Physiol. Pharmacol., 2000, 44, 64.
[16]. Chattopadhyay, R.R. J. Ethnopharmacol., 2003, 89, 217.
[17]. Sen, P.; Mediratta, P.K.; Ray, A. Indian J. Exp. Biol., 1992, 30, 1170.
[18]. Ray, A.; Banerjee, B.D.; Sen, P. Indian J. Exp. Biol., 1996, 34, 698.
[19]. Chattopadhyay, R.R. Indian J. Exp. Biol., 1998, 36, 418.
[20]. Yadav, S.K; Rathore, J.S. Mitotic inhibition by Melia Azadirachta leaf extracts. Proc. Natl. Acad. Sci. India, 1976, 46, 527.
[21]. Larocca, L.M.; Teofili, L.; Leone, G.; Sica, S.; Pierelli, L.; Menichella, G.; Scambia, G.; Panici, P.B.; Ricci, R.; Piantelli, M. Br. J. Haematol., 1991, 79, 562.
[22]. Gogate, S.S.; Marathe, A.D. J. Res. Edu. Indian Med., 1989, 8, 1.
[23]. Rao, A.R.; Kumar, S.S.; Paramasivam, T.B.; Kamalkashi, S.; Parashuram, A.R.; Shantha, M. Indian J. Med. Res., 1969, 57, 495.