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Potentially Pharmacological Qualities of Azadirachta Indica (Neem)

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Abstract: *Neem, or Azadirachta indica, (family Meliaceae) is a medicinal plant with a variety of applications in the fields of agriculture, conservation and medicine. Neem is a modern medical surprise that has been widely used in Ayurvedic, Unani, and homeopathic treatment. Each portion of the neem plant (Azadirachta indica) has been reported to possess different pharmacological qualities and has been used in different regions for decades. Plant parts and extracts exhibited specific biological and pharmacological activities such as antibacterial, anti-inflammatory, antioxidant, anticancer, antiviral, fungicidal, larvicides and insecticidal. The Pharmacological qualities of neem are reviewed in this article.*

Keywords: *Neem, Azadirachta indica, pharmacological qualities, medicinal plant*

I. INTRODUCTION

Azadirachta Indica A. Juss (family Meliaceae), is a popular medicinal neem plant in Asia and Africa about 20 ft tall that has been used for centuries for a variety of reasons. It is utilized in a variety of traditional treatments due to it have extraordinary application of biologically active ingredients. Neem produces a large number of physiologically active chemicals over 140 chemical substances have been identified from its various parts. Most important active constituent is azadirachtin and the others are nimbidin, nimbinin, nimbin, nimbidol, nimbolide, gedunin, mahmoodin salannin, quercetin [1,3]. Different components of the neem tree, including leaves, blossoms, fruits, seeds, and bark, find significant applications in ancient forms of herbal medicine (e.g., Ayurveda, Unani, and Siddha) for relieving multiple diseases affecting humans [4-6].

Because they are affordable and have few side effects, the therapeutic potential of many types of plants in treating ailments is still being extensively studied. It is well known that drugs based on allopathy are expensive and negatively impact healthy tissues and biological processes.

Natural resources, especially medicinal plants, are the source of many pharmacologically active drugs. In addition to researching the chemistry of its compounds, researchers have made significant progress in comprehending the biological activity and medicinal applications of neem over the past five decades [7-9]. It is now regarded as a valuable source of distinctive herbal remedies for the development of commercial goods and medications for a variety of diseases.

Pharmacological Qualities of Azadirachta Indica (Neem):

Patel, S. M. et al reported Azadirachta indica parts and

chemical compounds chemo preventive and anticancer therapeutic efficacy could be explained by multiple cellular and molecular mechanisms, including free radical scavenging, carcinogen-detoxification, DNA repair, cell cycle alteration, programmed cell death (apoptosis). Susmitha, S., et al used cup diffusion method to aqueous extracts of Azadirachta indica (neem) which were tested in vitro against Salmonella sp. and human pathogenic Escherichia coli. Pandey, G., et al tested A.indica leaves were strong antibacterial and antioxidant qualities, as well as phytoconstituents that may add to their therapeutic qualities. Emran, T. B. et.al tested considerable dose-related suppression of the analgesic effect can be seen by the ethanol extracts of A. indica. Deng, Y. X. et al carried out tests for acute and 28-day subacute toxicity were conducted. The LD50 values of neem oil in the acute toxicity test were 31.95 g/kg. The subacute neem oil treatment did not alter food and water intake or body weight increase. Mukherjee, A. K., et al reported that the phospholipase A2 enzymes of cobra and Russell's viper venoms are inhibited in a dose-dependent manner by a substance called AIPLAI (Azadirachta indica PLA2 inhibitor), which was isolated from the methanolic leaf extract of A. indica (neem). Schumacher, M., et al studied modification of the nuclear factor- κ B pathway mediates the anti-inflammatory, pro-apoptotic, and anti-proliferative actions of a methanolic neem (Azadirachta indica) leaf extract. In rats, Azadirachta indica reduces the neurotoxicity caused by cisplatin detected by Moneim, A. E. A. and Ahmad, A., et al reported that along with the medications LGH, Naproxen, BMS-885838, and BMS-883559, the chemical Hyperoside from neem leaf extract were the best interactions with conserved nucleoprotein residues and these substances have

been noted for their potential to be used as a universal medication against influenza strains. Patil, P. et al confirmed about 70% alcoholic neem root extract has antidiabetic activity. The effects of adding Neem powder (*Azadirachta indica*) to broiler diets on their immunological, physiological, and productive qualities proved experimentally by Shihab, I. M. and Hao, F. et al reported that neem extracts increase the effectiveness for multiple cancer chemotherapeutic drugs and make cancer cells more sensitive to immunotherapy and radiation. Chundran, N. K. verified that as compared to povidone iodine, neem leaf extract has the same rate of wound healing. The leaves of *A. indica* contain a large number of polyphenolic chemicals with strong antioxidant and cytotoxic activity, making it a promising source for healthy alternatives emphasized by Bader, A., et al. Haque, S. E., & Sreenivasulu, M. conducted a review as neem leaves, bark, seed, and seed husk have shown significant hypoglycemic activity as an antidiabetic agent by lowering blood glucose through administration of glucose outside the body, increasing insulin release, and inhibiting kidney nearby tubular reabsorption. Ashfaq, U. A., et al identified antiviral phytochemicals from *Azadirachta indica* leaves that targeting Hepatitis C virus NS3 protease via molecular docking and simulation methodologies. Deshpande, P. K. et al resolved that *Azadirachta indica* leaf extract possesses anti-plasmodium activity, serving as an antimalarial agent. Thakurta, P. et al study demonstrated that methanolic extract of *Azadirachta indica* leaves was an efficient antibacterial and antisecretory agent against *Vibrio cholerae*, the triggering agent of fatal disease cholera.

II.CONCLUSION :

Medicinal plants and phytochemicals are being increasingly utilized to prevent and treat diseases due to their usefulness and comparatively low side effects. The neem plant (*Azadirachta indica*) has been utilized for decades in various parts of the world, with each part reportedly having unique pharmacological properties. Medical study has shown that neem is essential for preventing a bacterial infections, cancerous diseases, reduce inflammation and potentially pharmacological important probably therapeutically essential.

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Conflict of interest: The author declares that, there is no conflict of interests regarding the publication of this paper.

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