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IMPORTANCE OF VILLAGE PHARMACY TREE- NEEM

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ABSTRACT

Village pharmacy plant commonly known as Neem (*Azadirachta indica*) belongs to the family eliaceae, subfamily Meloideae and tribe Melieae. Neem is the most important multimedicinal trees. It possesses maximum useful non-wood products (flowers, fruits, seed, leaves, and bark, gum, oil and neem cake). These non-wood products are known to have antiallergenic, antidermatic, antifeedent, antifungal, anti-inflammatory, antipyorrhoeic, antiscabic, cardiac, diuretic, insecticidal. Because of these activities neem has found enormous applications making it a green treasure.

Keywords: Village pharmacy, Neem cosmetics products, Extraction process, Medicinal Activity.

INTRODUCTION

Neem has been used in Ayurvedic medicine for more than 5,000 years due to its medicinal properties. *Azadirachta indica* is an evergreen, plant obtain in Indonesia, Sri Lanka, Myanmar, Pakistan, Japan and tropical regions of Australia and America, Ghana it has become the leading producer of firewood for the densely populated Accra Plains and in countries from Somalia to Mauritania it is a leading candidate for helping halt the southward spread of the Sahara Desert native to India, that grows up to 80 ft high. It is found in the tropical dry deciduous /evergreen and thorny forests and drier parts of Himachal Pradesh, Uttar Pradesh, Punjab, Orissa, Haryana, Karnataka, Kerala, Tamil Nadu and Andhra Pradesh. It is also known as "the village pharmacy" in Sanskrit it is known as 'arista' The seeds, bark and leaves contain compounds with proven antiseptic, antiviral, anti-inflammatory, anti-ulcer, antipyretic, and antifungal uses. In Sanskrit name 'nimba' comes from the term 'nimbatyasyathyamdadati' which means 'to give good health'. it is a tall evergreen tree with the small bright green leaves. It is up to 120 feet tall. It has a straight trunk. It blossoms in spring with the small white flowers. The colour of the bark is brown grayish. In Ancient time it is refers as Neem as "Sarva Roga Nivarini."

Pronounce of Neem in different language

English: neem, Indian lilac French: azadirad
d'Inde, margousier, azidarac, azadirac Portuguese: margosa
(Goa) Spanish: margosa, nim German: Niembaum Hindi:
neem, nimb Burmese: tamar, tamarkha Urdu: nim, neem
Punjabi: neem Tamil: vembu, vcpan Sanskrit: nimba,

nimbou, arishtha (reliever of sickness) Sindi: nimmi Sri Lanka: kohomba Farsi: azad darakht hindi (free tree of India), nib Malay: veppa Singapore: kohumba, nimba Indonesia: mindi Nigeria: dongoyaro Kiswahili: mwarubaini (muarobaini)

CHEMICAL CONSTITUENT OBTAIN IN NEEM PLANTS

According to their uses it consist the following chemical constituent. 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*) Antimalarial (*nimboldife, gedunin, azadirachtin*) Antitumor (*polysaccharides*) Immunomodulatory (*NB-II peptoglycan, gallic acid, epicatechin, catechin*) Hepatoprotective (*aqueous extract of neem leaf*) Antioxidant (*neem seed extract*)

METHODS OF NEEM OIL EXTRACTION

It is done by Mechanical pressing, Steam pressure extraction and Solvent extraction.

Steam pressure extraction

- The fruits are collected in a drum, and the kernels are separated to obtain the seeds.
- Later the seeds are woven dried and then feed into the

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- oil extracting machine in case of mechanical pressing method.
- The neem oil is obtained by pressing it mechanically and collected in a drum. Thus filtration is done to remove the various unwanted particles left in the extracted oil in order to obtain pure neem oil.
- In case of Steam pressure extraction method, the neem seeds after the drying process are feed into the steam boiler. This process makes the extraction process easier. The seeds get swollen by steaming thus the oil in squeezing becomes easy.
- The process of steaming is accompanied by increasing of pressure in the boiler which drives the oil out from the seed without any pressing.

In solvent extraction method

- solvents like petrol or white gasoline is mixed with the seeds after woven drying.
- The solvents help in extracting the neem oil out of the kernel up to certain percent. Added to that the neem seeds are pressed if needed.
- The resulting oil is stored in a silo where the pure neem oil is recovered from the crude one. Other than these above mentioned methods, a latest extraction method called cold pressing is being adopted in many neem oil manufacturing industries.

Cold pressing

In the method of cold pressing, it is seen that the purest form of neem oil is obtained along with the presence of active compounds. The oil extracted using cold press method seems to be lighter in color as well as odor when compared with other methods.

COSMETICS APPLICATION OF NEEM TREE

Neem Soap

Neem oil soap is the most popular form of utilizing the many benefits of neem oil. Neem oil has insecticidal properties, is antibacterial and antifungal, soothing and moisturising. Neem oil soap is a real treat for the skin, even for healthy skin. But skin problems are where it shines. Here are just some skin conditions where people have used neem soaps for centuries and with great results.

Neem Cream

Neem Cream help's to calm irritation and soothe red, sensitive areas perfect for those prone to eczema. Skin itchy and bumpy, soothes and brings comfort to areas that have flared up after unknown allergies or over reaction to sun or insect bites, helping the skin recover.

Neem Oil

It is used for preparing cosmetics (soap, hair products, body hygiene creams, hand creams) and in Ayurvedic, Unani and folklore traditional medicine, in the treatment of a wide range of afflictions. It is used for are skin diseases, inflammations and fevers, more recently rheumatic disorders, insect repellent and insecticide effects.

MAARKETED COSMETICS FORMULATION OF NEEM

Medicinal Applications of Neem

Immunostimulant activity

The aqueous extract of stick possesses potent immune stimulant activity as evidenced by both humoral and cell-mediated responses which increases IgM and IgG antibodies and it is also use full for tooth cleaning.

Hypoglycaemic activity

The aqueous leaf extract when orally fed, also produces hypoglycaemia in normal decreased blood glucose levels. Aqueous leaf extract also reduces hyperglycaemia in streptozotocin diabetes and the effect is possibly due to presence of a flavonoid, quercetin.

Antiulcer effect

Neem leaf aqueous extract produces antiulcer effect in rats exposed to restraint cold stress or ethanol orally by preventing mucus depletion and mast cell degranulation. An aqueous extract of neem bark has been shown from our laboratory to possess highly potent antiacid secretory and antiulcer activity and the bioactive compound has been attributed to a glycoside.

Antifertility effect

The mechanism of action of neem oil appears to be non-hormonal, probably mediated through its spermicidal effect and may have less side effects than steroidal contraceptives. Purified neem seed extract has also been demonstrated to abrogate pregnancy in both baboons and bonnet monkeys, when administered orally. From the hexane extract of neem seed, an active fraction containing six components has been found to completely abrogate pregnancy.

Antimalarial activity

Neem seed and leaf extracts are effective against malarial parasites. Components of the alcoholic extracts of leaves and seeds are effective against both chloroquin-resistant and sensitive strains of malaria parasite. Recently, neem seed extract and its purified fractions have been shown to inhibit growth and development of asexual and sexual stages of drug sensitive and resistant strains of the human malarial parasite *P. falciparum*.

Antifungal activity

Extracts of neem leaf, neem oil and seed kernels are effective against certain human fungi, including *Microsporium*, *Epidermophyton*, *Trichosporon*, *Geotricum*, *Trichophyton*, and *Candida*.

Antibacterial activity

Oil from the leaves, seeds and bark possesses a wide spectrum of antibacterial action against Gram-negative and Gram-positive microorganisms, including *M. tuberculosis* and streptomycin resistant strains. *In vitro*, it inhibits *Vibrio cholerae*, *Klebsiella pneumoniae*, *M. tuberculosis* and *M. pyogenes*.

Antiviral activity

Aqueous leaf extract offers antiviral activity against Vaccinia virus, Chikungemya and measles virus *in vitro*. The antiviral and virucidal effects of the methanolic extract of neem leaves. **Hepatoprotective activity:** The elevated levels of serum aspartate aminotransferase (AST), alanine aminotransferase (ALT) and gamma glutamyl transpeptidase (GGT).

Antioxidant activity

The antioxidant activity of neem seed extract has been demonstrated *in vivo* during horsegrain germination, which is associated with low levels of lipooxygenase activity and lipid peroxides⁹². An antioxidant principle has also been isolated, which is a potent inhibitor of plant lipooxygenases.

Fertilizer

The poultry manure shows increased in height stem girth compared to Neem leaves extracts. The soil

chemical condition were improved by the modified Neem leaves extract, by which it shows the highest value of organic matter, Nitrogen, Phosphorus, Potassium, Calcium and Magnesium in the soil compared to poultry manure and individual application of Neem leaves and wood ash.

Pesticide

It was stated that the wetting of banana corm or pseudo stem with Neem cake extract, aqueous Neem seed powder, Neem kernel powder or with emulsified Neem oil will disrupt the settling response, egg laying, and larval feeding of *Cosmopolites sordidus* which is known as The Banana Corn Borer.

Antisnake venom activity

Snake venom phospholipase (PLA2) inhibitor (AIPLAI) was isolated from leaves of *A. indica* (neem) and the mechanism of PLA2 inhibition by AIPLAI *in vitro* condition was also studied.

Table 1. Classification of Neem

Kingdom :	Plantae
Division	Magnoliophyta
Class:	Magnoliopsida
Order :	Sapindales
Family :	Meliaceae
Genus :	Azadirachta
Species :	<i>A. indica</i>
Scientific Name	<i>Azadirachta indica</i>
Found In :	Australia, America, Ghana, Sri Lanka, Myanmar, Pakistan, Japan, Philippines, Indian

Table 2. Bioactive Compounds from Neem

Neem compound	Source	Biological activity
Nimbidin	Seed oil	Anti-inflammatory, Antipyretic, Antigastric ulcer,
Sodium nimbidate	Seed oil	Anti-inflammatory
Nimbin	Seed oil	Spermicidal
Margolone,	Bark	Antibacterial
NB-II peptidoglycan	Bark	Anti-inflammatory
Azadirachtin	Seed oil	Antibacterial
Mahmoodin	Seed oil	Antibacterial

Figure 1(a). Neem Tree



Figure 1(b). Philippines Neem Tree



Figure 1(c). Indian Neem Tree



Figure 2. Chemical constituent found in Neem tree.

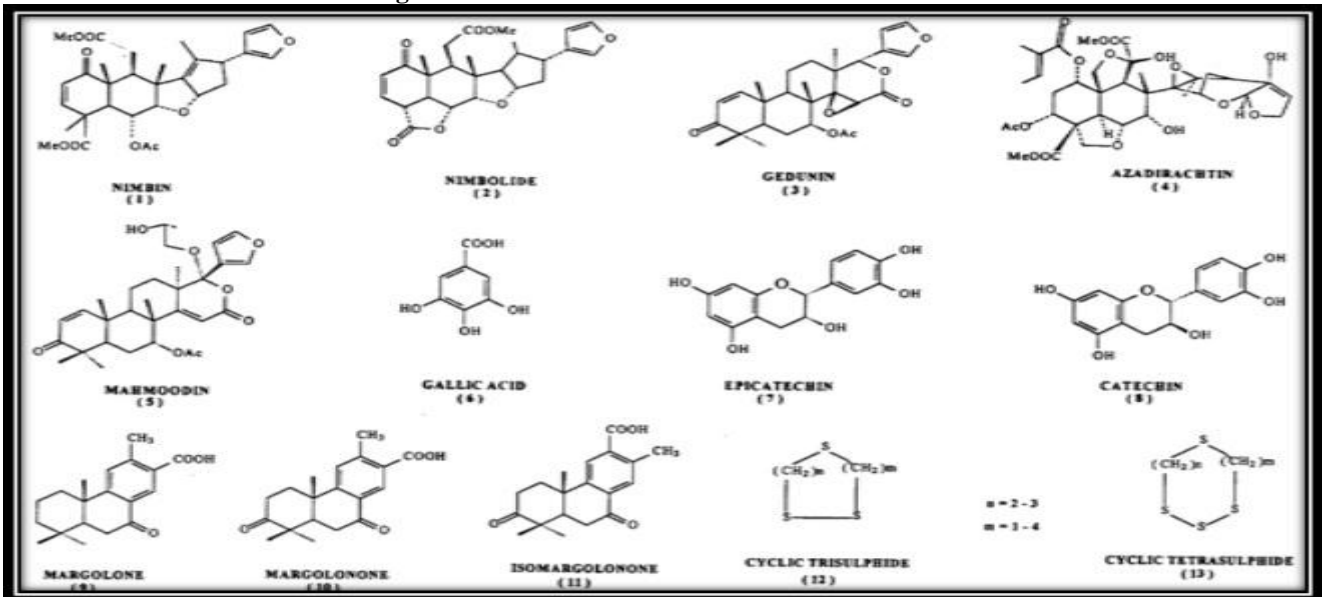


Figure 3. Neem soap Neem Cream

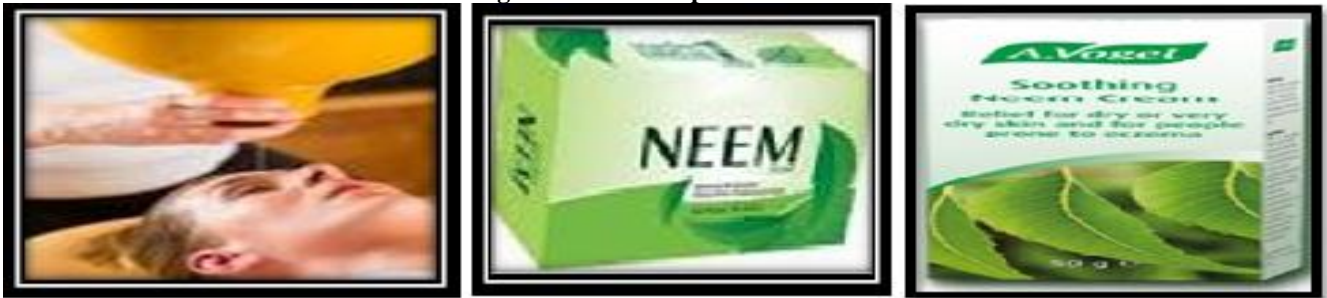


Figure 4(a). Neem Cream Neem Oil



Figure 4(b). Marketed cosmetics formulation of NEEM



Figure 5. Neem Stick



Figure 6. Neem Leaf



Figure 7. Neem Fruit



Figure 8. Neem Endocarp



Figure 9. Antioxidant activity



Figure 10. Fertilizer



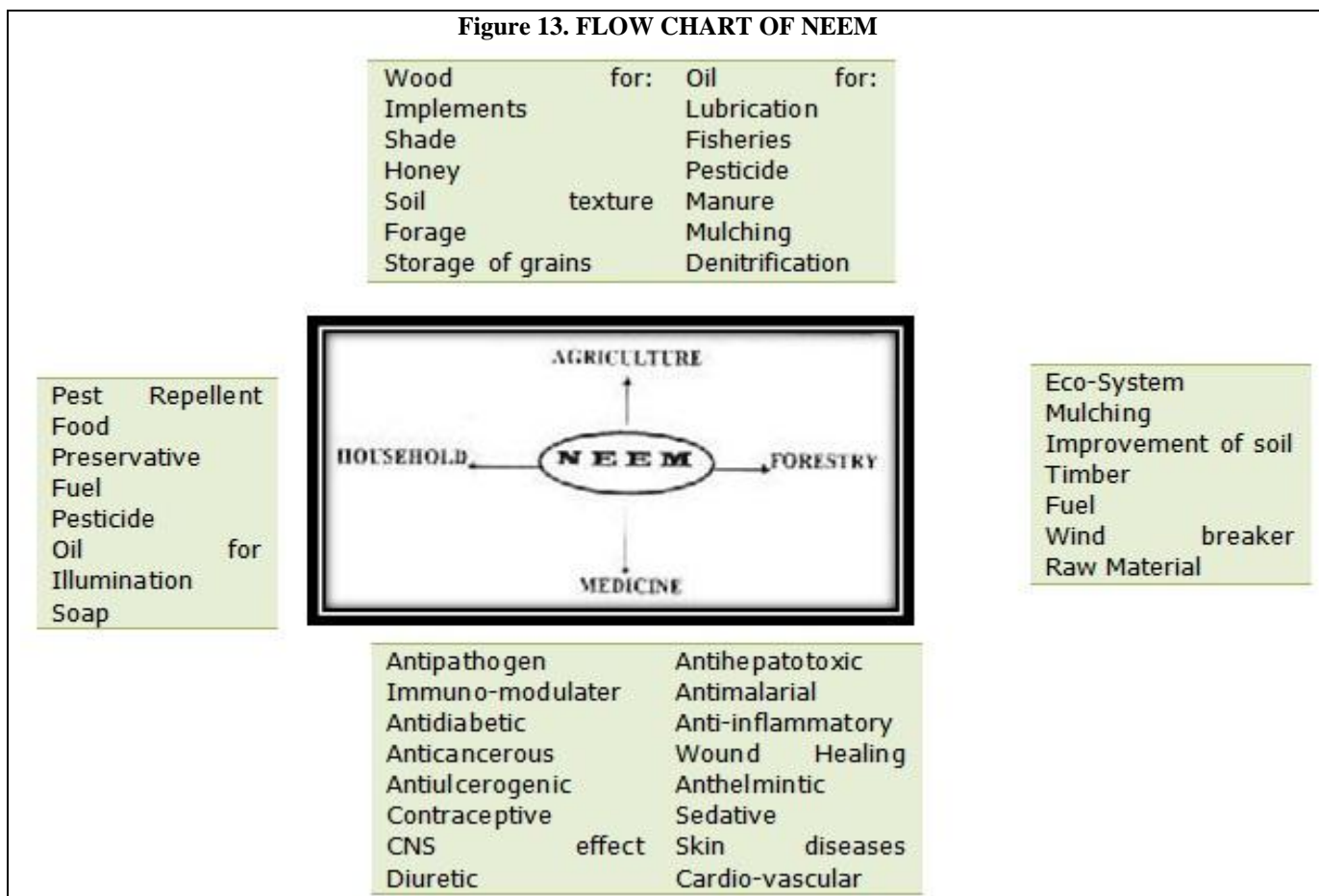
Figure 11. Pesticide



Figure 12. Antisnake venom activity



Figure 13. FLOW CHART OF NEEM



CONCLUSION

The ‘Village pharmacy’ or ‘Doctor Tree’ or ‘Wonder tree of India’ One of the most promising of all plants and the fact is that it may eventually benefit every person. It consists of nimbidin, sodium nimbidate, gallic acid, catechin, polysachharide, nimbidin, nimbidin, gedunin, cyclic trisulfide, nimbidin, nimbolide.

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