A PROJECT WORK ON AZADIRACHTA INDICA

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With Financial Assistance from St Theresa's College for Women (A), Eluru
Under RUSA 2.0

SUBMITTED BY

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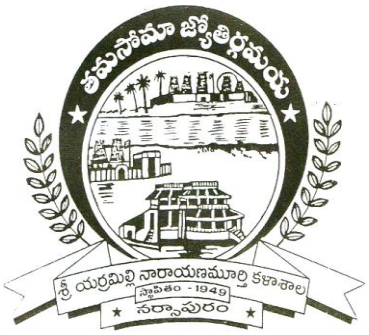

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(2019-2020)

CERTIFICATE

This is to certify that this project work entitled **"AZADIRACHTA INDICA"** is submitted by **S. Ganga parvathi, I. Madhu of II B.Sc. B.Z.C** during the academic year 2019-2020 under my guidance to the Coordinator RUSA.

Signature of the guide

Signature of the Head of the Department

Signature of RUSA Coordinator **Signature of the Principal**

DECLARATION

I hereby declare that the project work entitled "**AZADIRACHTA INDICA"** submitted to RUSA 2.0 Scheme, under the guidance of Sri Bh Rama Raju, Dept. of Botany, Sri YN College(A), Narsapur

SIGNATURE OF PROJECT STUDENTS

AZADIRACHTA INDICA

(Neem)

Botanical Name: ***Azadirachta indica***

Family: Meliaceae

Vernacular Name:

Sanskrit: Nimbah,

English : Neem,

Hindi: Nimb,

Malayalam: Veppu

Tamil: Vempu,

Telugu: Kondavepa, Turakavepa.

Distribution:

Throughout India in Deciduous forest also widely cultivated. Native to India is now widely distributed throughout the Indo – Malayan region and is also found in tropical Africa.

Description:

A medium to large sized tree, 15-20Mts in height with a clear bole of 7.0mts having grayish to dark grey tubercled barc. Leaves compound Imparipinnte, leaf lets, sub opposite, serrate, very oblique at base. Flowers creamy or yellowish white in axillary panicles, staminal tubes conspicuous, cylindric widening above, 9-10 lobed at the apex. Fruits one seeded drups with woody endocarp greenish yellow when ripe, seeds ellipsoid, cotyledons thick, fleshy and oily.

Propagation:

Propagation by seeds. Tree improvement by selection and breeding through conventional techniques is too slow. Because of the long life cycle of

the trees. Therefore, modern methods like Genetic Engineering and tissue culture techniques have successfully been used in the regeneration of Neem trees. Recently, transgenic neem trees have been developed by using *Agrobacterium tumefaciens.* Plantlets have also been obtained by embryoculture by the addition of high sucrose (12%) and 0.01mg / 1 NAA and 0.1mg / 1BAP to the culture medium.

Parts used:

Bark, Leaves, Flowers, Seeds, Oil

Chemical Constituents:

The stem **bark** contain : tannin, non tannin and red dye. The bark exudes a clear, bright, amber colored gum known as the EAST INDIA gum.

The **leaves** contain nimbin, nimbidin, nimbolide and quercetin. Analysis of the mature leaves gave moisture, protein, fat, fibers, carbohydrates, minerals, calcium, phosphorous, iron, thiamine, niacin, vitamin, carotene and cal val. The amino acids present or glutamic acid, tyrosine, aspartic acid, proline and glutamine.

The **fruits** contain gedunin, azadiradione, azadirone, nimbiol.

Uses:

Bark:

The bark is bitter, astringent, acrid, refrigerant, depurative, antiperiodic, vulnerary, demulcent, insecticidal, liver tonic, expectorant, urinary astringent, anthelmintic, pectoral and tonic. It is useful in vitiated conditions of *pitta*, hyperdipsia, leprosy, skin diseases, eczema, leucoderma, pruritus, inteminttent and malarial fevers, wounds, ulcers, burning sensation, tumour, tubercular glands, anorexia, vomiting, dyspepsia, intestinal worms, hepatopathy, cough, bronchitis, urorrheam diabetes inflammation, amenorrhoea, lumbago, haemorrhoids, otalgia, syphilis and fatigue.

- The bark is a good bitter tonic astringent and antiperiodic.
- It is also regarded as beneficial in malarial fever.
- Ethanolic extract of the **stem bark** exhibited anti bacterial and anti fungal activity against *Bacillus megateriam* and *Aspergillus niger* respectively.
- The methanolic extract of the bark also contained gedunin, with showed anti malerial activity against *Plasmodium falciparem*.
- The tri cyclic di terpenoids margocinin, margocilin and nimolinin and nimbilin have been isolated from the **root bark.**
- The terpionoid exhibited anti tumour, anti biotic and insecticidal properties.
- The amino acid composition of the bark is arginine, aspargine, aspartic acid, cysteine, glutamic acid, proline and tryptophan.

Leaves:

The leaves are bitter, astringent, acrid, depurative, antiseptic, ophthalmic, anthelmintic, alexeteric, appetizer, insecticidal, demulcent and refrigerant. They are useful in vitiated conditions of *pitta*, burning sensation, leprosy, skin diseases, leucoderma, pruitus, ophthalmopathy, intestinal worms,

dyspepsia, ulcers, tuberculosis, boils, eczema and malarial and intermittent fevers.

Neem leaf decoction is used a galactogogue for initiating milk secretion in nursing mothers. And also recommended for diabetes mellitus of adults, nonketonic diabetes, as well as in cases of insulin sensitivity.

- Tablets and injections are been formulated for chronic malaria.

- A neem leaf preparation is also recommended as a local sedative for external applications.

- The leaves are reported to be chewed to control bleeding and itching in piles.

- An aqueous extract of the leaves exhibited hepatotoxic activity in **rats** .

- The leaf extract prepared in potassium phosphate buffer inhibits aflatoxin production in *Aspergillus parasyticus* at 10% concentration.

- The aqueous also shows inhibitery effect on spinach mosaic virus and slight larvicidal activity.

Flowers:

The flowers are bitter, refrigerant, ophthalmic, stomachic, anthelmintic and tonic. They are useful in vitiated conditions of *pitta* and *kapha*, burning sensation, ophthalmopathy, colic, dyspepsia, intestinal worms and general debility.

The dry flowers are considered tonic and stomachic. The fresh tender twigs are used to clean teeth particularly in pyorrhoea.

Fruits:

In Pakistan a decoction of the fruits is reported to be used in gastric aliments, post-partum pain and haemorrhoids.

Seeds:

The seeds are bitter, acrid, thermogenic, purgative, emollient, anodyne, anthelmintic, depurative, vulnerary, uterine stimultant and urinary astringent. They are useful in tumours, leprosy, skin diseases, odontalgia, intestinal worms, haemorrhoids, pulmonary tuberculosis, ophthalmopathy, wounds, ulcers, constipation, dystocia, antenatal diseases, urorrhea and diabetes.

- The powdered seeds mixed with honey are reported to be given in piles by the local people of Uttar Pradesh.

- An aqueous solution of seeds showed anti viral activity against **okra mosaic virus.**

- Defatted neem kernel powder was found fatal against rice weevil, *sitophiles oryzae* .

- Azadirachtin also inhibits the development of oocytes in *Trogoderma granarium* .

- Aqueous extract of seeds was found highly effective in inhibiting spore germination of ground nut rust, *Puccinia arachidis*.

Oil:

The oil is bitter, anthelmintic, anodyne and depurative. It is useful in vitiated conditions of *vata*, chronic skin diseases, syphilitic sores, indolent ulcers, ring worm, scabies, intestinal worms, chronic malarial fever and leprosy. Neem oil has been found to slow down the growth of **HIV virus** which causes AIDS.

- The oil is also reported to be a potent contraceptive.

- The emulsified oil is used to control rust on beans and powdery mildew on many ornamental plants.

- When the oil is given as anthelmintic to humans it produces nausea and general discomfort.

- The oil is reported to be applied on Piles to control bleeding and itching.

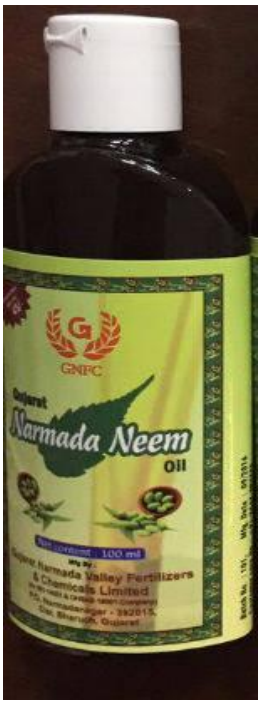
- The oil is also reported to possess pesticidal property against *Nilaparvata lugens*, *Nephotettix viresens* and *Bemisia tabaci*.

- Application of 10% neem oil emulsion in the top 6 axils is very effective for desuckering **tobacco** plants, thereby increase in the yield.

- Neem oil could be mixed with other oil and fats for the manufacture of washing soap.

- Considerable quantities of the oil are used for the preparation of cheap washing soap.

- Medicated soaps with the odour of neem are found in the market.



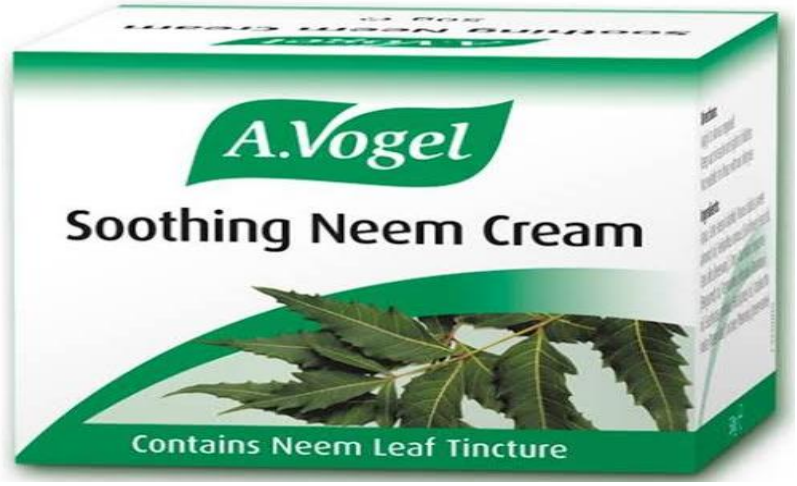
Other uses

Cosmetics:

- The major use of Neem oil is in the soap industry.
- Soaps and shampoos prepared from neem oil control **ticks** and **fleas.**
- An ayurvedic neem shampoo is used for greasy scalp.
- A neem face pack is prepared for oily and pimple prone skin.

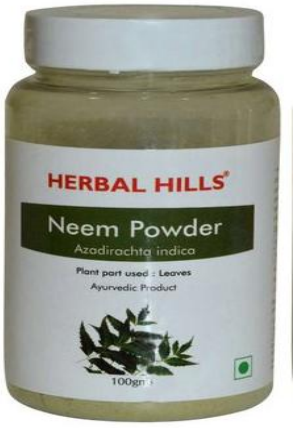
- Tooth powder and tooth paste prepared from neem are effective dentifrice.

- Patented extract of neem bark SILVOSE T and SILVOSE TRS are used as tooth paste and mouth wash, respectively.



Neem Cake:

Traditionally neem cake was used as a fertilizer and could not be used as animal feed due to its bitter taste and characteristic neem smell.



Neem Gum:

The gum which exudes from the bark occur in the form of clear bright amber coloured tears or fragments. It is found mixed with gum ghatti it contain water, ash, galactans, some albumins and oxidase.

Medicine:

Neem has been in used as indigenous medicine since time immemorial. Recently a large number of medicines manufactured from neem has come up in the form of ointments, tablets, injections etc. for curing various ailments.

- An ointment is prepared from neem for dermotological use.

- Another neem queen is a fly and mosquito repplent.

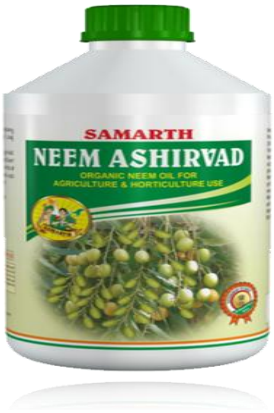
A wound dressing contains neem oil as one of its acting ingredients. It is recommended only for animals .

Insecticides and Pesticides:

Neemrich I and Neemrich II developed by the National Chemical Laboratory, Pune.

From neem seeds act as repellent against the potato tubar moth. Vepacide, a highly antifeedant and insect growth regulator has been developed by the Indian Institute of Chemical Technology, Hyderabad.

It can be used against armyworm (*mithimna separata*), spotted stem borer (*chilo partellus*), cotton gray weevil (*myllocerus sp.*), head bug (*calocoris angustatus*), and tobacco caterpillar (*spodoptera litura*).



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