

Review Article

Nimba neera - The gift of nature

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Abstract: *Nimba* (*Azadirachta indica* A. Juss, Meliaceae) has been extensively used in Ayurveda since antiquity. All five parts of *Nimba* (root, bark, leaf, flower, fruit) have been used in compendia separately or collectively (*Panchang*) in various ailments. All parts of *Nimba* are predominantly bitter in taste except a scarce usable part of *Nimba*, known as *Nimba Neera* (margosa toddy / sap) which is sweet in taste and requires a special attention. *Nimba Neera* is a sweetish-milky liquid that spontaneously oozes from the trunk, large branches and roots of *Nimba* tree. *Nimba Neera* contains free sugars, amino acids and organic acids. It is cooling, nutrient and stimulating tonic. Its external application pacifies burning sensation, excessive heat, thirst and mental confusion. *Nimba Neera* is a potent blood purifier, bactericidal, anti-fungal and therefore it is found to be beneficial in long standing cases of leprosy, gout, fever, venereal diseases, stomachache, atonic dyspepsia and general debility. This article throws a light on *Nimba Neera*, its genesis, chemical composition, method of collection, preservation, its difference from resin of *Nimba*, classical therapeutic indications.

Keywords: *Azadirachta indica* A. Juss, margosa sap, Ayurveda, tonic, bactericidal.

INTRODUCTION

Nimba (*Azadirachta indica* A. Juss, Meliaceae) has been in use in Ayurveda medicine since antiquity. Main areas of its therapeutic use such as fever [1], piles[2], jaundice[3], worms[4], blood disorders[5], *kustha*[6] (leprosy and skin diseases), diabetes[7] and wound[8] are account of its innate properties – *Laghu*, *Ruksha* (*Guna*), *Tikta* (*Rasa*), *Katu* (*Vipaka*), *Sita* (*Virya*) [9]. Its five parts (bark, leaf, root, fruit, flower) are used separately or collectively (*Panchang*) in different ailments. Five parts of *Nimba* have been used extensively by *Samhita* and *Nighantu* writers [10-16]. Some of the important indications may be referred here. Decoction of five parts of *Nimba* cures all types of *Prameha* particularly *Surameha* [17]. *Aristha Dhupa* which is used for fumigation, is prepared from all the five parts of *Nimba* mixed with ghee [18]. A formulation “*Pancha Nimba Churna*” (containing five useful parts of *Nimba*) is efficacious in *Kustha*, all skin diseases, fistula, filaria, *Vatarakta*, wounds, *Prameha*, obesity, and *Pradara* [19-20]. A formulation based on parched grain flour (*Saktu*) and *Pancha-nimba* is efficacious in *Amla-pitta* [21].

All five parts of *Nimba*, used for medicinal purposes are *Tikta* (*Rasa*) but an extremely scarce

usable part of *Nimba*, known as *Nimba Neera* or *Nimba Mada* (*Nimba* toddy or margosa toddy) sweet in taste, requires a special attention. Toddy is the general name given by the English to those sweet, delicious and refreshing liquors, which are procured in India by wounding the spathe of certain palms, when the exudates drops, it is collected in earthen pots attached to the tree [22]. *Nimba Neera*, an important therapeutic agent, is milk like whitish emulsion, possessing a peculiar aromatic odour of fully ripe *Nimba* fruits.

Nimba Neera in Ayurvedic texts:

- 1. For treatment of burning sensation:** Froth coming out of *Badari*, or *Nimba* should be applied externally on the affected part [23].
- By external application of the froth of *Nimba* thirst, burning sensation and mental confusion are pacified [24].
- In order to relieve excessive heat and burning sensation in *Pitta-jwara*, froth produced by pounding *Nimba* leaves is applied externally [25].
- For leprosy and blood disorders, there is a formulation “*Kusthasrasudana*” which contains exudation (toddy) of *Nimba* plant. It is also useful in worms, oedema, anaemia and eye diseases [26].

Procurement of *Nimba Neera*

The toddy or sap is yielded either spontaneously or extracted artificially. In former case, a clear milky liquid begins to flow in a very thin stream or continuous drops, from 2-3 and sometimes more parts of the plant and oozes maximum up to do 3-7 weeks. The trunk, large branches and roots are the parts from which the flow takes place through very small and recent cracks or fissures. Quantity of liquid discharged in 24 hours from the whole tree varies from 2-8 bottles according to its size. Due to excessive secretion of *Neera* at the interval of 3-4 year, continuously from trees, the whole tree becomes dead. For artificial extraction of *Neera*, root of *Nimba* nearby ponds should be punctured and an earthen pot should be kept below it and covered. 2-6 bottles of *Neera* accumulates in 24 hours but naturally secreted *Neera* is the best.

Neither the exact age of the tree for secretion of this white fluid nor why such a secretion occurs is known. Perhaps this occurs due to excitation of some old margosa trees. It is normal, though rare, for such secretions to occur in old trees. On each occasion, before the toddy or sap began to flow, there was always, for 3-4 day, a distinct and peculiar rushing or prompting noise of a liquid within the trunk, which did not entirely ceased till the discharge actually commenced from 3-4 parts of the plant[27-30].

Preservation techniques for *Nimba Neera*:

For preserving *Neera*, it should be mixed with honey and packed it in bottles and kept in dry, cool places. For each bottle of *Neera* 50 ml of honey is required and by preserving using this method *Neera* should be filtered 2 times in a month. Pure mustard oil can also be used for preservation. Sourness in *Neera* shows its deterioration[30].

Chemical composition of *Nimba Neera*:

In general composition *Nimba Neera* contains

1. Moisture- 86.56 %
2. Proteins- 0.36 %
3. Gums and colouring matter- 6.17 %
4. Glucose (grape sugar)- 2.99 %
5. Sucrose (cane sugar)- 3.15 %
6. Ash- 0.41%

Qualitative analysis of the ash showed the presence of Potassium, Iron, Aluminium, Calcium, Carbon dioxide in it. Petroleum ether extract from the dried solids of the toddy exhibits only a trace of fatty and resinous matter. Tests for alkaloidal and glucosidal principles were negative. A sample of toddy was chemically examined to find out its constituents and to ascertain whether there is any active principle that might produce effects popularly ascribed to it. The toddy was a milk like, whitish emulsion with a pale yellow tinge. It was sweet in taste and possessed the peculiar aromatic odour of ripe *neem* fruits. On boiling

and removing the precipitated albuminous matter, a limpid faintly yellow solution was obtained. Angle of rotation of this solution at 15⁰ was +1L⁰. From the above analysis, it can easily be seen that the active principle of neem which is alkaloid according to Cornish and resinous body according to Broughton (Vide Watt's Dictionary of Economic product) is absent in *Nimba Neera*. Hence neem toddy can be said to be a cooling, nutrient, and stimulating tonic[28-30].

Therapeutic Dose: 10 – 40 ml in adults[29].

Therapeutic uses of *Nimba Neera*:

1. **Anti-fungal activity of *Nimba Neera*** – The white milky liquid secretion, the *Nimba* toddy was collected from the trees and assayed for the presence of phenolic acids by the HPLC (high performance liquid chromatography). The phenolic acids detected were caffeic, vanillic, o-coumaric, cinnamic acid and salicylic acids. It was further fractionated by ethyl acetate and this fraction was tested against some fungi for anti-fungal activity. It was observed to be highly anti-fungal in vitro. Field experiments also showed its high efficacy against balsam (*Impatiens balsamna*) and powdery mildew (*Erysiphe cichoraccarum*)[31].
2. **Skin diseases-** *Nimba Neera* contains free sugars (glucose, fructose, mannose and xylose), amino acids (alanine, amino butyric acid, arginine, aspargines, aspartic acid, glycine, narvaline, praline etc), organic acids (citric, malonic, succinic and fumaric acid). The sap is reported to be useful in the treatment of general weakness and skin diseases. This *Nimba* toddy is very beneficial in diseases of impure blood. In gout and other skin diseases, it should be taken continuously for 6-7 month or 1 year. It is also beneficial in indigestion and burning due to fever in tuberculosis[29].
3. **Other traditional systems of medicines-**
 - A. In Siddha- Margosa toddy reduces stomachache and gives strength to body. It is used in chronic fever, venereal diseases and other *vata* related conditions[32-34].
 - B. In Unani- *Nimba mada* is a potent blood purifier, bactericidal, alleviates venereal disease and leprosy and it is said for *Nimba Mada* that venereal disease (*Updamsha*) not curable with any drug, is relieved by use of *Nimba Mada*[29].

CONCLUSION

The *Nimba Neera* (toddy of margosa) is a refrigerant, nutrient, and alterative tonic. It appears to be of great importance in some chronic and long standing cases of leprosy and other skin diseases, consumption, atonic dyspepsia and general debility. However *Nimba Neera* is extremely scarce drug and this is a great drawback to its use and adoption into general practice[35-36]. There is an urgent need for further scientific scrutiny of this scarce but potential therapeutic agent in the welfare of mankind.

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