

## A REVIEW ARTICLE ON BHALLATAKA (SEMECARPUS ANACARDIUM LINN.)

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### ABSTRACT

*Semecarpus anacardium* Linn.is a plant in the family Anacardiaceae . It is also called marking nut tree. In Ayurved system of medicine though it is poisonous plant & fruits of it is poisonous useful part but when used in purified form have been recommended for the treatment of hemorrhoids, worm, irritable bowel disease, constipation, ascites, bronchitis, skin disease, acute rheumatism and so on.

The *Semecarpus anacardium* Linn.has also been suggested to possess antibacterial, anti inflammatory, anti oxidant activity, analgesic action , anti cancer activity , anti helminthic and anti atherogenic actions.

Semecarpol( monohydroxy phenol) and Bhilawanol ( o-dihydroxy compound) is the active constituents present in *Semecarpusanacardium* Linn.hasbeen found to be largely responsible for the therapeutic potentials. The main aim of this article is to highlight the latest review of scientifically proved medicinal activity of *Bhallataka* (*Semecarpus anacardium*), against various diseases.

**KEY WORDS:** *Semecarpus anacardium*, marking nut tree, anti-cancer, anti-inflammatory, anti-oxidant, catechol, semecarpol, bhilawanol

### INTRODUCTION

The plant *Bhallataka* ( *Semecarpusanacardium* Linn.) belong to family anacardiaceae; commonly known as marking nut, dhobi nut, *bhilawa*, *biba* . It is one of the best, versatile, most commonly used herb as household remedy. It has been used all over India since centuries. It was held in high esteem by ancient stages of ayurveda .It is a plant well known for its great medicinal value in ayurveda and is effective in wide1 range of diseases.

The word *Bhallataka* describes the sharp attribute of the herb<sup>1</sup>. Because of its hot potency, light and sharpness property, it gives faster relief and *Bhallataka* besto-

wea wide range of beneficial effects. *Bhallataka* is used both internally as well as externally (before consuming or applying useful part of *Bhallataka* i.e.fruit should be purify first). Before *Bhallataka* is therapeutically used they are to be subjected to a processes called *shodhansanskara* as it is one of the irritant organic vegetable poison . This process reduces the toxicity of *bhallataka* and enhances its therapeutic property. Different recipes of *ballataka*are mentioned in the *Charak samhita*<sup>2</sup>. Properties of receptacles, fruits, medicated oil of *Bhallataka* are mentioned in *Sushrut samhita*<sup>3,4</sup>. Many formulations of *bhallata-*

ka are mentioned in *bhaishajyaratnawali*. *Bhallataka* is one of the main drug in practice of Ayurveda.

#### DESCRIPTION

This tree is found in the outer Himalaya from Sulej to sikkim and fairly common throughout hotter parts of India. *Semecarpus anacardium* is medium size deciduous tree, reaching up to height of 12-15 met, and a girth of 1.25 met. The fruits (marking nuts) are used for therapeutic purpose. The fruit of the tree is a nut is generally hearts shaped blackish nuts with rough projection at base which contains an edible kernel. The pericarp of the nut yields blackberry oil know as bhilawan oil which mixed with lime water or alum has been used in India or Malaya as marking ink. Its lives are large, crowded towards the extremities of the branches, obviate-oblong, rounded at the apex, rounded cuneate at the bases 17.5- 60.0 X 10.0 - 32.0cm. Its flowers are small greenish white. The tree become leafless between February.& April,the leaves and flowers appear in May.

#### Ayurvedic properties of main useful part ( fruit)of bhallataka<sup>5</sup>:-

*Bhallataka* is sweet and astringent in taste (*rasa*), sweet in post-digestive effect (*vipaka*) and has hot potency (*veerya*). It alleviates *kapha* & *vata* disorders and possesses light (*laghu*), unctuous (*snigdha*), sharp (*teekshna*) & hot (*ushna*) attribute. It is extremely heat generating, appetizer, digestive, rejuvenative, aphrodisiac herb and alleviates the skin & rheumatic disorders.

#### Macro and microscopical features of the fruit of *Semecarpus anacardium* Linn.:

During development period, some of these cells get dissolved & form lysigenous cavities which increase in size as the fruit matures. These cavities have no special lining & contain an acrid & irritant yellowish secretion which are oily in nature. This substance is highly vesicant & turns black on exposure to the air (Gathercoal & wirth, 1936, greenish 1933).

#### Table - I

##### Physical constants values<sup>6</sup> (ash and extractive values)

Sr.No	Physical constants	Percentage %
1	Total ash	3.68
2	Acid insoluble ash	0.325
3	Alcohol soluble extractive	11.27
4	Moisture content	12.70

Each value is an average of three determinations

#### Table-II

##### Important constituent of oil<sup>6</sup>

1	Unsaponifiable matter	5.14%
2	Fatty acid	36.65%
3	Phenolic constituents	42.69%

#### Table-III

##### Identity, purity and strength<sup>7</sup>

(According to ayurvedic pharmacopia of India)

1	Foreign matter	Not more than 1%
2	Total ash	Not more than 4%
3	Acid insoluble ash	Not more than 0.5%
4	Alcohol soluble extractive	Not more than 11%
5	Water soluble extractive	Not more than 5%

#### LATEST RESEARCH :

1. Aqueous extract of *S. anacardium* fruit showed significant anti-inflammatory effect.<sup>1</sup> 2. Effect of *S. anacardium* in ammonium chloride- induced hyperammonemia in rats.<sup>15</sup>

As above mentioned in the discription that *S. anacardium* has diverse biological potentials like anti cancer, anti inflammatory, anti oxidant, anti bacterial, anti artherogenic properties. In addition we found it also has property to reduce the levels of ammonia, urea in the blood.

#### TRADITIONAL USES

*Bhallataka* is used for hair care in traditional system of medicine as mentioned particularly in Ramayana, is used for dyeing and promoting hair growth in folk medicine<sup>16,17</sup> Also used for cauterization in joint pain and swelling (rheumatism)<sup>6</sup>

#### CHEMICAL CONSTITUENTS<sup>8,9</sup>

The fruit contains:

Kernel of the nut contains a small quantity of sweet oil . The pericarp of the fruit contains a bitter and powerful astringent principal (which is universally used in India as a substitute for marking ink). The black corrosive juice of the pericarp contains a tarry oil consisting of 90% of an oxy-acid named anacardiac acid and 10 % of a higher, non volatile alcohol called cardol.

Naidu (1925) isolated catechol and a monohydroxyphenol which he called anacardol, besides two acids and a fixed

oil from the kernel of the nut. Pericarp also contains vesicating oil 32p.c. soluble in ether and which blackens on exposure to the air. Fruit yields 2.14 p.c. of ash. Root bark contains an acrid, viscid juice similar to that formed in the pericarp. By extracting crushed fruits (pericarp and kernel) successively with light petroleum, alcohol and water. It has been found possible to isolate the following products:

- 1) Fixed oil
- 2) Amonohydroxy compound to which juice owes its corrosive properties.
- 3) Catechol
- 4) Two monobasic acids the potassium salt of an acid with strongly reducing properties.

Recently Pillay and Siddiqui (1931) have studies composition of the drug. They have succeeded in isolating following constituents from the juice of pericarp.

- 1) Amonohydroxyphenol, which form 0.1% of the extract, this has been named "**semecarpol**".
- 2) An o-dihydroxy compound forming 46% extract (15% of the nut), this has been called "**bhilawanol**".
- 3) A tarry, non volatile corrosive residue forming about 18% of the nut.

Chemical and photochemical analysis of its nut reveal the presence of flavonoids, tannins, carbohydrates, proteins and steroids.

The pericarp of *semecarpusanacardium* fruit abounds in a black, oily, bitter and highly vesicant juice, which has been

traditionally used for marking linen. The vesicant juice known in the trade as Bhilawan Shell Liquid (BSL) is a rich source of phenols.

A number of processes have been developed and patented for converting BSL into non-vesicating semisolid or solid resins, which are utilized as bases for the manufacture of varnishes, lacquers, enamels, paints, moulding, composition, water proofing and insulating (electrical) materials.

#### **Therapeutic Uses and Various activities of *Semecarpus anacardium* Linn.<sup>8,10,11,12,13</sup>**

*Bhallataka* bestows a wide range of beneficial effects such as carminative, digestive, antihelminthic, liver stimulating, cardiac stimulant, diuretic, nervinetonic, aphrodisiac and *rasayana*. *Bhallataka* is used both internally as well as externally. The fruit, their oil and the seeds have great medicinal value and are used to treat wide range of diseases. The fruit of *S. anacardium* is acrid, hot, antihelminthic, it is considered beneficial in ascites, tumours and warts, acute rheumatism, asthma, neuralgia, epilepsy and psoriasis. Externally it is sometimes used in small quantities and with a great caution as a vesicant in rheumatism, sprains, eczema, leprosy and other skin diseases. Kernel is a good nutritive food, also appetizer, digestive and carminative. It is a good cardiac tonic and a general respiratory stimulant. **Various Properties of *Semecarpus anacardium* Linn :**

**Anti-bacterial activity:** The juice of pericarp possesses antibacterial properties. Sulphonates and arsenic derivatives of bhilawanol are non vesicant. Some of them show marked bactericidal activity against *Bacillus pyogenes*, *B. coli*, *staphylococcus*

and *streptococcus pneumaticus* in concentration of 1 in 5000-15000.

**Anti-cancer activity<sup>6</sup>:** Biological tests have shown that extracts of the fruit are effective against human epidermoid carcinoma of the naso-pharynx in tissue culture. Experimental studies on the anti cancer activity of nut juice show that oral administration to cancer patients, particularly those suffering from oesophageal and mouth cancer, is beneficial in providing clinical improvement, symptomatic relief and extension of survival times.

**Anti-inflammatory activity<sup>10</sup>**The anti-inflammatory effects of SA nut extract on developing and developed adjuvant arthritis. *Semecarpus anacardium* significantly decreased the carrageen an induced paw edema and cotton pellet granuloma. These results indicate the potent anti-inflammatory effect and therapeutic efficacy of *Semecarpus anacardium*. Nut extract against all phases of inflammation is comparable to that of indomethacin.

**Anti-atherogenic effect<sup>13</sup> and antioxidant activity<sup>18</sup>:** The imbalance between the pro-oxidants and antioxidants is the main cause of development of atherosclerosis. To prevent such condition, antioxidant therapy is beneficial. *Semecarpus anacardium* shows such antioxidant property. It has capacity to scavenge the per oxidation of lipids in low density lipoproteins was also found inhibited by *Semecarpus anacardium*.

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## DISCUSSION

*Semecarpus anacardium* have been used for the treatment of diseases throughout the world since the beginning of civilization. The vast survey of literature showed that *Semecarpus anacardium* has a broad spectrum of pharmacological activities. It

has an esteemed status in herbs with diverse biological potentials and has a great scope for further new area of investigations. The fruit extract shows various activities like anti-bacterial, anti-cancer, anti-inflammatory, anti-atherogenic, antioxidant, hair growth promoter and many other properties. Further research and more efforts on *Semecarpus anacardium* needed to study traditional uses of the plant and subsequent validation of activity and mechanism of action for the welfare and survive of mankind.

## CONCLUSION

From above literature it is concluded that *Semecarpus anacardium* Linn. is responsible for the various therapeutic potentials especially in Joint disorders like rheumatoid arthritis. Many research studies reveal that it is useful herbal plant for the anti-inflammatory property.

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