

THERAPEUTIC AND TOXICOLOGICAL EFFECT OF *BHALLATKA* (*SEMECARPUS ANACARDIUM LINN.*) – A REVIEW

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ABSTRACT

Bhallataka (*Semecarpus Anacardum*) is known vegetable irritant poison and is mentioned in *Upavisha Varga* in Ayurveda texts like *Rasatarangini* and *Dhanwantari Nighantu*. *Semecarpus Anacardum* is a member of *Anacardiaceae* plant family. I juice of *Bhallataka* (even in traces) comes in contact with body, produces severe *Daha* (Burning), *Vrana* (Ulcer), etc. Despite being a toxic plant Ayurveda has recommended using its fruits and other beneficial portions for the treatment of number of diseases like Haemorrhoids, worms, Irritable bowel syndrome, constipation, ascites, bronchitis, skin disorders, acute rheumatism, etc. In this review, an endeavor has been made to explore the therapeutic utilities of *Bhallataka* and its poisoning effects as mentioned in Ayurveda and modern science.

INTRODUCTION

Bhallataka (*Semecarpus Anacardum*) is a well-known plant in since a long time. There are number of Classical formulations of *Bhallataka* with its therapeutic significance. Though plant is described under *Upavisha Varga*, it has been used successfully in the management of several diseases after proper 'Shodhana Process'.

Acharya mentioned it with a number of synonyms like *Angrimukhi*, *Arushkara*, *Agnika*, *Tapana*, *Dahana*, *Nabhovalli*, *Shophakrita*, *Anala*, *Vranakrita*, *Agnivartaka*, etc. indicate the toxic nature of *Bhallataka*. On the other hand, there are number classical reviews available on its therapeutic

significance. Ayurveda texts like *Charaka Samhita*, *Sushruta Samhita*, *Ashtang Hridaya*, *Bhavparakasha*, and *Nighantu* like *Raj Nighantu*, *Shaligram*, and *Kaideva* are available commentaries.

Ayurveda mentioned its medicinal properties after proper 'Shodhana' process with Brick powder or with coconut water. 'Shodhana' Process not only represent a process of purification, but also enhance the therapeutic efficacy of drug.

Some scattered references are there regarding different therapeutic utilities as described in Indian medicine. Hence, attempt has been made to compile them and present in systemic manner.

PHARMACOLOGICAL PROPERTIES OF *BHALLATKA*^[1,2,3,4]

Character	<i>Bhvaprakash Nighantu</i>	<i>Raj Nighantu</i>	<i>Shaligram Nighantu</i>	<i>Kaiyadeva Nighantu</i>
Guna (Qualities)	<i>Laghu</i> (Light to digest), <i>Snigdha</i> (unctuous), <i>Teekshna</i> (piercing)	-	<i>Laghu</i> , <i>Snigdha</i> <i>Teekshna</i>	<i>Guru</i> (heavy to digest) <i>Ruksha</i> (dry)
Rasa (taste)	<i>Madhura</i> (sweet), <i>Kashaya</i> (astringent)	<i>Kashaya Madhura</i>	<i>Madhura</i> , <i>Kashaya</i>	<i>Madhura</i>
Vipaka	<i>Madhura</i> (undergoes sweet taste conversion after	-	<i>Madhura</i>	<i>Madhura</i>

	digestion)			
Veerya (potency)	Ushna (hot)	Koshna (look warm)	Ushna	Sheeta (cold)
Karma (action)	Agnideepana (improves digestive secretion) Pachana (helps to digest), Chedana (excision function), Bhedana (incision function) Medhya (beneficial to brain)	-	Agnideepan Chedana Medhya Pachana Bhedana	Shukrala (creates sperm)
Doshaghnata	Kapha, Vata (alleviates kapha & vata dosha)	Kapha	Kapha, Vata	Pitta (alleviates pitta dosha)
Rogaghanata	Vrana (wound), Udar (ascitis), Kushtha (skin disorders), Arsha (Haemorrhoides), Grahani (Inflammatory bowel disease), Gulma (Abdominal mass), Shopha (Inflammation), Anaha (Flatulence), Jwar (Fever), Krimi	Shwasa (Asthma), Anaha, Vibandha, Shula (Pain), Adhmana (gases in abdomen), Krimi (Helminthiasis)	Vrana, Udar, Kushtha (skin disorders), Arsha, Grahani, Gulma (Abdominal mass), Shopha Anaha, Jwar, Krimi (Helminthiasis)	Raktapitta (bleeding disorders)

CHEMICAL COMPOSITION

The most significant components of *S. anacardium* Linn. Are *bhilwanols*, *phenolic compounds*, *bioflavonoids*, *sterols*, *anacardoside*, *semecarpetin*, *nallaflavanone*, *jeediflavone*, *semecarpuflavanone*, *galluflavone*, *anacarduflavone*, *bhilwanol-A*, *bhilwanol-B*, *amentoflavone*, *tetrahydroamentoflavone*, *semicarpol*, *anacardic acid*, *tetrahydrobustaflavone*, *O-trimethyl biflavanone A1*, *O-trimethyl biflavanone A2*, *O-tetramethyl biflavanone A1*, *O-hexamethyl bichalcone A*, *O-dimethyl biflavanone B*, *O-heptamethyl bichalcone B1*, *O-hexamethyl bichalcone B2* and *Octramethyl biflavanone C*.^[5]

BRIHATRAYI

Charaka, *Sushruta* and *Vagbhata* are *Brihatrayis* have described *Bhallataka* preparations.

Charaka Samhita – Fifty *Mahakshaya* have been described in *Sutra-sthana*. Out of these *Bhallataka* has mentioned in *Deepaniya Mahakshaya*,^[6] *Kushthaghna Mahakashaya*,^[7] and *Mutrasangrahaniya Mahakashaya*.^[8]

Sushruta Samhita and Ashtanga Sangraha, it is indicated that, use of about 1000 nuts of *Bhallataka* during the schedule of one therapeutic course of '*Vardhamana Prayoga*' (gradually increasing count).^[9,10]

THERAPEUTIC USES OF BHALLATAKA

- **Rasayana** – *Bhallataka Kshira*, *Bhallataka Kshudra* and *Bhallataka Taila* has *Rasayana* properties as mentioned *Charaka Samhita*.^[11]
- **Arsha** – Especially for *Vata-Kapha Piles*.^[12] *Bhallataka Kwatha* should take early in the morning by coating oral mucosa with butter.^[13]

- **Kushtha** – *Kwatha* of *Bhallataka*, *Abhaya* (*Terminalia chebula*) and *Vidanga*. Only *Bhallataka Oil* cures *Kushtha*.^[14]
- **Jawaragghna** – *Bhallataka* should give with *Guda* (*Jaggery*) to cure *Jwara*.^[15]
- **Pleehodara** – *Modaka* is prepared by equal proportions of *Bhallataka*, *Abhaya* (*Terminalia Chebula*), *Jeeraka* (*Cuminum cyminum*) and *Guda* (*Jaggery*) cures *Pleehodara* within seven days.^[16]
- **Pleehavridhi (splenomegaly)**, *Pandu*, *Shwasa*, *Kasa*- in all these conditions, *Vati* is prepared from equal quantities of *Bhallataka Churna*, *Haritaki Churna*, *Tila Churna* and *Guda* cures all diseases.^[17]
- **Visha Anjana Chikitsa** – In *Vishayukta Anjana* (collyrium), *Bhallataka* flowers are rubbed in milk which is used as counter-collyrium.^[18]

FORMULATIONS OF BHALLATAKA AND ITS USES

- 1) **Bhallatakadi Modaka**- *splenomegaly* and *Pittaja Arsha*.^[18]
- 2) **Bhallatakaavaleh Brihada**- *Arsha*.^[19]
- 3) **Bhallatakadi Kwatha** – *Urustambha*.^[20]
- 4) **Bhallataka Ghrita Prathama** – *Gulma*, *Pleehavridhi*, *Pandu*, *Shwasa*, *Grahani*, *Kasa*.^[21]
- 5) **Bhallataka Ghrita Dvitiya**-*Gulma* and *Rakta Gulma*.^[22]
- 6) **Bhallatakadya Taila** – *Nadivrana*, *Apachi*.^[23]
- 7) **Bhallatakadi Lepa** – *Indralupta*.^[24]
- 8) **Amrita Bhallataka** – acts as *nervoin tonic*, *rejuvenate the body* and cures *Kushtha*.^[25]
- 9) **Maha Bhallataka Guda** – *Shwitra*, *Kushtha*, *Visphota*, *Pama*, *Vatarakta*, *Udavarta*, *Pandu*, *Krumi*, *Bhgandara*, *Arsha*, *Amavata*.^[26]
- 10) **Sanjivani Vati** – *Ajirna*, *Gulma*, *Visuchika*, *Snake*

bite^[27]

11) **Bhallataka Rasayana** –Pandu, Balavardhaka^[28]

12) **Bhallatakarishta** –Dropsy, Abdominal enlargement, Rectal Fistula, Duodenal diseases, parasites, leprosy, diabetes, Emaciation, Kikkasa.^[29]

MEDICINAL DOSE OF BHALLATAKA

Oil = 10-20 drops; Fruit = 1-2 gm. in Kshirpaka form; Kalka = 3-6 gms.^[30]

RECENT ADVANCES OF SEMICARPUS ANACARDIUM LINN

1) ANTIRHEUMATIC ACTIVITY (AMAVATA)

Amrita Bhallataka is a classical '*Naimittika Rasayana*' for the treatment of *Amavata*, because it not only imparts *Rasayana* property but also controls the process of *Amavata* by directly attacking on source of *Aama* formation i.e. undigested food material.^[31]

2) ANTI-INFLAMMATORY AND ANTI-ARTHRITIC ACTIVITY

S. anacardium extract can inhibit pro-inflammatory cytokines production in mononuclear cells of normal individuals and rheumatoid arthritis patients. Further, nut extracts have been demonstrated immunomodulatory activity on the compounds of immune system in adjuvant induced arthritis.^[32]

3) ANTIOXIDANT ACTIVITY

The aqueous extract of *S. anacardium* had been found to be more effective than doxorubicin, a classical anticarcinogenic drug, with respect to its action on antioxidant enzymes and LDH in the liver of mice with developing lymphomas.^[33]

4) ANTICANCER

The study determined the anticancerous efficacy of *Ayurveda* preparation made of *S. anacardium* nuts. Study shows that, after completion of experiment liver enzymes and hepatocellular carcinoma marker (alpha-2 macroglobulin) had been increased in hepatocellular carcinoma (HCC) Control group and were decreased in *S. anacardium* nut milk extract treated group.^[34]

5) ANTIHELMINTHIC

The antihelmintic activity of extracts of nut were evaluated on adult earthworm. It was found that petroleum ether, chloroform extract of *S. anacardium* showed better anti-helmintic activities than ethanol and aqueous extract of it.^[35]

6) ANTIFUNGAL

Antifungal activity of *S. anacardium* is revealed against four fungi, namely *Fusarium oxysporum*, *Rhizctonia solanii*, *Alternaria spp.*, and *Sclerotium rolfsii*. Nut of *S. anacardium* is rich in Phenol contents which is involved in multiple mode of action like, degradation of cell wall, disruption of cytoplasmic membrane, damage of membrane protein and

integrated enzymes, leakage of cellular components.^[36]

TOXICOLOGICAL REVIEW

PART USE – Fruits^[37] CLASSIFICATION

1) *Upavisha*^[38]

2) *Phalavisha*^[39]

CONTRAINDICATIONS OF BHALLATAKA

Pittaja Vyadhi, Hemorrhagic tendency, Pregnancy, Child, Old age, Diarrhea, Nephritis and summer season.^[40]

FATAL DOSE – 5-10 Gms or 6-8 seeds^[41]

FATAL PERIOD – 12-24 hours^[42]

TOXICOLOGICAL EFFECTS OF BHALLATAKA

If juice of Bhallataka comes in contact with body surface, it produces severe *Daha* (burning sensations), *Vrana* (Ulcer), *Shopha* and *Visarpa*.^[43]

Some persons have intolerance of *Bhallataka*, they show manifestations like dark urine, itching all over body, red patches, blisters, diarrhea, fever, hematuria, etc. Oliguria, cloudy urine, itching at anus and penis may also find.^[44]

Some cases are reported of adverse effects of *Bhallataka* during treatment of piles. After administration of this drug 32 patients developed hepatitis, albuminuria, and generalized urticarial.^[45]

TREATMENT OF TOXICITY

The specific antidote for *Bhallataka* toxicity is *Bhibhitaka* (*Terminalia Belerica*)

1) *Bhallataka Shothahara Yoga*

- Local Application -Paste of *Tila* (*Sesame*) rubbed with buffalo milk and mixed with butter. OR

2) *Yashtimashu* (*Glycyrrhiza glabra*)

- Local Application- Paste of *Yashtimadhu*

3) *Arushkara Shothaghna Lepa*

- Local Application –Paste of *Tila* (*Sesame*) with goat milk and butter

4) *Krishna Mrittika*

- Local Application – For *Shotha* produces by *Bhallataka*.

5) Local Application for *Shotha* caused by *Bhallataka*

- Mixture of *Meghanada Swarasa* (*Amaranthus spinosa*) and butter OR
- Mixture of *Devdaru* (*Cedrus deodara*), *Sarshapa* (*Brasica juncea*), *Nagarmotha* (*Cyprus Rotundus*) and *Navneeta* (butter) OR
- Mixture of *Tila* (*Sesame*), *Mishri* (Sugar), milk and butter OR
- Neema* (*Azadirachta Indica*), *Tila* (sesame), *Tila*

Taila (sesame oil) are boiled together and made concentrated to apply locally.

Drugs that mitigate *Pitta* like milk and clarified butter and other drugs with cold potency can be used like *Sarivadyasava* 30 ml thrice daily after meal, *Triphala churna* 5gm before meal twice daily.^[44]

CONCLUSION

Though *Bhallataka* taken into account as toxic plant, it has been used as Ayurveda medicine, but only after its purification process. Hence, there is large scope of investigation for researchers and to explore its potential in the field of medicinal research and pharmaceutical science for novel and fruitful application of this plant.

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