



A REVIEW ARTICLE ON BHALLATAKA (SEMICARPUS ANACARDIUM) AND ITS FORMULATIONS IN AYURVEDA W.R.T ANTI-CANCER EFFECT

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ABSTRACT

Changing lifestyle, environmental condition, advanced pattern of socio-cultural life mankind is facing many struggles for maintain a good health in such hard balancing situation he is suffering from many diseases. Cancer is one of the most dreaded diseases of the 20th century and spreading further with continuance and increasing incidence in 21st century. Cancer is major health problem in both developed and developing countries. Extensive research has produced many new healing methods for the management of cancer. Treatment like chemotherapy and radiation gives the results with many complications, impaired health, and deteriorate quality of life. The health-related quality of life includes patients physical, mental, economical and socio-cultural life, so patients urge multi-modal therapy. In *Sanskrit*, carcinoma means *Arbuda*. The science of Ayurveda is supposed to add a step on to the curative aspects of cancers that have resemblance with clinical entities of *Arbuda* mentioned in *Sushruta Samhita*. Multimodal therapy, combining two or more treatment approach is now standard for many curable *Arbuda*. This article will review about *Bhallataka* to improve the qualities of body elements there by curing the disease as well as maintaining the healthy state of the body (care and treatment) due to chemotherapy there is a vitiation of *Tridosha* mainly *Vata* induces *Rukshtwa*. In *Ayurveda*, the action of a drug is understood by the properties of its basic Physio-chemical factors, *Tikta Katu Rasatmak Bhallatak* decrease the rate of *dhatu Pushti* (control cell metabolism) specially the *dhatu*s of *Kapha* groups like *Meda*, *Mamsa*, etc. are comparatively affected more than others which helps in *Samprapti Vighatana* of *Arbuda*.

KEYWORDS: *Bhallataka*, *Semecarpus anacardium*, *Arbuda*, Carcinoma.

INTRODUCTION

To maintain optimum health mankind had to struggle so much regarding environmental, food, social and cultural aspect while during balancing internal environment of body may get deviated from normal in the form of loss of physiological control and give rise to diseases like Carcinoma (*Arbuda*). *Arbuda* means disease process including the meaning “One hundred million” means cancer cells are concerned more with growth in the since of reproduction itself than with the function. In short cells are growing out of control.

Acharya Sushruta has described very clear and detailed definition of *Arbuda* that is, “The *Doshas* having *Vitseda* in any part of the body and which is circular, fired, slightly painful, big in size, broad, slowly growing and does not suppurate”.^[1] Surgical procedures are often less extensive than in proceeding decades. However, to limit the extent of surgery, the patient receives adjuvant chemotherapy and radiotherapy which increases the duration and toxicity of treatment. These causes many more defect as we see above. so preferring Multimodal therapy, combining two or more treatment approach is

now standard for many curable *Arbuda*. I hope deep work will give us overwhelmed results of *Ayurveda* and *Agada* (any agent which makes the body free from disease) like *Bhallataka* and more other *Agada*.

AIM AND OBJECTIVE

1. To review the *Arbuda* in *Ayurvedic* classics *Brihatyee* and *Laghurtrayee*
2. To study the role of *Bhallataka* and its formulations having anti-cancer effect

Review of *arbuda*

Etymological derivation^[2]

“*Arbuda*” is constituted of the root ward “*Arbb*” and the verb “*Udeti*”. The meaning of the “*Arbb*” is to kill, to hurt or to go towards and the meanings of the verb “*Udeti*” is to elevate, to rise, to threw up.^[3] “*Arbuda*” is derived as “*Aram Bundeti*”, “*Ubinder Nishamane*”, meaning which is perceived very fast means “*Sighratmapyati*”.

According to brihatryee

1. **Charak samhita:** There is no clear evidence of *Arbuda* maintained in *Charak*. In *Shoth Adhyay* as same feature swelling and protrubance maintained.^[4] charakacharya states it as *Mamsa Pradoshaj Vikar* as *Sthan*, *Lakshan*, *Dosh-Dushty* (*Vata-Rakta*) are same as *granthi* so treatment is also like *granthi*.
2. **Sushruta samhita^[5]:** Acharya Sushruta has described very clear and detailed definition. That is "The *Doshas* having vitiated in any part of the body and afflicting the *Mamsa* and produce a swelling, which is circular, fixed, slightly painful, big in size, broad based, slowly growing and does not suppurate." *Arbuda* is also described in 6th *Twaka Vikara*.^[6] In the same way, while dealing with *Kshudra Rogas*, he has described, another variety of *Arbuda* named *Sadhya – Sharkararbuda*.
3. **Vagbhat:** Vagbhatacharya explained that *Arbuda* is comparatively bigger than *granthi*.^[7] It is due to vitiation of *Mamsa* and maintained under the category of *Masma* or *Medo-vruddhijanya Vyadhi*. The clinical features of all *Arbuda* are same except *Rakta-Arbuda* as described in *Granthi* in *Kshudra Rogas* acharyas maintained *Sadhya Vyadhi* as a *sharkararbud*.^[8]

According to laghutrayee

- **Madhavanidan** described *Sangnya* of *Arbuda* and vitiated *Dosha+Rakta* and *Masma* creates the swelling.^[9]
- **Bhava Prakash and Sharngdhar** follows **Madhav Nidan** as it is.

Classification of arbuda"

- According to dosha-dushya^[10] Except charakacharya all acharyas sushrut, Vagbhat and Laghutrayee maintained 6 types of arbudaas as:
 1. Vataj Arbuda
 2. Pittaj Arbuda
 3. Kaphaja Arbuda
 4. Raktaj Arbuda
 5. Masaja Arbuda
 6. Medoja Arbuda
- According to Sadhyasadyatwa (prognosis),^[11] only 2 types maintained by all acharyas except charak i.e *sadhya* and *asadhya*
- According to metastasis^[12] Sushrut, Madhavanidan and Bhavaprakash explained following 2 types:
 1. Adhi-Arbuda
 2. Dwir-Arbuda

Arbuda based on prognosis

- *Sadhya Arbuda:* Vataja Arbuda, Pittaja Arbuda, Kaphaja Arbuda, Medoja Arbuda.
- *Asadhya Arbuda:* Raktarbuda, Mamsarbuda, Adhyarbuda, Dwirarbuda, Marma Janita.

Nidan panchak

1. **Nidan^[10]** - The factors responsible for the vitiation of doshas are discussed here
 - a) **Vata aggravating factors:** Excessive intake of bitter, pungent, astringent, dry foods and stressful conditions.
 - b) **Pitta aggravating factors:** Excessive intake of sour, salty, fried foods and excessive anger.
 - c) **Kapha aggravating factors:** Excessive intake of sweet, oily food and sedentary nature.
 - d) **Rakta aggravating factors:** Excessive intake of acid or alkali containing foods. Fried and roasted foods, alcoholic beverages, sour fruits are some examples. Excessive anger or severe emotional upset, sunbathing or working under scorching sun or near fire and hot conditions, etc are some other causes.
 - e) **Mamsa aggravating factors:** Excessive use of exudative foods like meat, fish, yoghurt, milk and cream. Behaviours leading to exudation like sleeping during the day and overeating are some of the causes for pathogens invading the fatty tissues.
 - f) **Medo aggravating factors:** Excessive intake of oily foods, sweets, alcohol and lazy attitude.

Samprapti

In *Charaksamhita* *Arbuda* is describes as *Shopha Vishes* in *Shotha-Sangraha*. The etiology described in *Shotha* can also be considered as etiology of *Arbuda*. General diseases like *Jwara*. Not taking food or proper food, Emaciation due to different causes, taking *kshar* and *dadhi* etc are *Abhishyandi padarths* forms un-assimilated products in *jatharagni* and *dhatwagni* level.^[13] Due to *Doshic* vitiation these newly formed vessels are again obstructed resulting into obstruction of passes of blood. Due to this obstruction in flow of blood, big and thick *Arbuda* develops.^[14]

Purvarupa

None of the Acharyas have described the *Purvarupa* (Premonitory Symptoms) of the disease *Arbuda*.

Rupa

Detailed description of this variety is explained by different *Aacharyas*. *Aacharya Sushruta* states that clinical features of *Vataja*, *Pittaja*, *Kaphaja* and *Medoja* are always like that of *Granthi*, after which features of *Rakta* and *Mamsarbuda* are described.

Samanya lakshana

- *Vritam* (Round)
- *Sthiram* (Firm stability)
- *Mandaruja* (Mild pain)
- *Mahantam, Analpa Mulam* (Deep seated root)
- *Chirvridhi* (Gradually increasing)
- *Apakam* (Never suppurates)

Samprapti ghataka

- *Dosha:-* Predominance of *Kapha* and *Vata* with *Tridosha*

- *Dushya*:- Rasa, Mamsa and Meda
- *Srotas*:- Rasavaha, Mamsavaha and, Medavaha
- *Sroto Dushti*:- Sanga and Siragranthi
- *Agni*:-Manda
- *Rogamarga*:- Bahya
- *Udbhavasthan*:- Ama-Pakvashaya Samuttha
- *Pratyatma Linga*: Mamsopachayam Tu Shopham

The therapeutic approach of *Ayurveda* has been divided into four categories as *Prakritisthapani Chikitsa* (Health maintenance), *Roganashani chikitsa* (Disease cure), *Rasayana chikitsa* (Restoration of normal function) and *Naishthiki chikitsa* (Spiritual approach).^[16]

Shodana chikitsa (Purification process), which eliminates *vitiated doshas*, have been primarily used for medical management of cancer. When both internal and external medications were given then it is called as *panchakarma chikitsa*.

Shaman chikitsa--The curative therapy which pacifies *dosha* and gradually relieves the disease. It is prescribed only to weaker patients for whom *shodana chikitsa* is contraindicated.

Bhallataka seed



(a)



(b)

1. **Charak samhita**: In *charak sutra sthan 4* there are 50 *Mahakashay* mentioned. Out of that in following 3 *Mahakashay Bhallatak* is included i.e
 - *Deepaniya Mahakashay* (cha.su.4/9)
 - *Kushtagnha Mahakashay*(cha.su.4/11)
 - *Mutrasangrahnaya*(cha.su.4/15)

In chikitsa sthan

- *Bhallataka Kshira* [cha. chi. 1:2/13]
- *Bhallataka Kshoudra* [cha. chi. 1:2/14]
- *Bhallataka Taila* [cha. chi. 1:2/15]
- Different 10 *Bhallataka* Recipes [cha. chi. 1:2/16]
- *Bhallataka Ghrita* [cha. chi. 5/143-146]
- *Bhallataka Kshara* [cha. chi. 15/177-178]

2. Sushruta samhita

- Properties of *Bhallataka Taila* – [su. s. 45/122]

In **rasayana prayoga** (Immunotherapy), certain poisonous plants, mercury like metals and animal products were rendered non-toxic and harmless by the use of alchemy and are used as rejuvenating drugs. many *agadas* are maintained in *samhitas* but we are considering only *bhallatak* here-

Bhallatak (Semicarpus anacardium)--- family-anacardiaceae

Bhallataka,--geerubeej, marking nut (Used by washerman to mark cloths)

This herb is anti-inflammatory, anti-oxidant, anti-microbial, anti-reproductive, CNS stimulant, hypoglycemic, anti-cancerous, hair growth promoter action due to contain various active compound such as bioflavonoids, phenolic acids, bhlawanol, mineral, vitamins and amino acids.

Rasapanchak

Rasa-katu, tikta, kashay Virya- ushna

Vipak-madhur Guna-laghu, tikshna, snigdha

Dipaneeya, bhedaniya, shirovirechak, kushtagnha,

- *Krishna Karma* – [Su. chi. 1/90-93]
- *Bhallataka Prayoga* – [su.chi. 6/17]
- *Bhallataka oil* – [su. chi. 6/18]
- *Bhallataka Medicated oil* [su. chi. 17/141]
- *Bhallataka Pushpa Anjan* [su. ka. 1/69-71]

3. Astang sangraha

- *Amrita Bhallataka Rasayana* [A.S.U. 49/143- 145]
- *Bhallatakorishta* [A.S.U. 49/451-455]
- *Narshimha Ghrita* [A.S.U. 19/47]
- In *Carakasamhitha*, 10 different types of *Bhallataka* preparations have been described in *Rasayanaadhyaya*.

S. N.	Preparation	SN.	Preparation
1	<i>Sarpi</i>	6	<i>taila</i>
2	<i>Kshir</i>	7	<i>palala</i>
3	<i>Kshoudra</i>	8	<i>saktu</i>
4	<i>Guda</i>	9	<i>lavana</i>
5	<i>Yusha</i>	10	<i>tarpana</i>

In *Charaka*, *Susrutha* and *Astanga-Sangraha* it is indicated that, the use of about 1000 nuts of *Bhallataka* during the schedule of one therapeutic course of “*Vardhamanaprayoga*”.^[5,6]

Active principle

1. A Monohydroxyphenol, named as *Semecarpel*
2. An o-dihydroxy compound *Bhilwanol*
3. A tarry, non-volatile corrosive residue

Collection of *bhallataka*

- Fruits which is undamaged, free from physical defects, full of *rasa* are selected.
- Fruit of proper size, be ripened, and resemble the ripe fruits of *Jambu*.
- Collected in the months of *suchi* and *sukra* and stored inside the heap of *yava* or *masha* for four months, thereafter in the month of *sahasi* and *sahasya*.^[8]

Purification of *bhallataka*

- *Bhallataka* ripe seeds put into water. Only those sinks are used for purification and rest are discarded.
- The seed is cut into two and kept immersed in dry brick powder for some time. the dry brick powder absorbs all the strong pungent oil of *Bhallataka*, reducing its pungency and making it usable for medicinal purposes.^[9]

Benefits of *bhallatakarasayana*

- By consuming this *Rasayana* person may live for 100 years.
- *Bhallataka* are *tikshna*, *paki*, and *agnisamam*, but after *vishodhan* it will work like *amrutha*, used as per *roga*, *prakrithi* and *satmya*.
- *Rog* of *kapha* and no *vibhandha* occurs, promotes *medha* and *agni*.
- Persons expecting long life, vitality and happiness practice rejuvenation therapy with complete devotion according to the prescribed procedure.^[12]

In *Ayurveda* classics, numerous references are available on the anticancer properties of *Semecarpus anacardium* nuts.^[15] An extensive review describes the phytochemical and pharmacological properties of *S. Anacardium*.^[16] The chloroform extract of *S. Anacardium* nut possess antitumour action with increased life span against leukaemia, melanoma and glioma.^[17,18]

The milk extract of *S. Anacardium* produces regression of hepatocarcinoma by stimulating host immune

system^[19] and normalizing tumour markers including alpha-fetoprotein levels^[19] This preparation stabilizes the lysosomes, and normalizes glycoprotein and mineral content in the body during cancer progression.^[19] It also corrects hypoglycaemia and controls abnormal lipid peroxidation by the maintenance of antioxidant defense status. In the microsomes, it acts as a bifunctional inducer of both phase I and II biotransformation enzymes and prevents tumour initiation by preventing carcinogen activation.^[19] Histologically, on treatment with the *S. anacardium* extract to hepatocarcinoma animals, the liver sections showed almost a normal architecture. The nodules become completely regressed and further cell necrosis was prevented.^[19]

Anacartin forte, another preparation from *S. anacardium* has been used for several decades as an anticancer drug since it is giving health improvement with alleviation or disappearance of troublesome symptoms. It provides clinical benefit with an extension of survival time in various cancers including oesophageal, chronic myeloid leukaemia, urinary bladder and liver cancer.^[19]

Ayurvedic drug containing *S. anacardium*, *Amuta Rohitaka*, *Glycyrrhiza glabra* and copper powder were reported to inhibit breast tumour development in mice by significantly extending the survival period. This drug was also found to be efficient in clinical trials.^[12]

DISCUSSION

In *Ayurveda* *Arbuda* is co-related with cancer. All description available in *Samhitas* are in scattered manner. Main symptom is a swelling, which continuously goes on increasing in size but never reaches the stage of suppuration. *Aacharyas* have encountered this disease in the scope of surgery. The main aim of *Samprapti Bhanga* is to break link between *dosha* and *Dushya* after *Aahar Graham* and *Pachan - Prasad* and *Kitta* produced which will be provided for nutrition of *Uttarottar Dhatu* and growth of human body. Here due to unequilibrium of *Agni*, *Aama* is produced. *Aama* is the prime factor of all disease. If derangement occurs at the *Dhatvagni* level, then it is known that the ultimate vitiations are of a serious nature. Its clarification can be understood in the manner that the *Agni* of which *Dhatu* is *Mandhya*, results in *prakruta Dhatu Kshaya* and *Aprakrut Dhatu Vrudhi*.

Probable mode of action of *bhallataka* (*Semecarpus anacardium*)

In *Ayurveda*, the action of a drug is understood by the properties of its basic physico-chemical factors. *Rasa*, *Guna Virya*, *Vipaka* and *Prabhava* primarily affect the *doshas* and determine their *Dosha Shamaka* activity, this in turn correct the *vitiated doshas* and thus maintain the *Doshic* equilibrium. This is the basic principle of the treatment. *Bhallataka's Tikta* and *Katu Rasa* control the cell metabolism, means decreases the rate of *Dhatu Pusti*, specially the *dhatu*s of *Kapha* groups like *Meda*, *Mamsa* etc. are comparatively affected more than others.

Tikta Katu Rasa are *Amahara*, *Kaphahara*, *Medohara* and in the manifestation of *Arbuda*, *Kapha* Mamsa and *Meda* play an important role. Further based on *Gunas*, it consists of *Laghu*, *Tikshana*, *Ushana* and *Sara*, *Ushnatva*, it subsides the *Vayu*, which is responsible for growth and pain. Due to *Sara Guna*, it retrieves *Mala* and *Pitta*, it enters in each cell and *Srotas* of the body, because of presence of *Laghu guna*, and thus corrects the *Dusties of Srotas* and *dhatus* by its actions like *Pachana*, *Shodhana*, *Kledaprasadana*, *Vishada* etc. It is also a good *Agnideepana*. *Bhallataka Ushna Virya*, so it digests the *ama* and increases the *Agni*, similarly relieves the *Kapha* and *Vata dosha*. *Dosha Prabhava* of *Bhallataka* is *Vata Kapha hara*. There is no *Kapha Vataja* disease, which cannot be cured by *Bhallataka*.^[13] *Dhatu Prabhava* are *Mamsalekhana*, *Shonita Sanghata*, *Bhedhana* and *Medohara*,. *Mala Prabhava* are *Malanuta*, *Swed/Kledhara* and *Malashodhana*. These all properties and effects are just opposite to the *Samprapti* of disease *Arbuda* Cancer. From the *Amsansakalpana* viewpoint *Kapha* is involved in this disease with its *guru*, *Manda*, *Sthria*, *Mahana* and *Analpmoola Gunas*. The *Bhallataka* possess all the properties just anti to above *gunas*. Similarly, the *Dusti of Mamsa*, *Meda* and *Rakta* are also corrected by its pharmacological actions. Hence based on above said synergistic properties, the anti-*Arbuda* actions can be explained and discussed from the *ayurvedic* viewpoint.

CONCLUSION

Arbuda originates due to metabolic changes. *Vata Dosha* is responsible for cell division. Aggravation of *Vata* and *Kapha Dosha* or both the *Doshas* interacting with one another may result in proliferation of cells. *Bhallataka* oil is possessing mainly *Tikta* and *Katu Rasa* which are effective to control the cell metabolism, in another words decreases the rate of *Dhatu Pusti*, specially the *dhatus of Kapha* groups like *Meda*, *Mamsa*, etc are comparatively affected more than others which helps in *Samprapti* *Vighatana* of *Arbuda*.

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