ABSTRACT

*Bhallataka*, a medicinal drug has the ability to penetrate deeply into the tissues and rejuvenate the body that’s why it was used to held in high esteem by ancient sages of ayurveda. Maharshi Charak emphasized the rasayana property of *bhallataka* and described ten types of preparations with it. He considered *bhallataka* as the best drug to cure the *kaphaj vyadhi*. Charak has categorized *bhallataka* has *dipaniya*-an appetizer, *bhedaniya*-to break accumulated doshas, *mutra sangrahaniya*-antidiuretic and *kusthaghna*-antidermatosis.

KEY WORDS: Rejuvenation, dipaniya, bhedaniya.

INTRODUCTION

The living organism has been considered as *nityaga* and *anubandha*[^1], the former refers to continuous process of ageing and latter to inherent quality to age in a specific manner and at specific intervals. The measures by which the process of ageing, both chronological and qualitative is delayed constitutes the principles of *rasayana*. In the *brahtrayi* text, several *rasayana yogas* are described with *bhallatak*, in which acharya Charaka emphasized the *rasayana* property of *bhallataka* and described ten types of preparations of it[^2]. In ayurveda, *bhallataka* (*Semecarpus anacardium* Linn) is included under *upvisha dravya*[^3] (semi poisonous drug) and in modern classification of poison it is categorized under irritant vegetable organic poison. As per Govt. rules and regulations this poisonous medicinal plants comes under control of Drugs and Cosmetic Act 1940. Though it is toxic in nature it should not get used before detoxification process, involves rubbing of *Semecarpus anacardium* nut with brick powder and then washing the nut with warm water[^4].
It also has activities on nervous system as brain tonic, intellect promoting and strengthening whole body in general. Rasayana or jara chikitsa is one amongst the eight branches of ayurveda; practiced extensively and effectively since ages. Though chiefly concerned with improving the health status rasayana is used also as curative treatment with effect thus, it serves the dual purpose of eradicating the ailments and keeping them away thereby promoting and prolonging the life span, the two faces of chikitsa that’s why acharya Charaka has dedicated the first chapter for rasayana in chikitsa sthana. An ideal rasayana prolongs life, improves memory and intellect, promote health, and provides immunity against diseases thereby helps an individual to lead an energetic life. It improves lusture and complexion of the body, tones the voice and speech and increases the acuity of all the sensory, motor organs along with vitality and vigour. Bhallatak posses all these quality so act as a good rasayana (restorative and promotive action) by which a healthy person attains prasasta rasadi dhathus along with its medhya (intellect) prabhava.

AIMS AND OBJECT

1. To discuss, evaluate & elaboration of Rasayana with special references to Rejuvenation / Promotion.
2. To discuss, evaluate & elaboration of properties of Bhallataka.
3. To discuss, evaluate & elaboration of Rasayana effect of Bhallataka.

MATERIAL AND METHODS

This article is based on personal experiences & textual review. Material related to Rasayana effect of Bhallataka was collected from the Brihatrayi, Laghutrayi, Nighantu and available commentaries of those has reviewed. Modern Texts & various websites to collect information on the relevant topics were referred.

CONCEPTUAL STUDY

Table no1: PROPERTIES OF DRUGS HAVING RASYANA EFFECT

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Sanskrit</th>
<th>English equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deergham Aayu</td>
<td>Prolonging age</td>
</tr>
<tr>
<td>2</td>
<td>Smriti</td>
<td>Enhancing memory</td>
</tr>
<tr>
<td>3</td>
<td>Medha</td>
<td>Enhancing intellect</td>
</tr>
<tr>
<td>4</td>
<td>Aarogya</td>
<td>Prevention from disease</td>
</tr>
<tr>
<td>5</td>
<td>Tarun vaya</td>
<td>Youthfulness</td>
</tr>
<tr>
<td>6</td>
<td>Prabha</td>
<td>Enhancing luster</td>
</tr>
<tr>
<td>7</td>
<td>Varna</td>
<td>Improving complexion</td>
</tr>
<tr>
<td>8</td>
<td>Swar</td>
<td>Maintaining voice</td>
</tr>
</tbody>
</table>
Table no 2: BHALLATAKA HAVING PROPERTIES LIKE RASAYANA

<table>
<thead>
<tr>
<th>Properties</th>
<th>Ch.²</th>
<th>Su.³</th>
<th>Vog.⁴</th>
<th>Vridh madhava Parker ⁵</th>
<th>Kaideva Nighantu¹⁰</th>
<th>Guna ratanamala¹¹</th>
<th>B.P¹²</th>
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</thead>
<tbody>
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<td></td>
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<tr>
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</tbody>
</table>

Table no 3: COMMON CHARACTERS OF BHALLATAKA

<table>
<thead>
<tr>
<th>Nighantu Characters</th>
<th>Bhavaprakash ¹³</th>
<th>Dhanvantari ¹⁴</th>
<th>Raj Nighantu¹⁵</th>
<th>Kaideva Nighantu¹⁶</th>
<th>Madanpal Nighantu¹⁷</th>
</tr>
</thead>
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<tr>
<td>Guna</td>
<td>Laghu</td>
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<td>-</td>
<td>Laghu</td>
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<tr>
<td>Rasa</td>
<td>Kashaya, Madhura</td>
<td>Katu, Tikta Madhura</td>
<td>Katu, Tikta, Kashaya</td>
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<td>Veerya</td>
<td>Ushna</td>
<td>Ushna</td>
<td>Ushna</td>
<td>Sheeta</td>
<td>Ushna</td>
</tr>
<tr>
<td>Vipaka</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Kati</td>
<td>-</td>
</tr>
<tr>
<td>Karma</td>
<td>Shukrala</td>
<td>-</td>
<td>-</td>
<td>Grahi, Deepana</td>
<td>Shukrala</td>
</tr>
<tr>
<td>Doshaghna</td>
<td>V-K</td>
<td>V-K</td>
<td>V-K</td>
<td>P-K</td>
<td>V-K</td>
</tr>
</tbody>
</table>
Previous Research work of *Semecarpus anacardium*

**Antioxidant effect** (Free radical scavenging activity)

- Verma *et al.* investigated antioxidant activity of the aqueous extract of nuts of medicinal plant SA in AKR mouse liver during development of lymphoma. Administration of the aqueous extract of SA to lymphoma-transplanted mouse leads to increase in the activities of antioxidant enzymes, whereas LDH activity is brought down significantly indicating a decrease in carcinogenesis.[18]

- Sahoo *et al.* investigated the antioxidant activity of ethyl acetate extract of stem bark of SA. Ethyl acetate extract showed the stronger antioxidant activity (due to presence of highest total phenolic content of 68.67% measured as pyrocatechol equivalent) compared to the other (hexane, chloroform and methanol) extracts. The isolation of the ethyl acetate extract of SA stem bark yielded a bright-yellow solid crystal, which was identified as butein. This compound exhibited antioxidant activity (IC50 values of 43.28 ± 4.34 μg/ml), which was comparable to rutin, taken as a standard.[19]

**Anti-inflammatory effect**

- Ramprasathet *et al.* investigated the anti-inflammatory effects of SA nut extract on developing and developed adjuvant arthritis. *Semecarpus anacardium* significantly decreased the carrageenan-induced paw edema and cotton pellet granuloma. These results indicate the potent anti-inflammatory effect and therapeutic efficacy of SA Linn. Nut extract against all phases of inflammation is comparable to that of indomethacin[20].

- Bhitre *et al.* prepared the methanolic, ethanolic, chloroform, ethyl acetate and petroleum ether extracts of fruits of SA and tested to study the antiinflammatory activity using the technique of carrageenan-induced paw edema in albino rats. The extract showed significant antiinflammatory activity comparable to the reference standard aspirin[21].

- Salvem *et al.* investigated that ethyl acetate extract of SA led to the isolation of major active principle, tetrahydroamentoflavone (THA), a biflavonoid. The *in vitro* cyclooxygenase (COX-1)-catalyzed prostaglandin biosynthesis assay of THA gave an IC50 value of 29.5 μM (COX-1) and 40.5% inhibition at 100 g/mL (COX-2). The *in vivo* carrageenan-induced paw edema assay resulted in dose-dependent antiinflammatory effect of THA and the activity was comparable to that of ibuprofen.[22]

- Satayavati *et al.* and Bajpai *et al.*, reported the antiinflammatory activity of SA for both immunological and non-immunological origin.[23]
Singh et al. evaluated that SA extract can inhibit pro-inflammatory cytokine production. *Semecarpus anacardium* extract inhibited the spontaneous and LPS-induced production of pro-inflammatory cytokines IL-1 beta and IL-12p40 but had no effect on TNF alpha and IL-6 production, both at protein and mRNA level. The extract also suppressed LPS-activated nitric oxide production in mouse macrophage cell line, RAW 264.7.\(^{[24]}\)

Premlatha et al. have been reported for immunomodulatory potency, antioxidative, membrane stabilizing, tumors marker regulative, glucose level restoring and mineral regulation properties of nut extract in hepatocellular carcinoma and found to detoxify a potent hepatocarcinogen aflatoxin B\(_1\) and causes its metabolites to excreted in urine.\(^{[25]}\)

**Anti atherogenic effect**

Sharma et al. demonstrated the cardiac activity of SA, as it generally reduces the tissue and serum hyperlipidemia by the inhibition of intestinal cholesterol absorption coupled with peripheral disposal thus possessing anti-arthrosclerotic activity.\(^{[26]}\)

**Anti-microbial activity**

Mohanta et al. found the antimicrobial activity (disc diffusion method) of *Semecarpus anacardium* with different extract. The petroleum ether and aqueous extract fractions of *Semecarpus anacardium* showed inhibitory activity against *Staphylococcus aureus* (10 mm) and *Shigella flexneri* (16 mm) at 100 mg/ml concentration. While chloroform extract showed inhibition against *Bacillus licheniformis*, *Vibrio cholerae* and *Pseudomonas aeruginosa*, the ethanol extract showed inhibition to *Pseudomonas aeruginosa* and *S. aureus*.\(^{[27]}\)

Nair et al. found that the alcoholic extract of dry nuts of *Semecarpus anacardium* showed bactericidal activity *in vitro* against three gram negative strains (*Escherichia coli*, *Salmonella typhi* and *Proteus vulgaris*) and two gram positive strains (*Staphylococcus aureus* and *Corynebacterium diphtheriae*). Subsequent studies have shown that the alcoholic extracts of different parts of the plant (leaves, twigs and green fruit) also possess anti-bacterial properties, especially the leaf extract\(^{[28]}\).

**CNS activity**

Farooq et al. evaluated the beneficial effect of nuts of SA, extracted with milk, on CNS, mainly for its locomotor and nootropic activities in different experimental animal
models. The extract tested but a slight CNS depressant effect was noted with only 150 mg/kg of the extract and it was found to possess nootropic activity.[29]

**Hypoglycemic effect**

- Arul et al. studied the effect of ethanolic extract of dried nuts of SA on blood glucose and investigated in both normal (hypoglycemic) and streptozotocin-induced diabetic (antihyperglycemic) rats. The ethanolic extract of SA (100 mg/kg) reduced the blood glucose of normal rats. The blood glucose levels were measured at 0, 1, 2 and 3 h after the treatment and antihyperglycemic activity of SA was compared with tolbutamide, a sulfonyl urea derivative used in diabetes mellitus.[30,31]

**Anti-carcinogenic activity**

- Mathivadhani et al. studied *Semecarpus anacardium* nut extract use for inhibitory effect on human breast cancer cell line (T47D). At the molecular level, these changes are accompanied by decrease in Bcl(2) and increase in Bax, cytochrome c, caspases and PARP cleavage, and ultimately by internucleosomal DNA fragmentation.[32]

- Arulkumaran et al. investigated the protective efficacy of preparation named as Kalpaamruthaa (KA) (containing SA nut milk extract, dried powder of *Phyllanthus emblica* fruit and honey) on the peroxidative damage and abnormal antioxidant levels in the hepatic mitochondrial fraction of 7,12-dimethylbenz(a)anthracene (DMBA)-induced mammary carcinoma rats. On the basis of the observed results, KA can be considered as a readily accessible, promising and novel cancer chemopreventive agent.[33]

- Sugapriya et al. showed restoration of energy metabolism in leukemic mice treated by SA nut milk extract. Leukemia-bearing mice showed a significant increase in LPOs, glycolytic enzymes, a decrease in gluconeogenic enzymes and significant decrease in the activities of TCA cycle and respiratory chain enzymes as compared to control animals. *Semecarpus anacardium* treatment was compared with standard drug imatinib mesylate. *Semecarpus anacardium* administration to leukemic animals resulted in clearance of the leukemic cells from the bone marrow and internal organs.[34]

**DISCUSSION**

*Rasayana* stands as an answer to solve the problem of healthful longevity including mental development and resistance against disease. *Rasayana* is a specialized type of treatment influencing the fundamental aspect of body i.e. dhatu, agni and srotas. It is a possible that
different rasayana drugs may act with predominance effect at different levels. These comprehensive effects are brought about with the help of the varied pharmacodynamic properties of these drugs. Rasayana effect is not a specific pharmacological action but it is a complex phenomenon operating through a comprehensive mechanism involving the fundamental factors like create excellence of Sapta dhatu by prashast rasadi-samvahan to promote immunity, agni to improve metabolism and srotas to improve endocrine and exocrine secretions. It may ultimately be leading to the achievement of the comprehensive effect as stated by Charaka “Labhopayo Hi Shastanam – Rasadinam Rasayanum”.[35]

Rasayana effects are mentioned in term of vayasthapana and ayushkara, medhakara, urjaskara so that drug likes bhallataka acting at the level of rasa by improving specific nutritional values of poshak rasa. Madhura vipaka and snigdha guna act as rasayana at level of rasa by promoting the nutritional value of the rasa which in term helps in obtaining the best qualities of dhatus. Bhallataka having a fundamental effect at level of agni or digestion and metabolism by virtue of its ushana veerya, laghu guna and katu, tikta, kashaya rasa. It vitalizing the organic metabolism leading to an improved structural and function pattern of dhatus i.e. prashasta dhatus or best possible biotransformation to produce the best quality bodily tissue and delay senility and prevent other diseases of old age shows rasayana effect. Bhallataka is upvisha possessing the laghu, raksha, aashu, vishad, vyavayi, teekshna, ushna guna may eliminates ama and clears up srotas/ Srotoshodhana – the micro channels of all the systems, hence facilitates the nourishment of all the tissues (dhatus) reveals rasayana effect in the body. Medhakara prabhava of it improve the mental faculty.

CONCLUSION

Bhallataka stands as a valuable drug possessing effective promotive action hence it belongs to group of major rasayana drugs with the support of pharmacological and biological activities, carrying classical support to its efficiency. Thus, the drug bhallataka has restorative promotive, age-sustaining and tissue-nutritive and anti oxidant activities which make it a potent drug prescribed in rasayana therapy.

REFERENCES


