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# A Review on Rasayana Karma of Bhallataka

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Bhallataka, a revered medicinal herb, is known for its ability to penetrate deeply into tissues and rejuvenate the body, which is why ancient Ayurvedic sages held it in high esteem. Maharshi Charak emphasized its Rasayana properties and described ten different preparations using Bhallataka. He regarded it as the most effective remedy for Kaphaj Vyadhi. Charak classified Bhallataka into several categories: Dipaniya (an appetizer), Bhedaniya (to break down accumulated Doshas), Mutra Sangrahaniya (antidiuretic), and Kusthaghna (antidermatosis).

**Keywords:** Bhedaniya, Dipaniya, Rejuvenation

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# Introduction

Living organisms are viewed as *Nityaga* and *Anubandha.*[1] *Nityaga* refers to the continuous process of aging, while *Anubandha* describes the inherent quality of aging in specific ways and at certain intervals. The principles of *Rasayana* focus on delaying both chronological and qualitative aspects of aging. In the *Brihtrayi* texts, several *Rasayana* formulations feature *Bhallataka*, with *Acharya Charaka* emphasizing its *Rasayana* properties and detailing ten different preparations.[2] In *Ayurveda, Bhallataka* (*Semecarpus anacardium* Linn) is classified as *Upvisha Dravya.*[3] In modern toxicology, it is categorized as an irritant vegetable organic poison. According to government regulations, this poisonous medicinal plant is regulated under the Drugs and Cosmetic Act of 1940. Despite its toxic nature, *Bhallataka* must undergo a detoxification process before use, which involves rubbing the nut with brick powder and then washing it with warm water.[4]

*Bhallataka* also has beneficial effects on the nervous system, acting as a brain tonic that promotes intellect and strengthens the entire body. *Rasayana*, or *Jara Chikitsa*, is one of the eight branches of *Ayurveda*, practiced effectively for centuries. While its primary focus is on enhancing health, *Rasayana* also serves as a curative treatment, addressing ailments and preventing their recurrence, thus promoting longevity. This dual purpose is why Acharya *Charaka* dedicated the first chapter of *Chikitsa Sthana* to *Rasayana*. An ideal *Rasayana* prolongs life, enhances memory and intellect, boosts overall health, and provides immunity against diseases, enabling individuals to lead vibrant lives. It improves skin luster and complexion, refines voice and speech, and enhances the acuity of sensory and motor functions, contributing to overall vitality and vigor. *Bhallataka* possesses all these qualities, making it an effective *Rasayana* that helps a healthy individual achieve *Prashasta Rasadi Dhathus* while enhancing *Medhya* (intellectual) attributes.

# Aim and Objectives

1. To Discuss, Evaluate, and Elaborate on *Rasayana* with a Focus on Rejuvenation and Promotion.
2. To Discuss, Evaluate, and Elaborate on the Properties of *Bhallataka*.
3. To Discuss, Evaluate, and Elaborate on the *Rasayana* Effects of *Bhallataka*.

# Materials and Methods

This article draws on personal experiences and a review of relevant texts. Information about the *Rasayana* effects of *Bhallataka* was gathered from the *Brihatrayi, Laghutrayi, Nighantu*, and their commentaries. Additionally, modern texts and various websites were consulted to supplement the research on related topics.

**Conceptual Study**

**Table 1: Properties of drugs exhibiting *Rasayana* Effects[5]**

| SN | Sanskrit | English Equivalent |
|---|---|---|
| 1. | Deergham Aayu | Prolonging Age |
| 2. | Smriti | Enhancing Memory |
| 3. | Medha | Enhancing Intellect |
| 4. | Aarogya | Disease Prevention |
| 5. | Tarun Vaya | Youthfulness |
| 6. | Prabha | Enhancing Luster |
| 7. | Varna | Improving Complexion |
| 8. | Swar | Maintaining Voice |
| 9. | Dehendreeya Bala | Strengthening body senses |
| 10. | Vaak Sidhhi | Empowers oratory |
| 11. | Pranati | Promotes gentleness |
| 12. | Kanti | Glow of the body |

**Table 2: *Bhallataka* having properties like *Rasayana***

| Properties | Ch [6] | Su [7] | Vag [8] | Vrinda Madhav [9] | Kaideva Nighantu [10] | Guna Ratnamala [11] | BP [12] |
|---|---|---|---|---|---|---|---|
| Deergh Aayu | ✓ | ✓ | ✓ | ✓ | | | |
| Smriti | | | ✓ | | | | |
| Medha | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aarogya | | | | ✓ | | | |
| Tarun Vaya | ✓ | | | ✓ | | | |
| Prabha | | | | | | | |
| Varna | | ✓ | ✓ | | | | |
| Swar | | | | | | | |
| Dehendriva Bala | | ✓ | ✓ | | ✓ | ✓ | |
| Vaak Sidhhi | | | | | | | |
| Praniti | | | | | | | |
| Kanti | | | | | | | |
| Vrishya | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| Rasayana | ✓ | | ✓ | ✓ | | | ✓ |

**Table 3: Common Characters of *Bhallataka***

| Nighantu / Characters | Bhavaprakash Nighantu [13] | Dhanvantari Nighantu [14] | Raj Nighantu [15] | Kaideva Nighantu [16] | Madanpal Nighantu [17] |
|---|---|---|---|---|---|
| Guna | Laghu | - | - | Laghu | Laghu |
| Rasa | Kashaya, Madhura | Katu, Tikta Madhura | Katu, Tikta, Kashaya | Tikta, Kashaya, Madhura | Kashaya, Madhura |
| Veerya | Ushna | Ushna | Ushna | Sheeta | Ushna |
| Vipaka | - | - | - | Katu | - |
| Karma | Shukrala | - | - | Grahi, Deepana | Shukrala |
| Doshaghnata | V-K | V-K | V-K | P-K | V-K |
| Rogaghnata | Udara, Aanaha, Kushtha, Arsha, Grahani, Gulma, Jwara, Kshwitra, Agnimandya, Krimi, Vrana | Krimi, Gulma, Arsha, Grahani, Kushtha | Prameha, Arsha | Raktavikar, Kushtha, Arsha, Gulma, Shopha | Udara, Aanaha, Kushtha, Arsha, Grahani, Gulma, Jwara, Kshwitra, Agnimandya, krimi, Vrana |

**Previous Research work of *Semecarpus anacardium***

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

- Verma et al. studied the antioxidant properties of the aqueous extract from the nuts of the medicinal plant SA in the liver of AKR mice during lymphoma development. Their findings revealed that administering the aqueous extract of SA to lymphoma-transplanted mice resulted in increased activity of antioxidant enzymes and a significant reduction in LDH activity, suggesting a decrease in carcinogenesis.**[18]**
- Sahoo et al. examined the antioxidant activity of the ethyl acetate extract from the stem bark of SA. This extract demonstrated the strongest antioxidant activity, attributed to its high total phenolic content of 68.67% (measuredas pyrocatechol equivalent), outperforming other extracts (hexane, chloroform, and methanol). From the ethyl acetate extract, a bright-yellow solid crystal was isolated and identified as butein.
- This compound exhibited antioxidant activity with an IC50 value of 43.28 ± 4.34 µg/ml, comparable to that of rutin, which served as the standard.**[19]**

**Anti-inflammatory effect**

- Ramprasathet et al. studied the anti-inflammatory effects of SA nut extract on both developing and established adjuvant arthritis. The extract from Semecarpus anacardium significantly reduced carrageenan-induced paw edema and cotton pellet granuloma formation. These findings highlight the potent anti-inflammatory properties and therapeutic efficacy of SA Linn. nut extract throughout all phases of inflammation, comparable to those of indomethacin.**[20]**
- Bhitre et al. prepared methanolic, ethanolic, chloroform, ethyl acetate, and petroleum ether extracts from the fruits of SA and evaluated their anti-inflammatory activity using the carrageenan-induced paw edema model in albino rats. The extracts demonstrated significant anti-inflammatory effects comparable to the reference standard, aspirin.**[21]**
- Salvem et al. discovered that the ethyl acetate extract of SA allowed for the isolation of a major active compound, tetrahydroamentoflavone (THA), a biflavonoid. In vitro assays measuring cyclooxygenase (COX-1)-catalyzed prostaglandin biosynthesis revealed an IC50 value of 29.5 µM for THA and a 40.5% inhibition at a concentration of 100 µg/mL for COX-2. In vivo, the carrageenan-induced paw edema assay demonstrated a dose-dependent anti-inflammatory effect of THA, comparable to that of ibuprofen.**[22]**
- Satayavati et al. and Bajpai et al. reported the anti-inflammatory activity of SA for both immunological & non-immunological origins. [23]
- Singh et al. evaluated the ability of SA extract to inhibit pro-inflammatory cytokine production. The extract of Semecarpus anacardium significantly reduced both spontaneous and LPS-induced production of the pro-inflammatory cytokines IL-1beta and IL-12p40, but it did not affect TNF-alpha and IL-6 levels at either the protein or mRNA level. Additionally, the extract suppressed LPS-activated nitric oxide production in mouse macrophage cell line RAW 264.7.**[24]**

- Premlatha et al. reported the immunomodulatory potency, antioxidative properties, membrane stabilization, tumor marker regulation, glucose level restoration, and mineral regulation effects of nut extract in hepatocellular carcinoma. They found that the extract detoxifies the potent hepatocarcinogen aflatoxin B1, facilitating the excretion of its metabolites in urine.**[25]**

**Anti atherogenic effect**

- Sharma et al. demonstrated that SA has cardiac activity, primarily by reducing tissue and serum hyperlipidemia through the inhibition of intestinal cholesterol absorption and promoting peripheral disposal. This mechanism contributes to its anti-atherosclerotic properties.[26]

**Anti-microbial activity**

- Mohanta et al. investigated the antimicrobial activity of Semecarpus anacardium using the disc diffusion method with various extracts. The petroleum ether and aqueous extracts demonstrated inhibitory effects against Staphylococcus aureus (10 mm) and Shigella flexneri (16 mm) at a concentration of 100 mg/ml. Additionally, the chloroform extract inhibited Bacillus licheniformis, Vibrio cholerae, and Pseudomonas aeruginosa, while the ethanol extract showed inhibition against Pseudomonas aeruginosa and S. aureus.[27]
- Nair et al. discovered that the alcoholic extract of dry nuts from Semecarpus anacardium exhibited bactericidal activity in vitro against three gram-negative strains (Escherichia coli, Salmonella typhi, and Proteus vulgaris) as well as two gram-positive strains (Staphylococcus aureus and Corynebacterium diphtheriae). Further studies revealed that alcoholic extracts from various parts of the plant, including leaves, twigs, and green fruit, also possess antibacterial properties, with the leaf extract showing particularly strong effects.[28]

**CNS activity**

- Farooq et al. assessed the beneficial effects of SA nuts extracted with milk on the central nervous system (CNS), specifically focusing on locomotor and nootropic activities in various experimental animal models. The extract demonstrated only a slight CNS depressant effect at a dose of 150 mg/kg, while also exhibiting nootropic activity.[29]

**Hypoglycemic effect**

- Arul et al. investigated the effects of an ethanolic extract of dried SA nuts on blood glucose levels in both normal (hypoglycemic) and streptozotocin-induced diabetic (antihyperglycemic) rats. At a dosage of 100 mg/kg, the extract significantly reduced blood glucose levels in normal rats. Blood glucose measurements were taken at 0, 1, 2, and 3 hours post-treatment, and the antihyperglycemic activity of SA was compared to tolbutamide, a sulfonylurea derivative used in the treatment of diabetes mellitus.[30, 31]

**Anti-carcinogenic activity**

- Mathivadhani et al. studied the inhibitory effects of Semecarpus anacardium nut extract on the human breast cancer cell line T47D. At the molecular level, these effects were associated with a decrease in Bcl-2 and an increase in Bax, cytochrome c, caspases, and PARP cleavage, ultimately leading to internucleosomal DNA fragmentation.[32]
- Arulkumaran et al. investigated the protective efficacy of a preparation called Kalpaamruthaa (KA), which contains SA nut milk extract, dried powder of Phyllanthus emblica fruit, and honey, against peroxidative damage and abnormal antioxidant levels in the hepatic mitochondrial fraction of rats induced with mammary carcinoma using 7,12-dimethylbenz(a)anthracene (DMBA). Based on the observed results, KA is suggested as a readily accessible, promising, and novel cancer chemopreventive agent.[33]
- Sugapriya et al. demonstrated that treatment with SA nut milk extract restored energy metabolism in leukemic mice. Compared to control animals, leukemia-bearing mice exhibited a significant increase in lipid peroxidation products (LPOs) and glycolytic enzymes, along with a decrease in gluconeogenic enzymes and significant reductions in the activities of TCA cycle and respiratory chain enzymes. The effects of Semecarpus anacardium were compared with the standard drug imatinib mesylate. Administration of Semecarpus anacardium to leukemic animals led to the clearance of leukemic cells from both the bone marrow and internal organs.[34]

## Discussion

*Rasayana* offers a holistic approach to promoting healthful longevity, encompassing mental development and enhancing disease resistance. It is a specialized form of treatment that influences fundamental bodily aspects, including *Dhatu, Agni,* and *Srotas*.

Different *Rasayana* drugs may exert predominant effects at various levels, thanks to their diverse pharmacodynamic properties. Rather than representing a specific pharmacological action, the *Rasayana* effect is a complex phenomenon that operates through a comprehensive mechanism involving essential factors.

This includes enhancing the quality of the *Sapta dhatu* through *Prashast Rasadi-Samvahan* to boost immunity, improving agni to enhance metabolism, and optimizing *srotas* for better endocrine and exocrine secretions. Ultimately, this integrated approach may lead to the comprehensive effects described by Charaka: "*Labhopayo Hi Shastanam – Rasadinam Rasayanam.* [35]

*Rasayana* effects are described in terms of *Vayasthapana, Ayushkara, Medhakara,* and *Urjaskara*. For instance, drugs like *Bhallataka* operate at the level of *Rasa* by enhancing the specific nutritional qualities of *Poshak Rasa* . The properties of *Madhura Vipaka* and *Snigdha Guna* also contribute to *Rasayana* effects by promoting the nutritional value of *Rasa*, which in turn helps achieve optimal qualities of *Dhatus.*

*Bhallataka* primarily impacts *Agni* , or digestion and metabolism, due to its *Ushana Veerya, Laghu Guna* and the *Katu, Tikta*, *Kashaya Rasas.* This vitalizes organic metabolism, leading to improved structural and functional patterns of *dhatus* , resulting in *Prashasta Dhatus* or timal biotransformation for producing high-quality bodily tissues, delaying senility, and preventing age-related diseases.

As an *Upvisha, Bhallataka* possesses *Laghu, Ruksha, Aashu, Vishad, Vyavayi, Teekshna,* and *Ushna Gunas,* which help eliminate *Ama* and clear the *Srotasas* , or microchannels of the body's systems. This process facilitates the nourishment of all tissues (*Dhatus*) and reveals the *Rasayana* effect within the body. Additionally, its *Medhakara* properties enhance mental faculties.

## Conclusion

*Bhallataka* is a valuable drug known for its effective promotive action, categorizing it among the major *Rasayana* drugs. Supported by both pharmacological and biological activities, it has classical validation of its efficacy. Consequently, *Bhallataka* offers restorative, age-sustaining, tissue-nutritive, and antioxidant properties, making it a potent option in *Rasayana* therapy.

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