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# Role of Rasayana in Preserving Health, Function and Longevity - A Literary Review and Comparative Textual Analysis of the Brihat-Trayi

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**Abstract:** ***Background:*** *Aging involves progressive loss of physiological reserve, function and resilience. Healthy-aging science therefore emphasizes healthspan and preservation of function. In Ayurveda, Rasayana is a major preventive and rejuvenative discipline concerned with longevity, strength, cognition, sensory function, nourishment and resistance to disease.*

***Objective:*** *To identify and synthesize classical descriptions of Rasayana, aging and preservation of function across Charaka Samhita, Sushruta Samhita and Ashtanga Hridaya, and to interpret these findings cautiously within contemporary healthy-aging science.*

***Methods:*** *A structured literary review and comparative textual analysis was undertaken using the Brihat-Trayi as primary sources. Sanskrit terms and transliteration variants related to Rasayana, Jara, Vaya, Ayu/Ayushya, Bala, Ojas, Medha, Smriti, Indriya, Dhatu, Agni, Srotas, Vyadhikshamatva, Achara Rasayana and named formulations were used to identify relevant passages. Modern peer-reviewed literature was used for contextual interpretation only.*

***Results:*** *The three texts consistently describe Rasayana as a multidimensional health-promoting strategy rather than a single anti-aging medicine. Recurrent domains include longevity, strength, tissue preservation, cognition, sensory function and resistance to disease. Charaka provides the most systematic early exposition; Sushruta emphasizes health preservation within its therapeutic framework; Ashtanga Hridaya integrates Rasayana with Jara-cikitsa and practical regimens. Modern studies of selected interventions, especially Amalaki Rasayana, provide preliminary biological and functional signals but do not establish a generalized anti-aging effect.*

***Conclusion:*** *The Brihat-Trayi supports interpreting Rasayana as a framework for healthy aging, preservation of physiological function and potential delay of premature decline. Modern evidence should be considered intervention-specific and hypothesis-generating. Rigorous translational and clinical research is required.*

**Keywords**: Rasayana; Ayurveda; aging; healthy aging; longevity; Brihat-Trayi; geroscience; rejuvenation.

## I. INTRODUCTION

Aging is a multifactorial process involving progressive changes in cellular integrity, metabolism, tissue function and resilience. Contemporary geroscience focuses increasingly on healthspan, intrinsic capacity and functional independence rather than lifespan alone. Ayurveda approaches aging through concepts such as Jara and Vaya and links age-related change with Dosha, Dhatu, Agni, Ojas, strength and mental and sensory function.


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Rasayana is broader than an anti-aging drug. Classical descriptions include medicines, diet, regimen, behavioral discipline and environmental control. Achara Rasayana further demonstrates that healthy aging was not conceived solely as pharmacological treatment. The Brihat-Trayi is therefore an appropriate corpus for examining whether Rasayana represents a coherent classical model of preservation of function and longevity.

Research gap: although Rasayana is extensively described and selected formulations have been studied experimentally and clinically, a concise comparative synthesis of its role in healthy aging across the Brihat-Trayi is insufficiently consolidated.

Aim: To critically examine the role of Rasayana in preserving health, function and longevity in the Brihat-Trayi and to assess its cautious conceptual relevance to contemporary healthy-aging research.

Objectives: (1) identify aging/longevity references; (2) classify Rasayana concepts and formulations; (3) compare the three texts; (4) synthesize evidence for preservation of function; and (5) develop a scientifically cautious interpretation.

## II. MATERIALS AND METHODS-

- **Study Design-**

This was a structured literary review and comparative textual analysis, not a clinical trial, laboratory experiment, systematic review or meta-analysis. The unit of analysis was the classical passage and its verified textual location.

- **Primary and Secondary Sources-**

Primary sources were Charaka Samhita, Sushruta Samhita and Ashtanga Hridaya. Standard editions and published scholarly citations were used for the classical evidence. Secondary sources included peer-reviewed Ayurveda/Rasayana research and high-quality gerontology literature. Secondary evidence was not used to replace classical statements.

| Text | Verified core locations | Main domains |
|---|---|---|
| Charaka Samhita | Chikitsa Sthana, Rasayana Adhyaya, 1/1/7–8; 1/1/41–57 | Longevity, health, strength, cognition, rejuvenation |
| Sushruta Samhita | Chikitsa Sthana, Rasayana-related material, 27/3–4; 27/6–8 | Health preservation, resilience, longevity |
| Ashtanga Hridaya | Uttara Sthana, Rasayana Vidhi, 39/1–2; 39/178 | Jara-cikitsa, regimen, rejuvenation, function |

- **Search and Selection-**

The textual search framework included Rasayana, Jara, Vaya, Ayu, Ayushya, Dirghayushya, Bala, Ojas, Medha, Smriti, Indriya, Dhatu, Agni, Srotas, Vyadhikshamatva, Jarachikitsa, Achara Rasayana, Kutipraveshika Rasayana, Vatatapika Rasayana and named formulations. Modern searches combined Ayurveda/Rasayana with aging, healthy aging, healthspan, geroscience, Amalaki Rasayana and Triphala.

Included were passages directly addressing Rasayana, longevity, age-related deterioration, preservation of strength/cognition/sensory function, resilience and relevant formulations or Achara Rasayana. Excluded were unrelated therapeutic descriptions, duplicates, unsupported biomedical extrapolations and unverifiable quotations.

- **Data Extraction and Analysis-**

Each passage was mapped as Text | Sthana | Adhyaya | Verse | Concept | Rasayana/drug | Intended effect | Interpretive domain. Themes were consolidated into longevity, physical strength, cognition, sensory function, Dhatu preservation, Agni/metabolism, Ojas/resilience, disease prevention, mental-behavioral health and Rasayana formulations.

Comparative analysis examined common concepts, unique descriptions, terminology, organization and therapeutic emphasis. Important classical claims were verified in the sequence Sanskrit passage → chapter → verse → edition → citation. Exact verse numbers were not supplied where independent verification was unavailable.

- **Evidence Hierarchy-**

Four levels were kept separate: (A) classical textual evidence; (B) Ayurvedic interpretation; (C) modern mechanistic correlation; and (D) evidence-supported clinical claim. No level was treated as proof of the next.

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## III. RESULTS

- **Core Classical Evidence-**

Six core citation clusters were verified for detailed comparison—two from each member of the Brihat-Trayi. This is a verified analytical core, not an exhaustive count of every relevant verse in the three texts.

| Text | Core clusters | Dominant findings |
|---|---|---|
| Charaka | 2 | Rasayana benefits; longevity; Bala; Medha/Smriti; tissue and health preservation |
| Sushruta | 2 | Rasayana as health-promoting and affliction-mitigating measure |
| Ashtanga Hridaya | 2 | Jara-cikitsa; rejuvenative regimen; formulations and functional preservation |

- **Thematic Findings-**

Rasayana and longevity: All three texts associate Rasayana with maintenance of Ayu and favorable health. Charaka explicitly connects Rasayana with long life, health, memory, intellect, youthful state and strength. Sushruta emphasizes health preservation and mitigation of bodily afflictions. Ashtanga Hridaya integrates rejuvenation with management of age-related decline.

Physical function: Bala is a recurring outcome. The classical aim is broader than muscle strength alone and includes maintenance of bodily integrity and functional capacity.

Cognitive and sensory function: Medha and Smriti are included in the Rasayana benefit profile, while preservation of Indriya function forms part of the broader health objective. Modern cognitive or sensory endpoints cannot be assumed to be direct equivalents of these classical terms.

Dhatu and Ojas: Rasayana is conceptually linked with nourishment and maintenance of Dhatu and Ojas. These are systems-level Ayurvedic constructs and should not be equated with a single modern tissue, biomarker or immune variable.

Disease prevention and resilience: Freedom from disease and resistance are recurring desired outcomes. Modern pharmacological studies of selected Rasayana plants suggest antioxidant, stress-response or immunomodulatory activity, but these findings are intervention-specific.

Achara Rasayana: Behavioral and ethical regulation broadens the Rasayana framework beyond medicines and provides a potential health-promotion model relevant to lifestyle, stress regulation and social functioning.

- **Brihat-Trayi Comparison-**

| Domain | Charaka | Sushruta | Ashtanga Hridaya |
|---|---|---|---|
| Rasayana | Most systematic; dedicated Rasayana Adhyaya | Integrated within therapeutic framework | Detailed Jara/Rasayana practical approach |
| Longevity | Explicit | Explicit health-preserving orientation | Explicit rejuvenative orientation |
| Strength/function | Bala and tissue benefits | Positive health/resistance | Functional preservation |
| Cognition | Medha/Smriti | Broader mental-health context | Cognitive/behavioral relevance |
| Regimen | Kutipraveshika/Vatatapika | Regimen-based measures | Procedural and behavioral detail |

- **Major Formulations-**

| Formulation | Classical relevance | Healthy-aging domain |
|---|---|---|
| Amalaki Rasayana | Named classical Rasayana | General vitality/function |

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|---|---|---|
| Brahma Rasayana | Broad restorative Rasayana | Longevity, cognition, strength |
| Chyavanaprasha | Classical Rasayana formulation | General health/rejuvenation |
| Medhya Rasayana group | Cognition-oriented Rasayana | Cognitive function |

## DISCUSSION

- **Rasayana as a Health-Promoting Concept-**

The principal finding is that Rasayana is better understood as a multidimensional health-preservation strategy than as a collection of anti-aging medicines. Its classical outcome profile spans longevity, nourishment, strength, cognition, sensory integrity and resistance. This breadth has conceptual similarity to contemporary healthy-aging models centered on function and resilience.

The analogy must remain cautious. Bala is not synonymous with muscle mass; Ojas is not synonymous with immunity; Dhatu is not equivalent to a single tissue; and Rasayana is not a direct biomedical synonym for geroprotection.

- **Preservation of Function and Premature Decline-**

The classical emphasis on strength, cognition, sensory function, tissue quality and vitality suggests an objective of preserving functional reserve. This is compatible with the modern healthspan concept. The appropriate interpretation is potential mitigation or delay of age-associated decline, not abolition of chronological aging.

This distinction is particularly important because the modern evidence base is intervention-specific. A study of Amalaki Rasayana cannot establish efficacy for every Rasayana formulation, and a preclinical effect cannot establish a clinical healthspan benefit.

- **Modern Scientific Correlations-**

Selected studies provide plausible conceptual links with oxidative stress, DNA repair, telomerase activity, cellular stress response, mitochondrial function and cognition. In aged human volunteers, Amalaki Rasayana maintained or enhanced DNA strand-break repair in one randomized study, while nucleotide- and base-excision repair outcomes did not change. Another human study reported increased telomerase activity without a discernible change in telomere length. These results support further investigation, not a claim of proven anti-aging efficacy.

In Drosophila, Amalaki Rasayana improved tolerance to cellular stresses and reduced reactive oxygen species and lipid peroxidation while increasing superoxide dismutase activity. In a mouse model, Amalaki Rasayana was associated with improvements in age-related memory measures and dendritic spine density. Such findings are mechanistically informative but remain preclinical.

A 2026 rat study reported preservation of antioxidant activity, tissue integrity and selected gene-expression patterns with long-term Amalaki Rasayana supplementation. These results further support translational investigation but do not establish human clinical efficacy.

- **Evidence Hierarchy and Clinical Meaning-**

The strongest evidence in this review concerns the existence and coherence of the classical Rasayana concept. Modern mechanistic evidence is promising for selected interventions, while robust long-term clinical evidence for healthy-aging outcomes remains limited. A recently registered cluster randomized trial of Ayush Rasayana A and B illustrates the field's movement toward functional and quality-of-life outcomes in older adults.

Accordingly, Rasayana should be framed as a candidate healthy-aging framework rather than a proven method for preventing or reversing biological aging.

## IV. LIMITATIONS, CONCLUSION AND FUTURE DIRECTIONS-

- **Limitations-**

This study is literary and does not provide pooled clinical effect estimates. Classical interpretation may vary by edition, ecension and commentary. The present manuscript uses a verified core citation set rather than an exhaustive digital oncordance. Classical constructs cannot be translated one-to-one into biomedical variables. Modern Rasayana evidence

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is heterogeneous, often ntervention-specific, and includes preclinical studies. Publication and interpretation bias in secondary literature are also possible.

- **Conclusion-**

The Brihat-Trayi presents Rasayana as a multidimensional strategy for preserving health, physiological function and longevity rather than a literal means of abolishing chronological aging. Across Charaka Samhita, Sushruta Samhita and Ashtanga Hridaya, recurring domains include longevity, strength, tissue quality, cognition, sensory function, resilience and disease prevention. Rasayana also includes behavioral and regimen-based measures, demonstrating that its classical scope extends beyond medicines.

Within contemporary healthy-aging science, these descriptions can be interpreted as a hypothesis-generating model of healthspan preservation. Selected studies of Amalaki Rasayana and other Ayurvedic interventions provide preliminary evidence concerning DNA repair, telomerase activity, stress tolerance, cognition and tissue protection, but these findings do not prove that Rasayana as a whole prevents or reverses aging.

The most defensible conclusion is that Rasayana represents a historically developed Ayurvedic framework for healthy aging and preservation of function, with selected components warranting rigorous translational and clinical evaluation.

- **Future Directions-**

Develop standardized searchable Sanskrit corpora and digital concordances.
Conduct comparative philological studies across editions and commentaries.
Standardize Rasayana formulations, botanical identity, processing and dose.
Use validated outcomes such as frailty, physical performance, cognition, quality of life and healthspan.
Integrate biomarkers with clinically meaningful functional endpoints.
Conduct adequately powered, long-duration clinical trials and longitudinal studies.

- **Declarations-**

Conflict of interest: To be completed by the authors according to journal requirements.
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Data/source availability: The study is based on published classical texts and identifiable scholarly literature; exact editions and search strings should be supplied with the final submission.

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