

**REVIEW ON PUNARNAVA (BOERHAAVIA DIFFUSA LINN.) AS A RASAYANA
DRAVYA: AN AYURVEDIC AND SCIENTIFIC PERSPECTIVE****Dr. Onkar Pawar*, Dr. Amit Avalaskar**

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ABSTRACT

Ayurveda emphasizes Rasayana Chikitsa as a specialized branch dedicated to promoting longevity, improving immunity, delaying ageing, and maintaining physical and mental well-being. Among the renowned Rasayana drugs, Punarnava (*Boerhaavia diffusa* Linn.) occupies a unique position due to its rejuvenating, restorative, and disease-preventive properties. The term Punarnava literally means "that which renews the body," reflecting its traditional use in restoring vitality and tissue health. Classical Ayurvedic texts such as Charaka Samhita, Sushruta Samhita, Ashtanga Sangraha, and Bhavaprakasha Nighantu describe Punarnava as Vayasthapana, Shothahara, Kasahara, and an important Rasayana drug.^[1-5] Modern scientific investigations support these traditional claims by demonstrating hepatoprotective, nephroprotective, antioxidant, immunomodulatory, anti-inflammatory, adaptogenic, antidiabetic, cardioprotective, and anticancer activities. Phytochemical studies have identified numerous bioactive compounds including punarnavine, boeravinones, lignans, flavonoids, rotenoids, alkaloids, steroids, and phenolic compounds, which collectively contribute to its pharmacological efficacy. Despite extensive experimental evidence, well-designed clinical studies evaluating the Rasayana effect of Punarnava remain limited. This review analyses the classical Ayurvedic concepts alongside contemporary pharmacological evidence to understand the Rasayana potential of Punarnava and highlights future research directions.^[6-12]

INTRODUCTION

Ayurveda aims not only to cure diseases but also to preserve health and promote longevity. The concept of Rasayana represents one of the eight specialized branches of Ayurveda, focusing on rejuvenation, tissue nourishment, enhancement of immunity, healthy ageing, and prevention of disease. Rasayana drugs improve the quality of Rasa Dhatu, resulting in better nourishment of all body tissues, increased strength, enhanced intellect, improved complexion, and prolonged lifespan.^[1-2]

Among various Rasayana herbs, Punarnava (*Boerhaavia diffusa* Linn.), belonging to the family Nyctaginaceae, has gained remarkable importance. The Sanskrit word Punarnava is derived from "Punah" (again) and "Nava" (new), signifying its ability to restore youthfulness and regenerate body tissues. Classical Ayurvedic literature extensively recommends Punarnava in disorders associated with oedema, liver diseases, urinary disorders, anaemia, inflammation, respiratory illnesses, and general debility. Modern pharmacological research has further

expanded its therapeutic profile by validating many traditional claims through experimental studies.^[3-6]

Concept of Rasayana in Ayurveda

Rasayana therapy is described in Charaka Samhita Chikitsa Sthana as a method of obtaining longevity (Dirghayu), intelligence (Medha), immunity (Vyadhikshamatva), youthfulness (Yauvana), strength (Bala), complexion (Varna), and excellence of sensory functions.

According to Ayurveda, Rasayana drugs improve: Dhatu nourishment, Ojas formation, Immunity, Tissue regeneration, Mental performance, Adaptation to stress, Resistance against ageing. Rather than acting on a single disease, Rasayana therapy enhances the body's overall physiological efficiency.^[1,2]

Classical Review of Punarnava

Charaka Samhita categorizes Punarnava under Swedopaga, Anuvasanopaga, Kashara, and Vayasthapana Mahakashaya, indicating its importance in rejuvenation

and respiratory disorders. It is also recommended in Kushtha using root preparations.^[1]

Sushruta Samhita includes Punarnava in Vidarigandhadi Gana and Shaka Varga. It recommends Punarnava root in Shotha, Ashmari, fever, poisoning, and inflammatory conditions.^[2]

Ashtanga Sangraha places Punarnava in Vayasthapana Mahakashaya, highlighting its rejuvenating potential and describing Rasayana formulations containing Punarnava root, milk, and Madhuyashti.^[3]

Bhavaprakasha Nighantu describes two varieties, Shweta and Rakta Punarnava, with indications in Pandu, Shotha, Udararoga, inflammatory diseases, and Vata-Kapha disorders.^[4]

Dravyaguna Profile

Botanical name: Boerhaavia diffusa Linn.

Family: Nyctaginaceae

Rasa: Tikta, Kashaya, Madhura

Guna: Laghu, Ruksha

Virya: Ushna

Vipaka: Madhura

Doshagnata: Kapha-Vata Shamaka

Prabhava: Shothahara and Rasayana

The pharmacodynamic properties indicate correction of impaired metabolism, elimination of accumulated fluids, and restoration of tissue integrity.^[4,5]

Phytochemistry

Punarnava contains numerous biologically active compounds.

Major phytochemicals include: Punarnavine, Boeravinones A–J, Rotenoids, Flavonoids, Quercetin, Kaempferol, Lignans, Steroids, β -sitosterol, β -Ecdysone, Phenolic acids, Alkaloids, Glycoproteins.

Rotenoids, flavonoids, lignans, steroids, xanthenes, and other secondary metabolites are major constituents supporting its therapeutic effects.^[6-9]

Scientific Basis of Rasayana Activity

Antioxidant Activity Oxidative stress accelerates ageing through lipid peroxidation, mitochondrial dysfunction, and DNA damage. Experimental studies demonstrate significant free radical scavenging activity of Punarnava due to flavonoids, phenolic compounds, and rotenoids. This antioxidant property provides scientific support for its classical Rasayana action.^[6,7,10]

Immunomodulatory Activity Modern investigations demonstrate both immunostimulatory and immunomodulatory effects. Studies cited in the review describe increased leukocyte activity, enhanced macrophage function, improved stress resistance, and modulation of immune mediators. These observations correlate with the Ayurvedic concept of Vyadhikshamatva (enhanced disease resistance).^[6,8,11]

Hepatoprotective Activity Punarnava has traditionally been prescribed in Kamala and Yakrit disorders. Experimental studies demonstrate: Reduction in SGOT, Reduction in SGPT, Lower bilirubin, Improved hepatic histology, Protection against toxin-induced liver injury. Its hepatoprotective activity is attributed to antioxidant, anti-inflammatory, and membrane-stabilizing effects.^[6,9,12]

Nephroprotective and Diuretic Activity Punarnava is widely known as one of Ayurveda's best Mutrala drugs. It promotes: Increased urine output, Reduction of oedema, Improved renal function, Electrolyte balance, Protection against nephrotoxicity. This validates its classical indication in Shotha and Mutravaha disorders.^[5,6,10]

Anti-inflammatory Activity Chronic inflammation is closely associated with ageing. Experimental studies have demonstrated inhibition of inflammatory mediators, reduced tissue oedema, and stabilization of inflammatory pathways. These findings explain its classification as Shothahara.^[6,8,11]

Adaptogenic Activity Animal studies reveal improved swimming endurance, reduced cortisol levels, enhanced stress tolerance, and better physical performance following administration of Punarnava extracts. Adaptogenic activity represents one of the important scientific explanations of Rasayana therapy.^[6,11]

Anticancer Potential Several experimental studies have shown: Inhibition of tumour cell proliferation, Modulation of apoptosis, Suppression of metastasis, Immunological enhancement although encouraging, these findings require validation through controlled clinical trials.^[6,9,12]

Analysis

Classical Ayurvedic literature consistently identifies Punarnava as a rejuvenating herb capable of restoring health and vitality. Modern pharmacological studies provide substantial support for these traditional claims through evidence of antioxidant, hepatoprotective, nephroprotective, immunomodulatory, anti-inflammatory, adaptogenic, and metabolic regulatory activities.

However, most available evidence is derived from in vitro and animal studies. Clinical trials evaluating Rasayana outcomes such as healthy ageing, quality of life, immune resilience, and long-term disease prevention remain scarce. Standardization of raw material, dosage forms, phytochemical markers, and cultivation methods also requires further investigation.

An emerging area of interest is the comparison of hydroponically cultivated Punarnava with traditionally grown plants. Controlled cultivation may enhance phytochemical consistency and sustainability, but

evidence regarding its influence on Rasayana efficacy is still insufficient and warrants systematic evaluation.^[1-12]

Future Perspectives

Future research should focus on:

Randomized clinical trials evaluating Rasayana effects.
Standardization of Punarnava extracts using chemical markers such as boeravinones.

Comparative studies on hydroponically cultivated versus soil-grown Punarnava.

Molecular mechanisms underlying Rasayana activity.

Integration of Ayurvedic principles with modern pharmacology and systems biology.

Long-term safety and pharmacokinetic studies.^[6,9,12]

CONCLUSION

Punarnava is one of the most significant Rasayana herbs described in Ayurveda. Classical literature emphasizes its rejuvenating, anti-inflammatory, and restorative actions, while contemporary scientific studies validate many of these claims through antioxidant, immunomodulatory, hepatoprotective, nephroprotective, adaptogenic, and metabolic effects. The convergence of traditional knowledge and modern evidence strongly supports its importance as a Rasayana Dravya. Nevertheless, the current body of evidence relies predominantly on experimental research, highlighting the need for robust clinical investigations and standardized cultivation practices. Future interdisciplinary studies, including comparisons between hydroponically cultivated and conventionally grown Punarnava, may further strengthen its role in evidence-based Ayurvedic medicine.

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