



Review Article

SIGNIFICANCE AND UTILITY OF *RAKTASHALI* (RED RICE) IN AYURVEDA - A NARRATIVE REVIEW

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ABSTRACT

Raktashali, or red rice, recognized for its distinctive red bran and unrefined nature, holds a place of prominence in Ayurveda for its nutritional richness and therapeutic potential. Ancient Ayurvedic scriptures- including the Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, and Bhavaprakasha Nighantu repeatedly affirm Raktashali's ability to harmonize the Tridoshas Vata, Pitta, and Kapha. It is described as having a sweet taste (Madhura rasa), cooling energy (Shita virva), light digestive quality (Laghu), and nourishing effect (Pushtiprada), making it especially beneficial in conditions such as fever, inflammation, ulcers, and overall physical debility. Ayurveda regards food as fundamental to health, and Raktashali is classified as Nitya Sevaniya Ahara, a food suitable for daily consumption owing to its role in tissue nourishment, digestive support, and immune modulation. Its applications are extensive: it plays a vital role in Samsarjana Krama, the graduated dietary regimen following Panchakarma therapies; it is recommended during monsoon (Varsha Ritu) to rekindle digestive strength (Agni); and it serves as a traditional staple in regions like Coastal Karnataka and Kerala. Modern nutritional science corroborates these benefits, identifying high levels of antioxidants, flavonoids, iron, and zinc, along with a low glycemic index that supports heart health, reduces inflammation, and aids in glycemic control. Additionally, its bran is rich in bioactive compounds, such as tocopherols, tocotrienols, and catechins- known for liver-protective and anticancer properties. By synthesizing ancient Ayurvedic wisdom with current scientific evidence, this review underscores Raktashali's role as a versatile functional grain suitable for both therapeutic use and everyday nutrition in preventive and integrative healthcare models.

INTRODUCTION

Ayurveda, being the oldest science, has the potential to heal naturally through regimen, food, and medicines. According to *Kahasyapa Ahara* (diet food) is *Mahabhaishajya* (prime medicine). Historically, Indian medical literature, particularly foundational Ayurvedic texts such as the *Charaka Samhita, Susruta Samhita, Vagbhata,* and *Kashyapa* writings, have given the therapeutic significance of various rice types. Notably, red rice (*Rakta shali* or *Lohit shali*) is consistently viewed as the most efficacious one due to its role in restoring equilibrium among the three



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primary doshas, Vata, Pitta, and Kapha. These ancient sources attribute red rice with health-promoting functions such as alleviating thirst, enhancing vitality, and correcting internal physiological imbalances. Additional historical texts, including the Jatakas and Milinda Panha, validate red rice's importance in ancient Indian culture and medicine, referencing its uses in ceremonial practices, traditional healing, and as a base for fermented products. Varieties such as Shali, Kalama, and Sambaka are also mentioned for their medicinal properties. Red rice was also recognized spiritually and agriculturally. In the early agricultural Kashvapiya manuscript krishisukti, emphasized the significance of preserving traditional rice germ, particularly red rice varieties. [2]

Oryza sativa Linn. is a commonly known Asian rice species, being a grass under Poaceae family, consisting of two major varieties: short-grain, as

Japonica, and long-grain, which is Indica. Rice is dependent on environmental characteristics to grow and develop, evidently cultivated in the coastal region due to the abundant water reservoirs around. Structure of a rice grain consisting of outer husk (hard covering), below this is bran (protection), inside it is endosperm covered by germ for nourishment and energy. The bran layer consists of nutrients like vitamins, iron, manganese, etc. When it comes to red rice, it is an unprocessed and unpolished one with only the outer hull taken out, but the bran layer is intact and reservoirs nutrients. [3]

Rice serves as the primary staple food in most of the Asian countries over two-thirds of the population, it is known as a synonym for food. Red rice, characterized by its distinct red bran layer, is notable not only for its pigmentation but also for its enhanced nutritional profile. The red coloration is primarily due to the presence of polyphenols and anthocyanins, compounds known for their potent antioxidant activity. These bioactive constituents help to mitigate oxidative stress and may reduce the risk of various chronic diseases, thereby contributing to improved health outcomes. Nutritionally, the endosperm of both red and white rice is compositionally similar, providing comparable taste and texture; the bran of red rice offers significantly greater health benefits. [4]

In Ayuredic literature, various food groups (Varga) are categorized based on their origin and nutritional functions. These include Shook Dhanya (cereals), Shami Dhanya (legumes/pulses), Mamsa Varga (meat), Shaka Varga (vegetables), Phala Varga (fruits), Harita Varga (green foods), Madya Varga (fermented beverages), Gorasa Varga (dairy products), Ambu Varga (water and beverages), Ikshu Varga (sugarcane and its derivatives), Kritanna Varga (processed foods), and *Ahaaropayogi* (dietary adjuncts or enhancers). Among these, Shook Dhanya Varga, which refers to cereals, is considered the most fundamental as it includes essential staple foods that form the basis of daily nutrition. The term Shook Dhanya translates to "grain with bristles or spikes," indicating cereals. Classical Ayurvedic texts mention key cereals such as Shashtika (a type of rice), Vrihi (rice). and Godhuma Yava (barley). (wheat). emphasizing their importance in maintaining health and supporting daily nutritional needs. These cereals are described as having a sweet taste (Madhura Rasa), cool potency (Sheeta Virya), and a sweet post-digestive effect (Madhura Vipaka), making them suitable for maintaining physiological balance. Acharya Sushruta

further categorizes cereals into *Mudgadi Varga*, *Shali Varga*, and *Kudhanya Varga*, highlighting their diversity and health benefits. From a modern scientific perspective, these cereals are classified as monocotyledons and are primarily recognized as energy-yielding foods. Staple grains like rice, wheat, corn, and jowar (sorghum) are key components of this group and serve as significant sources of carbohydrates, protein, energy, and micronutrients such as vitamin B1 (thiamine). [5]

Therefore, to explore the traditional significant properties of *Raktashali* and its importance in utility, the review is been carried out.

MATERIALS AND METHODS

As per the title, we screened the major concerned books in Ayurveda primly been used for therapeutics, such as *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, *Bhavaprakasha Nighantu*, *Raja Niganthu*, and *Sharangadhara Samhita* are searched for properties and indications mentioned, as well as the utility. Examined the Scholarly articles on the present red variety of rice to evaluate its potential for *Samsarjana karma*.

RESULTS

All the texts consistently tell that within the *Shali varga* (Rice Varieties), *Raktashali* (red rice) is superior. [6,7,8] *Charaka* included the *Shali varga* in *Shukadhanya* and also placed it first in the *Annapaanavidhi* chapter, where the mention of all different kinds of Vargas (groups) is discussed. Similarly, *Sushruta* has discussed *Shali* (rice).

Functional properties of Raktashali

According to the above-mentioned acharyas, the properties of *Raktashali* are classified in Table 1 below, with its properties and indications noted. Charaka and Asthanga Hridaya share the same view that Raktashali reduces Trishna and elevates all three Apart from this. Sushruta Bhavaprakasha Nighantu, and Raja Nighantu explore the qualities of Raktashali. Sushruta's verse exclusively promotes it as Shukra doshagna, Mutrala, Hridya, and Bhavaprakasha Nighantu quote exclusively Shukrala, Vanhikara, and Pushtiprada. Further, Raja Nighantu defines it as Madhura, Laghu, Snigdha, Ruchi, Deepana, Pathya, Mukhajadyahara, Rujapaha, Pittavatahara. Collectively, Sushruta, Bhayaprakasha Niahantu, and Raja Nighantu opine Varnya, Balaya, Vranahara, and Bhavaprakasha Nighantu, and Sushruta opine Chakshushya, Swarya, Jwarahara, and Vishapaha.

Table 1: Properties and indications of Raktashali as per different Acharyas

(Cha. Su 27/11-12) ^[9] & (A H Su 6/5) ^[10]	(Su Su 46/4-7)[11]	(BP N 6/15-16) ^[12] Shali varga	(RN /15-16)[13]
Trishnagna (reduces thirst)	Shukra doshagna (reduces the semen disorders)	Balya (increases strength)	Madhura (sweet for taste)
Tridoshapaha (reduces vata, pitta, kapha doshas)	Mutrala (increases s) maturation) Varnya (increases complexion)		Laghu (light for digestion)
	Chashushya (improves eyesight)	Tridoshara (reduces Vata, Pitta, Kapha doshas)	Snigdha (unctuous)
	Varnakruta (increases complexion)	Chashushya (improves eye sight)	Balapaha (increases strength)
	Balakruta (increases Bala)	Swarya (clears the voice)	Ruchikara (increases taste)
	Swarya (clears the voice)	Shukrala (increases the semen quantity)	Deepana (increases and stimulates the digestion)
	Hridya (cardiotonic)	Tranajwarapha (reduces mild fevers)	Pathya (wholesomeness)
	Trishnapaha (reduces thirst)	Vishahara (reduces the toxicity)	Mukhajadyapaha (reduces toughness in the oral cavities)
	Vranyahara (reduces ulceration)	Varanahara (reduces ulcers)	Rujapaha (reduces the pain)
	Jwarahara (reduces fever)	Dahahara (reduces burning sensation)	Sarvamayahara (reduces all kinds of disorders)
	Sarvadosha hara (reduces all the Doshas)	Vahikara (increases digestion)	Pitta daha anila jita (reduces Pitta dosha, burning sensation and Vata dosha)
	Vishapaha (reduces toxicity)	Pushti (provide nourishment to Dhatus)	

Utility of Raktashali according to Sharangdhara Samhita

Sharanghara Samhita in Ayurveda is the core book reference for Ayurvedic Pharmaceutics, which mentions the references for the utility of rice to prepare the Pathya~Kalpana (wholesome diet preparations). [14] The below given table of contents below refers to the different preparations, their properties, and indications, which will give an idea of the utility of Raktashali as per Ayurveda principles.

Table 2: Properties of Pathya Kalpana in Sharangadhara Samhita and their correlation to Raktashali

S.No	Pathya Kalpana	Properties of Pathya Kalpana	Correlations with Raktashali
1	Yavagu ^[15] (1:6 parts) rice cooked with 6 parts of water	Grahi (absorbent), Balya (strengthening), Tarpani (soothing), Vatanashini (reduces Vata dosha)	Balya, Tridoshahara (along with Vata reduces other Dosha as well)
2	Vilepi [16] (1:4 parts) rice cooked with 4 times water	Tarpani (shooting), Brhamani (nourishing), Hridaya (cardio tonic), Madhura (sweet), Pithanashini (reduces Pitta)	Hridaya, Madhura, Tridoshahara (along with pitta reduces other Dosha as well)
3	Peya ^[17] (1:14 parts) rice is cooked with 14 parts of water, along the cooked rice and supernatant water are served	Laghutara (lighter for digestion), Grahi (absorbent), Dhatupushtiprada (nourishment to Dhatus)	Laghu (light for digestion), Pushtiprada (provide strength to Dhatus)

4	Manda ^[18] (1:14 parts) rice is cooked with 14 parts of water, and the supernatant water is served	Deepana (stimulates digestion), Pranada (rejuvenates), Bastishodhana (clears the bladder), Raktavardana (increases the blood), Jwarahara (reduces the fever), Sarvadoshagna (reduces all kinds of Doshas in the body)	Deepana (stimulates digestion), Jwarahara (reduces the fever), Sarvadoshagna (reduces all kinds of Doshas in the body)
5	Odhana ⁽¹⁹⁾ (steamed and cooked rice) (1:5 parts) Rice cooked with 4 parts of water and served with steamed cooked rice alone.	Madhura (sweet), Laghu (light for digestion)	Madhura (sweet), Laghu (light for digestion)

From the *Pathya* preparations, we observe most of the properties similar to the *Raktashali* properties.

Utility of Raktashali in Panchakarma procedures

Panchakarma in Ayurveda is a branch that technically operates to eradicate the toxic *Doshas* from the body through the Shodhana or detoxification method. These Shodhana procedures are nothing but Vamana (emesis) and Virechana (purgation). As the gut is concerned as the root cause to all the Doshas to origin and spread to form disease in Ayurveda, "Sarveroga mandangino" hence, while treating such problems, there is reduced *Agni* (digestive capacity) which requires to be corrected otherwise the patient will not be able to get strength so to correct this, a regimen protocol of diet which is wholesome to body is adopted and called as Samsarjana Krama, the diet is gradually introduced to the body based on the level of internal purification the individual achieves. A specific sequence of diet is mentioned to follow, which involves to intake of the Pathyas like Peya, Vilepi, Akrutha yusha, Krutha yusha, Akrutha mamsa rasa, and Krutha mamsa rasa, and then Odhana. This step-by-step diet is carried out to enhance the individual's Agni (digestive capacity) just after purification of Vamana and Virechana. [20] Among the Pathya Kalpana of Shali (rice) used as material are Peya, Vilepi lastly Odhana are mentioned in Samsarjana Krama. According to *Jivanprada* commentary on the *Sharangdhara Samhita* suggested to use Raktashali (red rice) for Samarjana Krama in the Pathya diets. [21]

Some studies have generated evidence for *Samsarjana Krama* like Sushmitha Bekal et al.^[22] mentions the nutritional influence in the hierarchy of the diet mentioned in *Samsarjana krama*, Sagare, et al.^[23] shown a quasi-randomised control trail on *Samsarjana Krama* done post *Vamana* and *Virechan* to rule out the uniformity of serving size of diet and standardised the impact the regimen as trial group with comparison to conventional regimen as control group and has concluded that trial group of served with *Samsarjana* regimen has shown high fasting blood sugar and Random blood sugar levels than the regular serving group. This is needed after detoxification procedures, as there is a low sugar level and reduced

nutrition due to the expulsion of the doshas from the body through the upper or lower route.

Raktashali in Daily regimen

In the Charaka Samhita (Sutra Sthana 5/11), Raktashali (red rice) is highlighted as one of the Nitya Sevaniya Ahara Dravyas- foods recommended for daily intake due to their health-supporting qualities. This variety of rice is regarded as highly nourishing and easy to digest. It is particularly effective in balancing Pitta and Vata doshas, while also contributing to enhanced strength (Bala), improved immunity, radiant complexion (Varna), and longevity. With its sweet taste (Madhura rasa) and cooling nature (Shita virya), Raktashali is especially beneficial for individuals with inflammatory disorders or general debility. Its aids nutritional richness in Dhatu (nourishment of body tissues) and helps maintain a well-functioning digestive fire (Samyak agni), a cornerstone of good health in Ayurveda. Charaka's endorsement of Raktashali as a daily dietary staple reflects its significant role in both disease prevention and health promotion, in line with Ayurvedic principles of maintaining wellness through proper nutrition.[24]

Raktashali in the Seasonal regimen

In the Sushruta Samhita, Raktashali (red rice) is classified among the most wholesome cereal grains, particularly suitable for inclusion in the seasonal dietary regimen (Rtucharya). Notably, during the Varsha Ritu (monsoon season), a period characterized by diminished digestive efficiency (Agni) and increased Vata dosha, Raktashali is recommended due to its nutritionally dense, easily digestible, and bio-balanced properties. Its sweet taste (Madhura rasa) and cooling potency (Shita virya) contribute to the modulation of aggravated Vata and Pitta, making it beneficial for maintaining metabolic stability, immune resilience, and gastrointestinal health. Sushruta's inclusion of Raktashali in this context reflects a rational approach to seasonal nutrition, aligning with the principles of functional food science and preventive healthcare in Ayurveda.[25]

Ratshali in Regional Utility

In the Coastal Karnataka region, indigenous red rice varieties such as Athikarva, Ghandasali, and Gulwadi Sanna are widely cultivated and form a fundamental part of the local diet. These landraces are for their high content of essential including iron and micronutrients. zinc. and significant antioxidant demonstrate properties. Traditionally, red rice is employed in the management of gastrointestinal disorders like diarrhea and holds cultural significance in regional rituals.[26]

Similarly, in Kerala, the *Nivara* rice variety, while botanically distinct from *Raktashali*, exhibits comparable therapeutic qualities. It is utilized in Ayurvedic medicine for its detoxifying effects, antiaging potential, and efficacy in treating conditions such as dermatological disorders, hypertension, and rheumatism. These regional applications highlight the diverse health benefits of red rice cultivars within traditional medicinal and dietary frameworks.^[27]

Review of Previous Studies on Raktashali (red rice)

Tavhare et al.^[28] have provided a comprehensive overview of rice as a dietary therapeutic in Ayurveda, listing various rice preparations in different forms along with their properties and uses. Totally 33 recipes with their preparation method, processing, pharmacological action on digestion, indications, and significance have been discussed. The importance of using a therapeutic diet, as rice is a commodity, is demonstrated through references to classical Ayurvedic texts.

Baptista et al.^[29] explored the chemical and bioactive properties as nutritional composition of Red rice with expressing the potential pharmaceutical applications, analytically examined through HPLC and LC-MS techniques as well as antioxidant activity assessed overall revealed the bioactive compounds such as tocopherols, tocotrienols and phenolic compounds like catechins and flavanols located in rice bran layer of the grain. Antioxidant properties lower the risk of chronic cardiovascular conditions and neurological disorders. As a nutraceutical suggested to supplement functional food based on the findings.

Rita Singh et al. [30] studied qualitative characteristics comparing red rice to white rice from the local market of Uttarakhand, concluding red rice shows high magnesium, calcium, zinc, and iron content along with high protein of 10% and crude fibre of 2% compared to white rice. Antioxidant properties with total phenolic content and flavonoid content are higher than white rice, also the glycemic index was lower than white rice. Hence, they conclude it is a storehouse of nutrition than the polished white rice.

Onsa-Ard et al. [31] stated the Type I interferons (IFN-1), being the inflammatory cytokines involved in the pathogenesis of inflammation, are sensed by the

nucleic acid sensor gene (STING) that stimulates the production of interferon I so the extract of red rice examined over this expression shown it suppresses the phosphorylation of STING and decreases the interferon I signals resulting in Anti inflammation action.

DISCUSSION

Raktashali (red rice) is well introduced as it comes with the bran of red pigmentation and is unprocessed with loaded nutrient contents, farmed in places where the water is abundant. Through the results of screening, the renowned Avurveda texts found that it alleviates all three Doshas, Vata, Pitta kapha, and quenching the thirst. Additionally, it is considered to retain properties like Madhura, Laghu, Snigdha, Ruchi, Deepana, Pathya, Mutrala, Hridya Shukrala, Chakshushya, Swarya, Varnya, Balaya, Classically, several indications Pushtiprada. Raktashali (red rice) have been quoted so beginning with Shukra doshagna (reduces the Shukra doshas). Raktashali (red rice) has qualities as mentioned before. as Madhura and Snigdha; henceforth, it supports reducing the Shukra dosha. Mutrala (diuretic), in case of incontinence of urine, most of the drugs used in Ayurveda will have the properties of Madhura rasa, Laghu (light for digestion). As these will help to build up the fluid volume in the vessels and facilitate easy expulsion as Laghu so hence Raktashali being Madhura and Laghu will act as Mutrala. As told in Avurveda that "Ahara is Rasa pradhana and Aushadha Veeryapradhana," meaning food is governed by the rasa or taste of the *Dravya* more than its potency; similarly, the medicines will behave more to potency than the rasa or taste. *Madhura rasa* has many benefits quoted in Avurveda for its immense utility as it nourishes and sustains the Dhatus or tissues in the body, hence it turns out to act as *Hridya* (cardiotonic), Balaya (increases strength), Chakshushya (improves the eyesight), Pushtiprada (provide nourishment to the Dhatus), Trishnapaha (reduces thirst).[31] These are the same qualities laid out by Raktashali.

An insight to understand the potential applications of *Raktashali*, firstly, the *Samsarjana krama*, Sushmitha Bekal et al & Sagare et al explained that the step-by-step enhancement of *Agni* (digestive capacity) of an individual is necessary after a huge amount of expulsion of *Doshas*, leading to diminished digestion and diminished metabolism. So, the *Ahara* as *Pathya* will bring the *Agni* to normalcy by adopting a gradual uptake based on *Annakala*. Here, restoration of digestion and nourishment to the tissues is laid down by the *Ahara rasa* (digestive juices), hence, using *Raktashali* by the *Madhura laghu deepana*, *Ruchikara*, and *Balya*, *Pushtiprada* action will restore the same.

Tayhare et al have notably discussed that in Ayurveda, processed rice should not be taken to use, as it contains a high glycemic index and is preferred to use *Raktashali* for diet, as it is best to correct *Agni* and its disorders, mainly the *Agni dushti* (hampered digestion and metabolism), being called as "Sarveroga mandayagno" meaning for all kinds of diseases or disorders caused is through the *Agni dushti*, indicating defective metabolism. Therefore, they say on the type of process or the *Samsakara* given to the *Shali* (rice) will show properties distinctly. Hence mode of cooking and method of cooking is important for the need to serve as the glycemic index, and nutritional value is concerned. This suggests that the *Raktashali* action for *Agni* disorders like *Jwara* (fever), *Vrana* (ulceration), *Daha* (burning sensation), *Trishna* (thirst), *Mukhajadya* (disorders of the oral cavity), and *Ruja* (pain).

Baptista et al quote that phytochemicals in whole grain rice are mainly found in the bran layer consists of lipophilic (tocotrienols and tocopherols), these showing properties of antioxidants, help in relieving cardiac and neurological disorders, and also act as metal ion chelators, free radical scavengers, and reducing sugars. They showed antibacterial activity against gram-positive species, detected with slight activity, and bioactives like caffeic, ferulic, spinapic acids, as well as catechin derivatives, reduce hepatotoxicity and antiproliferative action in carcinoma, as well as antioxidant. This reveals the action of red rice in *Hridaya*, *Jwarahara*, and *Rujahara*. Rita Singh et al revealed the nutritional importance of red rice over white rice, which is notable. Onsa-Ard et al consider explaining the anti-inflammatory action of red rice, which helps to explain the Raktshali being Vranahara (reduces ulceration) and Jwarahara (reduces fever), Dahahara (reduces burning), Rujahara (reduces pain). These are also said to be the signs to understand as inflammation.

CONCLUSION

Raktashali, commonly known as red rice, stands out as a distinct grain highly valued in both classical Ayurvedic literature and modern nutritional research for its remarkable health-promoting and nourishing qualities. Ancient Ayurvedic texts recognize it as a staple food suitable for regular consumption (Nitya Sevaniya Ahara) and emphasize its role in therapeutic diets, including those followed after purification procedures (Samsarjana Krama), across seasonal routines, and in the management of various diseases. Its naturally sweet taste, cooling effect, and nourishing nature contribute to its traditional use in balancing doshas, revitalizing bodily tissues, and strengthening immunity. Modern scientific studies support these traditional uses, highlighting its abundance of antioxidants, flavonoids, essential minerals, and other beneficial compounds known for their heart-protective, anti-inflammatory, and blood sugar-regulating properties. With such a wide spectrum of benefits, Raktashali holds significant promise not only within Ayurvedic medicine but also in the broader field of functional nutrition and preventive healthcare. The harmony between classical Ayurvedic insights and modern evidence underscores its relevance as a valuable dietary component for fostering comprehensive health and wellness.

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