

## Heritage Rice: A Treasure Trove of Medicinal Compounds

**ABSTRACT:** Heritage rice refers to the traditional rice varieties that have been grown and consumed for centuries, often by indigenous communities. Based on the culinary need, flavour and availability, rice varieties were chosen by the people. These rice strains have adapted to local climates and environmental conditions, resulting in a wide range of genetic diversity. Recent studies have shown that heritage rice varieties contain a variety of medicinal compounds that can provide various health benefits. These include antioxidants, anti-inflammatory agents, antimicrobial agents, and anti-cancer compounds. The medicinal properties of heritage rice are attributed to their unique genetic makeup, as well as the growing conditions and cultural practices of the communities that cultivate them. Processing plays a major role adding nutrition to the rice because compared to ordinary polished rice, unpolished rice has additional biochemical components like polyphenols, phytochemicals, antioxidants, vitamins and minerals. **This paper examines the nutritional and medicinal properties of heritage rice.**

**Keywords:** Heritage rice, Traditional rice varieties, Medicinal properties of heritage rice, and Nutritional properties of heritage rice

### INTRODUCTION

Rice is an important food crop next to wheat and is a staple food for more than two third of the world's population. Among the rice species, Asian rice varieties (*Oryza sativa L.*) accounts about 80% of the world's total rice production. More than half of world's population relies on it as one of their main sources of energy, fibre, antioxidants, complex vitamins and minerals essential for life (Savitha & Kumari, 2016). Rice is rich in genetic diversity with more than two lakh varieties in India until 1970s which was lost due to the arrival of modern high yielding varieties, hybrids and engineered rice developed after the green revolution (Richaria & Govindaswami, 1990; Ashraf & Lokanadan, 2017). In recent days, these traditional varieties are being revived for its nutritional values, medicinal values and unique aroma (Verma, n.d.). Traditional rice varieties are rich in nutrients like vitamin D, riboflavin, thiamine, glutamic acids, minerals like calcium, magnesium, phosphorous and high in fibre. The presence of oryzanol, a molecule that reduces fat production in the body and low sugar, fat and gluten content makes them a great diet for diabetics and hypertension people (Bhat & Riar, 2015). The medicinal properties of traditional rice can be attributed to their unique genetic makeup as well as the growing conditions and cultural practices of the communities that cultivate them. For example, some traditional rice varieties are grown using

organic farming methods, resulting in lower pesticide residues and higher nutrient levels (Hegde, Yenagi & Kasturiba, 2013). Additionally, the consumption of heritage rice is often accompanied by traditional cooking methods and spices, which further enhance their health benefits (Adi et al, 2020).

Traditional rice has been used for medicinal purposes in India for thousands of years and has been mentioned in various ancient texts. In the Charaka Samhita, one of the foundational texts of Ayurveda, black rice known as "Mahakar" is believed to have cooling properties that can help alleviate heat-related illnesses such as fever and diarrhea (Bhat & Riar, 2015). It is also believed to have anti-inflammatory properties that can help reduce inflammation in the body. The Sushruta Samhita, another important Ayurvedic text, red rice known as "Raktashali" is believed to have astringent properties that can help treat conditions such as diarrhea and dysentery. It is also believed to be beneficial for the liver and the eyes.

Although traditional rice has nutritional and medicinal properties, it has been easily replaced by high yielding varieties. The price of the traditional rice can be made more competitive vis-à-vis high yielding varieties by increasing the production of traditional rice in the long run. This necessitates the presence of a vibrant market for the traditional rice varieties. This paper seeks to

facilitate this vibrant market by examining and emphasizing the nutrient and medicinal properties

### NUTRITIONAL PROPERTIES

Traditional rice varieties retain its bran layer containing vitamins, minerals and fibres whereas white polished rice loses 8-10 % of its bran. Rice is the major source of carbohydrate which is broken down to glucose to provide energy for physical activities and fuel the brain. Traditional rice has a low glycemic index hence starch digestion takes place slowly. It prevents the body from building up cholesterol levels due to the presence of good

of these varieties.

amount of oryzanol content and lesser fat content. Apart from carbohydrates, proteins and fats, these are also good sources of minerals and vitamins such as niacin, riboflavin, thiamine, iron, calcium, vitamin D and high fibre content. Table 1 shows the Nutritional composition of traditional rice (per 100 g). Apart from providing essential nutrients, it has the capacity to strengthen the body by eliminating toxic metabolites, improving body elements, revitalizing energies and preventing premature ageing and skin diseases.

**Table 1 Nutritional composition of traditional rice (per 100 g).**

Traditional Rice Varieties	Energy (Kcal)	CHO (g)	Proteins (g)	Fats (g)	Minerals				
					Potassium (mg)	Iron (mg)	Calcium (mg)	Magnesium (mg)	Zinc (mg)
Garudan Samba	352.69	74.17	8.85	2.29	231.60	5.60	35.10	89.0	1.40
Illupaipoo Samba	362.53	77.00	9.47	1.85	86.60	3.40	22.10	28.60	1.80
Iraivaipandi	344.31	75.07	9.68	0.59	229.00	3.60	44.30	82.70	1.50
Karunkuruvai	348.35	74.57	8.22	1.91	249.70	7.60	37.70	94.70	2.80
KaruppuKouni	332.58	71.01	8.94	1.42	254.60	6.50	36.90	112.80	1.60
Kattuyanam	349.40	74.88	8.51	1.76	335.00	7.30	40.10	154.50	2.20
Kuliyadichan	356.00	73.56	9.73	2.57	233.50	6.80	34.50	102.09	1.90
Mappillai Samba	349.00	74.45	7.91	2.18	299.90	6.90	43.60	117.90	1.90
Navara	354.00	74.28	8.97	2.36	320.50	8.60	35.10	123.20	2.50
Neelan Samba	351.00	75.06	7.22	2.47	242.40	1.80	28.70	117.40	1.90
Pal Kudaivazhai	357.00	76.39	7.51	2.39	148.00	3.10	20.30	61.10	1.50
Rasakadam	368.00	78.95	7.95	2.22	142.80	1.90	20.20	47.10	1.90
Seeraga Samba	352.00	78.53	7.69	0.79	223.00	4.80	37.90	111.30	1.90
Kavuni	338.00	71.95	7.07	2.47	228.90	8.00	31.20	115.40	1.80
Thanga Samba	351.00	74.38	8.27	2.23	203.70	3.30	42.70	99.40	1.70
Thooyamalli	361.00	77.11	8.07	2.23	98.10	2.30	21.30	32.30	1.60

**Source:** (Balasubramanian et al., 2019)

### MEDICINAL PROPERTIES OF SPECIFIC VARIETIES

India is known for its rich and diverse rice varieties that are integral to its cuisine and culture but the exact number of traditional rice varieties is not clear and may vary based on different resources. In general, consuming traditional foods reduces health problems and diseases like arthritis, obesity, dehydration, Diabetes mellitus, food poisoning, cardiac problem, etc. since traditional rice varieties are unpolished, they

contain more bioactive compounds like flavonoids, polyphenols, and anthocyanins than polished rice, which has antioxidant, anticancer, anti-inflammatory, antidiabetic, and anti-aging properties (Ashokkumar et al., 2020). In addition, they are used to treat many ailments like leukorrhea, gastrointestinal disorders, hypertension, stroke and rheumatism and also increase milk secretion in lactating mothers (Hegde, Yenagi & Kasturiba, 2013). Table 2 shows the medicinal properties of few familiar traditional varieties. Table 3 shows the properties of some

unfamiliar traditional rice varieties mentioned in ayurvedha.

**Table 2: Medicinal properties of few familiar traditional varieties**

S.No.	Variety name	Medicinal use	Reference
1	Rakthashali	Pacify body humor; good for ulcer and fever; improve eyesight, voice, skin, and health; increases fertility; act as a spermatophytic, diuretic, tonic, and cosmetic.	(Ahuja et al., 2008; Bhat & Rair, 2015; Priya et al., 2019)
2	Sali	Treat fractures and burns.	(Balasubramanian et al., 2019)
3	Navara	Treat paralysis, cervical spondylitis, psoriasis, rheumatoid arthritis, skin lesions, neuromuscular disorder; weaning food for underweight babies; reduce stomach ulcer, snakebite, and backache	(Deepa et al., 2008)
4	Kafala	Used to treat abortion complications and leucorrhea.	(Balasubramanian et al., 2019)
5	Kalanamak	Phytoconstituents and free radical scavenging ability, productively control tumour growth and breast cancer, improves eye health, improves body weight and reduces chronic inflammation.	(Banerjee et al., 2019)
6	Kichili samba and Seeraga samba	Antimicrobial, antifungal and antiretroviral properties, anti-inflammatory for peptic ulcers, antidiabetics, boosts the immune system and strengthens muscles.	(Bakun et al., 2021)
7	Kattuyanam	Treat anaemia, neurodevelopment	(Pushpam et al., 2019)
8	Karunguruvai	Treat leprosy, chickenpox, elephantiasis, cholera, venomous bites.	(Ortansa et al., 2020)
9	Mapillai samba	treat gastrointestinal tract disorders like irritable bowel syndrome, ulcerative colitis, and radiation proctitis.	(Ashokkumar et al., 2020; Załęski et al., 2013)
10	Kavuni	Treat anemia, diabetes, mellitus, stress disorder, osteoporosis and many biological functions like antioxidant, antiviral, antifungal, and antibacterial activity.	(Meera et al., 2019; Valarmathi et al., 2014)

**Table 3. Medicinal properties of few unfamiliar traditional varieties**

S.No.	Variety name	Properties
1	Annamazhgi	Wards off all diseases and regulates deranged pitta.
2	Irkku samba	Good for offering prayer and to feed the noble.
3	Kalundai samba	Enhance physical strength and stamina.
4	Kaadai samba	Strengthen the body and cures urinary tract infections like burning micturition.
5	Kaalaan samba	Wards off diseases caused by derangement of vaatha.
6	Gundu samba	Suppresses pitta
7	Kodai samba	Regulates all three doshas

8	Korai samba	Provides a cool feel and controls Pitta, it cures urinary tract diseases and controls pruritis.
9	Seetha bogam	Provides strength, complexion and improves spermatogenesis
10	Chensamba	Controls excessive appetite, cures itching, pyoderma and wounds.
11	Puzhugu samba	Ability to quench thirst and hunger and strengthens the body, removes fatigue and provides a pleasant feel.
12	Manakathai	Controls skin diseases, helps in poison bites, and heals ulcers if one takes this variety regularly.
13	Malligai samba	Nourishment, strength and growth, and prevents dermatitis.
14	Milagu samba	Improves appetite, regulates thirst, gives a pleasant feel, wards of many diseases.
15	Maisamba	Regulates deranged vaatha and Pitta, Cures fever, vomiting, ingested toxins and removes ageusia, anorexia.
16	Kundumanisamba	Regulates deranged vaatha and alleviates a lot of diseases.
17	Vaalaanarici	Suppress anorexia –loss of taste but improves complexion, adds weight. But in order to get proper nourishment and improve spermatogenesis use judiciously.
<b>Source:</b> (Balasubramanian et al., 2019)		

## CONCLUSION

Traditional rice varieties in India are found to have several medicinal properties due to their high nutritional content and phytochemicals. It is also a part of India's cultural heritage. These varieties had been on the verge of extinction due to a lack of awareness and insufficient availability of scientific data. However, there is an early science of reversal that is evidenced in the revival of heritage rice cultivation and awareness among sections of the public. This paper has sought to aid this revival.

## FUTURE SCOPE

Documented evidence suggest that India was home to at least 2 lakh varieties of heritage rice. However, modern science has not yet recognised and researched this vast main of knowledge. This calls for more focus and dedicated exploration into this field. Special attention is need from agricultural economists in analyzing the cost and benefits to the farmers and the society at large.

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