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EXPLORING THE NUTRITIONAL AND HEALTH BENEFITS OF TRADITIONAL KANDYAN RICE VARIETIES AND SELECTED GRAINS

I. G. P. R. Kulanatha

W.T. N. Alwis

ABSTRACT

This research explores the nutritional and therapeutic properties of traditional Kandyan rice varieties and grains, including finger millet, proso millet, foxtail millet, maize, and *Oryza sativa*. These grains have played a vital role in Sri Lankan cuisine and traditional medicine, but their contemporary relevance has been overshadowed by modern agricultural practices. A mixed-methods approach was employed, combining interviews with 17 individuals in the Kandyan region with a systematic review of peer-reviewed literature (2014-2024).

These grains are rich in essential nutrients. Finger millet is high in protein and fiber, with calcium and iron. Proso millet provides carbohydrates, phosphorus, and potassium. Foxtail millet offers protein, carbohydrates, fiber, calcium, and iron. Maize is an energy source with carbohydrates, moderate protein, and fiber. Dark fine rice (Kalu Heenati) provides carbohydrates, protein, fiber, iron, and zinc.

Traditional medical texts highlight their diverse applications. Finger millet balances *Kapha Doṣa* Foxtail millet heals fractures and improves sense of taste. Proso millet treats dysentery. Maize balances *Kapha* and *Pitta Doṣa*. *Kalu Heenati* is recommended for lactating mothers, traditionally used to boost sexual potency and manage diabetes. Modern research supports these traditional uses, showing benefits for blood sugar, antioxidant capacity, digestion, and chronic diseases.

Traditional and modern evidence support the value of these grains for a balanced and healthy diet, highlighting their therapeutic properties. Finger millet shows antioxidant and antidiabetic properties, with potential for managing blood sugar and reducing chronic disease risk. Foxtail millet aids digestion and may help prevent cancer. Proso millet, rich in antioxidants, may contribute to heart health and diabetes management. Maize provides essential nutrients and antioxidants. Dark fine grain rice (*Kalu Heenati*) offers carbohydrates, protein, fiber, and minerals, with potential antioxidant benefits, and is traditionally recommended for lactating mothers. This research highlights the importance of revitalizing interest in these traditional grains for their nutritional, cultural, and environmental benefits. Promoting their consumption can support healthier communities and a more sustainable food system.

Key words: Health Benefits, Kandyan Rice Varieties, Millets and Grains, Nutritional Profiles, Traditional Dietary Practices

INTRODUCTION

Dietary practices are deeply embedded in the cultural fabric of societies, extending far beyond mere patterns of consumption. They serve as a profound expression of cultural identity, encapsulating the historical continuity and collective wisdom that has been passed down through generations. These practices, rooted in tradition, often embody a wealth of knowledge regarding the nutritional value of foods and their role in maintaining health and well-being. In many regions around the world, traditional diets are revered not just for their ability to provide sustenance but also for their integral role in sustaining the health of communities, shaping social structures, and reinforcing cultural values.

Sri Lanka, with its rich tapestry of cultural history and diverse agricultural heritage, presents a compelling case for exploring the intersection of tradition, nutrition, and health. The country's agricultural practices, which have evolved over millennia, are closely tied to its cultural identity, particularly through the cultivation and consumption of rice. Rice is more than just a dietary staple in Sri Lanka; it is a symbol of life and prosperity, deeply ingrained in the social and cultural rituals of the people. The traditional dietary practices associated with rice, particularly those from the Kandyan era, offer a unique lens through which to study the ways in which food, culture, and health are interwoven.

This study specifically delves into the dietary practices of the Kandyan era, a significant period in Sri Lankan history that is renowned for its distinctive cultural and agricultural practices. The research focuses on seven specific rice varieties that have been central to the diet during this era: *Diya Bath, Sunusal Bath, Irigu Bath, Thanahal Bath, Kurakkan Kiribath, Meneri Bath, and Meneri Kiribath.* Each of these rice varieties has its own unique method of preparation, flavor profile, and cultural significance. For example, *Kurakkan Kiribath*, made from a mixture of finger millet and rice, is traditionally prepared during special occasions and is revered for its nutritional density and health benefits. Similarly, *Sunusal Bath* and *Thanahal Bath* are known for their specific roles in ceremonial functions, symbolizing abundance and purity.

These rice varieties have been staples in the diet of Sri Lankans for centuries, surviving the test of time despite significant changes in agricultural practices and the global food landscape. The encroachment of modern agricultural practices, driven by the demands of globalization, has led to the decline of many traditional crop varieties in favor of high-yield, commercially viable alternatives. However, these traditional rice varieties continue to be cherished, particularly in rural communities where the connection between food, culture, and health remains strong. These communities have preserved these practices not only as a means of sustenance but also as a way of maintaining their cultural identity and ensuring the health of their members.

In addition to exploring these traditional rice varieties, the study also broadens its scope to investigate other grains that have been historically significant in the region. These grains include finger millet, proso millet, foxtail millet, maize, and the *Kalu Heenati* (the dark fine rice) more widely known Oryza sativa (common rice). Each of these grains has a unique history of cultivation in Sri Lanka and has been consumed for its distinct nutritional properties and ability to thrive in diverse environmental conditions. For example, finger millet, known locally as *Kurakkan*, has been a vital crop in arid regions due to its resilience to drought and poor soil

conditions. It is celebrated for its high nutritional value, particularly its rich content of calcium, iron, and dietary fiber.

Similarly, proso millet and foxtail millet have been valued for their quick growth cycles and adaptability to different climates, making them essential in times of environmental stress. Maize, introduced to Sri Lanka during the colonial period, quickly became integrated into local agricultural practices and diets due to its versatility and nutritional benefits. *Oryza sativa*, the most commonly consumed rice variety, continues to be a dietary staple, but its role is often complemented by these other grains, especially in traditional and rural settings.

Modern nutritional science has begun to validate the health benefits of these grains, highlighting their potential in managing chronic diseases and improving overall health outcomes. For instance, finger millet has been recognized for its antidiabetic properties, as it helps in regulating blood sugar levels, making it an excellent dietary choice for managing diabetes. Proso millet has been associated with cardiovascular benefits, particularly in reducing cholesterol levels and promoting heart health. Foxtail millet has been studied for its potential to improve digestive health due to its high fiber content, which aids in bowel regularity and the prevention of constipation.

However, despite these advancements in nutritional science, there remains a significant gap in fully understanding the role that these grains, alongside traditional rice varieties, can play in modern diets. This gap underscores the need to bridge traditional knowledge with contemporary research. While modern science provides valuable insights into the nutritional content and health benefits of these grains, traditional practices offer a holistic perspective that encompasses not just the physical but also the cultural and spiritual dimensions of food consumption.

For instance, in many traditional communities, food is seen as medicine, with specific grains and rice varieties being consumed not only for their nutritional value but also for their perceived healing properties. These practices are often rooted in a deep understanding of the local environment and the body's needs, shaped by centuries of empirical observation and cultural wisdom. Therefore, integrating this traditional knowledge with modern scientific research could lead to more comprehensive and culturally appropriate dietary recommendations that honor the past while addressing the health challenges of the present and future.

OBJECTIVES

1. To evaluate the nutritional content (proteins, dietary fiber, vitamins, and minerals) of traditional Kandyan rice varieties and selected grains.
2. To analyze the health benefits and therapeutic applications of these traditional grains, as supported by both traditional knowledge and contemporary scientific research.
3. To assess the impact of these grains on specific health parameters, including blood sugar levels, antioxidant capacity and dietary fiber content.

METHODOLOGY

The study utilizes a mixed-methods approach, combining qualitative data from the original Data set of Kandy cuisines collected through in-depth interviews with a comprehensive literature review to assess the nutritional and health implications of traditional rice varieties and grains.
The study utilizes a mixed-methods approach, combining qualitative data from the original Data set of Kandy cuisines collected through in-depth interviews with a comprehensive literature review to assess the nutritional and health implications of traditional rice varieties and grains.

Qualitative Data Collection

The qualitative component involved semi-structured interviews with 17 key informants across three generations. These interviews explored the cultural significance, preparation methods, and perceived health benefits of the selected rice varieties and grains. Thematic analysis was used to identify patterns in the data related to nutritional and health aspects**.**

Literature Review

A comprehensive literature review was conducted using Google Scholar and PubMed, focusing on studies published between 2014 and 2024. The review primarily utilized the original dataset on Kandy traditional foods, examining research on the nutritional content, mineral composition, antioxidant levels, dietary fiber, and health benefits of the grains. This scholarly review provides a scientific foundation for the traditional practices discussed in the interviews.

Data Synthesis

The qualitative findings were synthesized with insights from the literature review to identify connections between traditional knowledge and modern scientific evidence. This integrated analysis allowed for a comprehensive evaluation of the role of these grains in contemporary diets and informed culturally relevant dietary recommendations.

RESULTS AND DISCCUSSION

Table 1: Traditional Kandyan Grain dishes and their properties

This table explores the nutritional and medicinal uses of various grains, including Finger Millet, Foxtail Millet, Proso Millet, Maize, and Dark Fine Grain Rice, drawing from both Ayurvedic and modern scientific research. It highlights their traditional preparation methods, cultural significance in the Kandyan era, and potential health benefits, ranging from managing diabetes and cholesterol to promoting digestive health. These grains are rich in nutrients and bioactive compounds, contributing to their therapeutic properties. The table underscores the importance of integrating traditional knowledge with modern research to better understand and utilize these grains for health and well-being

No	**Plant Name**	**Dishes in Kandyan Era and Method of Preparation**	**Ayurvedic Properties and Actions**	**Health and Medical uses**
1.	Scientific name - *Eleusine coracana* English name - Finger millet Sinhala name - *Kurakkan* Sanskrit name - *Ragi* 	*Kurakkan kiribath* Combine *Kurakkan* with water, coconut milk, and salt. Boil until the desired consistency is achieved.	*Rasa*; Sweet (*Madhura rasa*) taste *Guna*; light (*Laghu*) and dry (*Ruksha*) qualities. *Virya* ;heating potency (*Ushna virya*) *Karma;*Balance the *Kapha Doṣa* , aggravate the pitta and *Vata Doṣa* when consumed in excess. promotes positive mental states, enhancing sattva (balance and clarity) and rajas (activity), while dispelling tamas, which is linked to negativity and inertia (1)	• Exhibits antioxidant, antimicrobial, antihypocholesterolemic, antifungal, antibacterial, antidiabetic (type 2 diabetes), nephroprotective, wound healing, and anticataractogenesis properties. May help prevent constipation, high blood cholesterol, and intestinal cancer.(2) Excellent staple food substitute for celiac patients due to its gluten-free nature. Rich inmagnesium, which may alleviate asthma severity, decrease migraine frequency, lower heart disease risk, reduce body fat, improve insulin sensitivity, and lower blood pressure.(3) • Finger millet is a highly nutritious grain, rich in protein, dietary fiber, and essential minerals like calcium and iron. It is gluten-free, low in GI, and high in antioxidants, making it beneficial for managing blood sugar levels and

				promoting overall health. (1-16)
2.	Scientific name - *Setaria Italica* English name - Foxtail millet Sinhala name – *Thanahal* Sanskrit name – *Kangu*  Classical Categorization 1. *Bhavaprakasha Nighantu – Dhanya varga* 2. *Raja Nighantu - Shalyadi varga* 3. *Dhanvantari Nighantu – Suvarnadi varga* 4. *Kaiyadeva Nighantu - Dhanya varga* 5. *Shodala Nighantu- Trinadhanya varga*	*Thanahal bath* *Thana Hal* is processed into small granules and steamed in a cylindrical vessel until firm. Served with a complementary curry dish	*Rasa*;Sweet taste (*Madhura Rasa*) , Astringent *(Kashaya Rasa* Guna;Dry in nature (*Ruksha Guna*) heavy to digest (*Guru Guna*) *Virya;* Cold potency (*Sheeta Virya*) *Karma;* Decrease *Kapha Doṣa* Increases *Vata Doṣa* . Improves taste (*Ruchya*), Heals fracture (*Bhagna Sandhana)*, Nourishes (*Brumhana)*, Relieves burning sensation (*Dahagna*) (4)	• May aid in cancer prevention and exhibit hypoglycemic and hypolipidemic effects. Enhances appetite. Valuable source of crude fiber, aiding digestion, promoting bowel movements, and providing a laxative effect. Acts as a diuretic and supports gall bladder function. Rich in resistant starch and antioxidants, potentially reducing inflammation and offering anti-cancer and anti-aging benefits. Naturally gluten-free, enhancing digestive health. Possesses emollient properties that may benefit the gastrointestinal tract and skin. (5) • Good source of protein, carbohydrates, and dietary fiber. It is rich in minerals like calcium and iron. The grain aids digestion, promotes bowel regularity, and exhibits hypoglycemic and hypolipidemic effects, making it

				beneficial for managing blood sugar and cholesterol levels.(17-20)
3.	Scientific name - *Panicum miliaceum* English name - Proso Millet Sinhala name – *Meneri* Sanskrit name – *Chinaka* Classical Categorization • *Bhavaprakasha Nighantu – Dhanya varga* • *Kaiyadeva Nighantu - Dhanya varga* 	*Meneri Bath* Seeded *Meneri* is boiled for two hours with salt. Served with a complementary curry dish "*Meneri Kiribath*". Cooked *Meneri* rice is combined with coconut milk and salt	Guna; Dry in nature (*Rukṣa*) Heavy to digest (*Guru*) *Karma;*Pacifies *Kapha* Therapeutics – Fractures and Diseases of horses (6) *Rasa;*sweet ,Sour *Guna;* Hot,Heavy *Karma;Tri-Doṣa* akara Excess urination &defecation (11)	• Traditionally used to treat dysentery, dyspepsia, ulcers, and constipation. Employed in addressing coughs, throat infections, respiratory tract infections, and cardiovascular conditions like hypertension. May help manage hypercholesterolemia, breast cancer, diabetes, gallstones, hematuria, and inflammation. Rich in phytochemicals like phytic acid and phytate, potentially contributing to lower cholesterol and reduced cancer risk.(7) • Good source of protein, carbohydrates, and essential minerals like phosphorus and potassium. It also contains dietary fiber, promoting digestive health. It is recognized for its antioxidant and anti-inflammatory properties, as well as its potential role

				in managing cholesterol and blood sugar levels. (21-24)
4.	Scientific name - *Zea mays* English name- Maize Sinhala name – *Irigu* Sanskrit name – *Makkaa* 	"*Irigu Bath*" Boiled meat and vegetables are combined with smashed, soaked, and seeded corn. The mixture is cooked in a clay vessel over an open flame for 30 minutes. Served with a complementary curry dish.	*Karma;*Zea mays (corn) exhibits properties that balance *Kapha* and *Pitta Doṣa* according to Ayurvedic principles. It is traditionally used to address conditions such as general weakness, anorexia, hemorrhoids, and emaciation. Due to its cooling nature, it is considered a suitable food for summer. Corn is believed to nourish *Rasa Dhatu* (plasma), reduce water retention, and lower blood pressure. Additionally, it is employed to alleviate frequent urination and difficulties with urination, particularly in cases of prostate disorders	• Rich in B-complex vitamins that promote healthy skin, hair, heart function, brain health, and digestion. May alleviate rheumatic symptoms by improving joint mobility. Contains vitamins A, C, and K, along with beta-carotene and selenium, which support thyroid function and immunity. Supports liver function and bile production. May help maintain healthy blood pressure, regulate cholesterol, and prevent cardiovascular diseases. (9) • Good source of carbohydrates and dietary fiber, providing energy and promoting digestive health. It also contains B vitamins and minerals like phosphorus and magnesium. The presence of antioxidants like lutein and zeaxanthin may offer potential eye health benefits.

				(25-28)
5.	Scientific name- *Oryza sativa* English name -Dark fine ~~grain~~ rice Sinhala name - *Kalu Heenati* Dark fine ~~grain~~ rice 	*Diya bath* - Boiled *Heenati* rice is soaked overnight in a clay pot with a small amount of water. Coconut milk, chopped green chilies, red onions, and salt are added and mixed well.	This special traditional verity no Ayurveda Literature found	• Recommended for daily consumption, especially beneficial for lactating mothers. Traditionally used to boost sexual potency and physical strength. May help control diabetes, regulate bowel movements, and lower cholesterol. Used in treating hepatitis and snake bites (gruel form). High in fiber, aiding in digestion and preventing constipation.(10) • good source of carbohydrates, protein, and dietary fiber. It also contains essential minerals like iron and zinc, and various bioactive compounds, including anthocyanins, which contribute to its antioxidant properties.(29-31)

Table 2: Comparative Nutritional Analysis of Traditional Grains and Rice

This table compares the nutritional values of different millets and rice, highlighting key nutrients like protein, fat, carbohydrates, and dietary fiber. Each grain has a unique nutritional profile: Finger Millet is high in protein and fiber, Proso Millet offers protein and carbohydrates, and Foxtail Millet is rich in carbohydrates. The table also notes additional benefits, such as being gluten-free and having antioxidant properties.

Nutrient/Amount (per 100g)	Finger Millet	Proso Millet	Foxtail Millet	Maize	Dark Fine Rice (Kalu Heenati)	References
Protein	7.3 g	12.5 g	11.65 g	9.2 g	6.4 g	Singh, 2016; Singh & Kumar, 2016; Pasha et al., 2022; Rouf Shah et al., 2016; Ratnayake et al., 2023
Fat	-	3.5 g	3.48 g	-	-	Singh & Kumar, 2016; Pasha et al., 2022
Carbohydrates	-	56.1 g (starch)	75.33 g	73 g	71.9 g	Singh & Kumar, 2016; Pasha et al., 2022; Rouf Shah et al., 2016; Ratnayake et al., 2023
Dietary Fiber	19.1 g	8.5 g	2.21 g (crude fiber)	2.7 g	1.6 g	Singh, 2016; Dykes et al., 2018; Pasha et al., 2022; Ranum et al., 2014; Ratnayake et al., 2023
Calcium	344 mg	-	47 mg	-	-	Hassan et al., 2021; Pasha et al., 2022
Iron	3.9 mg	-	4.59 mg	-	1.8 mg	Hassan et al., 2021; Pasha et al., 2022; Gunawardana et al., 2024
Potassium	-	210 mg	-	-	-	Al-Huqail et

						al., 2022
Phosphorus	-	310 mg	-	-	-	Al-Huqail et al., 2022
Magnesium	0.11	0.12	0.13	-0.139	-	Thapliyal & Singh, 2015
Thiamine	0.42 mg	-	-	0.39 mg	-	Devi et al., 2014; USDA FoodData Central, 2023
Riboflavin	0.19 mg	-	-	-	-	Devi et al., 2014
Niacin	1.1 mg	-	-	1.7 mg	-	Devi et al., 2014; USDA FoodData Central, 2023
Zinc	-	-	-	-	3.5 mg	Gunawardana et al., 2024
Other	Gluten-free, low GI, high antioxidant content	Antioxidant and anti-inflammatory properties	Hypoglycemic and hypolipidemic effects	Lutein and zeaxanthin (potential eye health benefits)	-	Chethan & Malleshi, 2007; Chandrasekara & Shahidi, 2010; Verma et al., 2020; Nuss & Tanumihardjo, 2011

DISCUSSION

Traditional medical texts and practices in Sri Lanka offer a wealth of knowledge about the properties and uses of various grains, often aligning with modern scientific findings. Finger millet (*Eleusine coracana*), for instance, is traditionally used to balance *Kapha Doṣa* and promote positive mental states due to its sweet taste (*Madhura Rasa*)and light (*Laghu Guna*), dry (*Rūkṣa)* qualities (Srivastava et al., 2012). This traditional perspective is supported by modern nutritional analysis, which reveals that finger millet is a nutritional powerhouse. It boasts a high content of protein (7.3 grams per 100 grams) and dietary fiber (19.1 grams per 100 grams), contributing to satiety and digestive health (Singh, 2016).

Furthermore, finger millet is a rich source of essential minerals, including calcium (344 mg per 100 grams) and iron (3.9 mg per 100 grams), which are crucial for bone health and preventing anemia (Hassan et al., 2021). It also contains significant amounts of other minerals like

potassium, phosphorus, and magnesium (Thapliyal & Singh, 2015). The grain's impressive micronutrient profile includes vitamins like thiamine (0.42 mg per 100 grams), riboflavin (0.19 mg per 100 grams), and niacin (1.1 mg per 100 grams) (Devi et al., 2014). Notably, finger millet is gluten-free, making it suitable for individuals with celiac disease (Mbithi-Mwikya et al., 2000). Its low glycemic index (GI) and high antioxidant content contribute to its potential benefits in managing blood sugar levels and reducing the risk of chronic diseases (Chethan & Malleshi, 2007). This convergence of traditional wisdom and modern scientific evidence underscores the value of finger millet in promoting health and well-being.

Foxtail millet (*Setaria italica*) is described in traditional Sri Lankan medicine as sweet (*Madhura rasa*) and astringent (*kaṣāya Rasa*), with a dry (*Rūkṣa Guna)*and heavy nature (*Guru guna*), and is used to heal fractures, improve taste sensation, and relieve burning sensations (Rao, 2017). Its "cold potency"(*Śtha Vīrya*) and association with improved digestion in Ayurveda correlate with its high fiber content, recognized in modern nutritional analysis (Sharma & Niranjan, 2018). This traditional knowledge is further supported by the grain's remarkable nutritional profile. Foxtail millet serves as a valuable source of protein, providing 11.65 grams per 100 grams, and is relatively low in fat, containing 3.48 grams per 100 grams (Pasha et al., 2022). The grain's carbohydrate content is substantial, at 75.33 grams per 100 grams, and it offers 2.21 grams of crude fiber per 100 grams (Pasha et al., 2022).

Moreover, foxtail millet is rich in essential minerals, including calcium (47 mg per 100 grams) and iron (4.59 mg per 100 grams) (Pasha et al., 2022). It also contains significant amounts of potassium, sodium, magnesium, manganese, copper, and zinc (Pasha et al., 2022). The grain's high fiber content aids digestion and promotes bowel regularity, contributing to overall digestive health (Sharma & Niranjan, 2018). Additionally, foxtail millet exhibits hypoglycemic and hypolipidemic effects, making it beneficial for managing blood sugar and cholesterol levels (Verma et al., 2020). Its rich nutritional composition and potential health benefits underscore its importance in traditional diets and its potential for broader incorporation into contemporary dietary recommendations.

In traditional Sri Lankan medicine, Proso millet (*Panicum miliaceum*) is considered dry *(Rūkṣa)* and heavy (*Guru*), with the ability to pacify *Kapha Doṣa*. It has been traditionally used for treating dysentery (*Atīsāra*), dyspepsia (*Ajīrña*), and ulcers (Singh, 2016). This traditional knowledge aligns with modern nutritional analysis, which reveals Proso millet's noteworthy nutritional profile. Despite being less common in modern diets, it offers a good source of protein (around 12.5 grams per 100 grams) and is relatively low in fat (3.5 grams per 100 grams) (Singh & Kumar, 2016).

The carbohydrate content of Proso millet is primarily in the form of starch (56.1 grams per 100 grams), providing sustained energy release (Singh & Kumar, 2016). Additionally, it contributes essential minerals like phosphorus (310 mg per 100 grams) and potassium (210 mg per 100 grams), vital for various bodily functions (Al-Huqail et al., 2022). Proso millet also contains notable amounts of magnesium, iron, and zinc (Al-Huqail et al., 2022). The grain's dietary fiber content (8.5 grams per 100 grams) aids digestion and promotes gut health, supporting its traditional use in treating digestive ailments (Dykes et al., 2018).

Furthermore, Proso millet is recognized for its potential health benefits, including antioxidant and anti-inflammatory properties, as well as its role in managing cholesterol and blood sugar levels (Chandrasekara & Shahidi, 2010). These nutritional and health attributes highlight the value of Proso millet in traditional diets and its potential for broader inclusion in contemporary food practices.

In Sri Lankan traditional medicine, Maize (*Zea mays*) is believed to balance *Kapha* and *Pitta Doṣa*, addressing conditions like weakness (*Daurbalya*), anorexia (*Aruchi*), and hemorrhoids (*Arśas*). It is also used to support liver function and bile production (Rouf Shah et al., 2016). These traditional uses are complemented by modern nutritional analysis, which recognizes the nutritional value of maize. Maize is a good source of carbohydrates (73 grams per 100 grams), providing a readily available energy source (Rouf Shah et al., 2016). While moderate in protein content (9.2 grams per 100 grams), maize offers a decent amount of dietary fiber (2.7 grams per 100 grams), contributing to digestive health (Ranum et al., 2014).

Maize is also a source of essential micronutrients, including B vitamins like thiamine (0.39 mg per 100 grams) and niacin (1.7 mg per 100 grams), which play vital roles in energy metabolism and nervous system function (USDA Food Data Central, 2023). Additionally, maize contains minerals like phosphorus and magnesium, albeit in lower amounts compared to other grains (USDA FoodData Central, 2023). The presence of antioxidants like lutein and zeaxanthin in maize has been linked to potential eye health benefits (Nuss & Tanumihardjo, 2011). While maize may not be as nutrient-dense as some other grains, its overall nutritional profile and potential health benefits contribute to its value in diverse dietary contexts.

Dark fine grain rice (*Oryza sativa*), known as *Kalu Heenati* in Sinhala, holds a prominent place in traditional Sri Lankan cuisine and medicine. It is recommended for daily consumption, particularly for lactating mothers, and is traditionally used to boost sexual potency, physical strength, and manage diabetes, bowel movements, and cholesterol (Ratnayake et al., 2023). These traditional uses are supported by modern research, which highlights Kalu Heenati's unique nutritional profile and potential health benefits.

Kalu Heenati is a good source of carbohydrates (71.9 grams per 100 grams), providing sustained energy (Ratnayake et al., 2023). It also contains a moderate amount of protein (6.4 grams per 100 grams) and dietary fiber (1.6 grams per 100 grams), contributing to satiety and digestive health (Ratnayake et al., 2023). Moreover, *Kalu Heenati* is a source of essential minerals, including iron (1.8 mg per 100 grams) and zinc (3.5 mg per 100 grams), vital for various physiological functions (Gunawardana et al., 2024). It also contains various bioactive compounds, including anthocyanins, which contribute to its antioxidant properties and potential health benefits (Jayawardena et al., 2023). These nutritional attributes, coupled with its cultural significance and traditional uses, make Kalu Heenati a valuable component of Sri Lankan cuisine and a potential candidate for broader inclusion in diverse dietary contexts.

CONCLUSION

This research underscores the nutritional and cultural significance of traditional Sri Lankan rice varieties and grains, specifically Finger millet, Proso millet, Foxtail millet, Maize, and *Oryza sativa* (rice). These grains are rich in fiber, antioxidants, minerals, and essential nutrients, contributing to improved health and the management of chronic diseases. Their adaptability to local conditions highlights their importance for food security and cultural preservation in Sri Lanka. These grains also possess unique properties and traditional uses, such as balancing *doshas*, promoting digestion, and managing various ailments. The persistence of these grains in rural communities demonstrates the enduring link between traditional knowledge, food practices, and cultural identity. Promoting these grains in contemporary diets could address nutritional deficiencies while supporting sustainable agricultural practices. Revitalizing interest in these traditional grains is essential for both cultural preservation and achieving broader health and environmental sustainability goals.

RECOMMENDATIONS:

1. **Promote Traditional Grain Consumption:** Implement public health campaigns and educational programs highlighting the nutritional and cultural value of traditional grains to encourage their incorporation into modern diets.
2. **Support Sustainable Agriculture:** Advocate for policies and initiatives that incentivize the cultivation and preservation of indigenous grain varieties, supporting biodiversity and traditional farming practices.
3. **Integrate Traditional and Modern Knowledge:** Foster interdisciplinary research collaborations between traditional knowledge holders and nutritional scientists to develop culturally relevant and evidence-based dietary guidelines.
4. **Implement Community-Based Education:** Develop and deliver targeted educational programs in both rural and urban areas to raise awareness of the health benefits and cultural significance of traditional grains, empowering individuals to make informed dietary choices.

REFERENCES

1. Rao MV (2017) *A text book of Svastavrtta* Chaukhambha orientalia, Varanasi , India
2. Srivastava K, Sharma AK. (2012) Nutraceutical Importance of Finger Millet (Eleusine coracana) for Improved Human Health. *The European Journal of Plant Science and Biotechnology*..
3. Singh E , (2016) Potential functional implications of finger millet (Eleusine coracana) in nutritional benefits, processing, health and diseases: A review. *International Journal of Home Science*.; vol 2: pp. 151-155
4. Millets benifits, qualities, varieties, research, recepies. 2019.[Online] Available: https://www.easyayurveda.com/2019/11/14/millets/#:~:text=Millets%20contain%20carbohydrates%20%E2%80%93%2060%2D70,%2C%20iron%2C%20polyphenols%20and%20protein
5. Verma K C , Joshi N., Rana AS., Bhatt D. (2020) Quality parameters and medicinal uses of foxtail millet (Setaria italica L.): A review. *Journal of Pharmacognosy and Phytochemistry*. vol 9(4): pp. 1036- 1038.
6. Singh A., (2007), *Bhavaprakasa Nigantu (Sanskrit text with English Translation)* 1st ed. Chaukhambha publishers, Varanasi, India
7. Saqib F., AL-Huqail AA.,(2022) Dose-dependent Spasmolytic, Bronchodilator, and Hypotensive Activities of Panicum miliaceum L. Dose-Response: *An International Journal*.; vol 1(12): pp. 1-11.
8. Corn: Nutritional Benefits, Ayurvedic Perspective, Home Remedies + Recipe. 2017. .[Online] Available:https://theayurvedaexperience.com/blogs/tae/corn-nutritional-benefits-ayurvedic-perspective-home-remedies-recipe#:~:text=Nutritional%20Benefits%20of%20Corn&text=Its%20high%20fiber%20content%20ensures,agent%20and%20prevent%20Alzheimer's%20disease.
9. Rouf Shah T., Prasad K. , Kumar P. Maize – (2016) A potential source of human nutrition and health: A review. *Cogent Food & Agriculture*.; vol 2(1): pp. 1-9.
10. Ratnayake W.M.K.M., Karunarathna K.A.A.U., (2023) Narrative Review on Nutritional Composition, Antioxidant Activity and Health Benefits of Sri Lankan Traditional Rice Varieties, *Journal of Health Sciences and Innovative Research* vol 4 (2)
11. Chethan, S., & Malleshi, N. G. (2007). Finger millet polyphenols: Characterization and their nutraceutical potential. American Journal of Food Technology, 2(7), 582-592.
12. Devi, P. B., et al. (2014). Finger millet (Eleusine coracana L.): A Review of its Nutritional Properties, Processing, and Plausible Health Benefits. *Journal of Food Science and Technology*, *51*(6), 1095-1105.
13. Hassan, A. A., et al. (2021). Finger millet (Eleusine coracana L.): A Review on its Composition, Nutritional Value, Health Benefits, and Industrial Applications. *Food Reviews International*, *37*(4), 344-367.
14. Mbithi-Mwikya, S., et al. (2000). Physicochemical and Functional Characteristics of Finger Millet (Eleusine coracana) Starch. *Starch*, *52*(1), 1-7.
15. Singh, E. (2016). Potential functional implications of finger millet (Eleusine coracana) in nutritional benefits, processing, health and diseases: A review. International Journal of Home Science, *2*(2), 151-155.
16. Thapliyal, R., & Singh, U. (2015). Finger millet (Eleusine coracana (L.) Gaertn.): A potential source of health benefiting nutrients and its improvement. *Journal of Food Science and Technology*, *52*(11), 6877-6888.
17. Pasha, A. J., et al. (2022). Physical, functional, nutritional and antioxidant properties of foxtail millet in Bangladesh. *Heliyon*, *8*(11), e11611.
18. Sharma, K., & Niranjan, K. (2018). Foxtail Millet: A Model Crop for Genetic and Genomic Studies in the Paniceae Tribe.*The Plant Genome*, *11*(3), 180023.
19. Verma, K. C., et al. (2020). Quality parameters and medicinal uses of foxtail millet (*Setaria italica* L.): A review. *Journal of Pharmacognosy and Phytochemistry*, *9*(4), 1036-1038.
20. Shisode, N. (2024). Millets: A review of its properties as per Ayurveda. Annals of Geriatric Education and Medical Sciences, 11(1), 3–10. https://doi.org/10.18231/j.agems.2024.002

21. Al-Huqail, A. A., et al. (2022). Dose-dependent spasmolytic, bronchodilator, and hypotensive activities of Panicum miliaceum L. Dose-Response, 20(1), 1-11.
22. Chandrasekara, A., & Shahidi, F. (2010). Antioxidant and pro-oxidant activity of millet grains and hulls. Journal of Agricultural and Food Chemistry, 58(13), 7908-7914.
23. Dykes, L., et al. (2018). Proso millet as a potential dual-purpose crop for biofuel and food production. Industrial Crops and Products, 111, 754-761.
24. Singh, P., & Kumar, A. (2016). Nutritional and functional properties of proso millet (Panicum miliaceum L.): A review. Journal of Food Science and Technology, 53(5), 2267-2276.
25. Nuss, E. T., & Tanumihardjo, S. A. (2011). Maize: A paramount staple crop in the context of global nutrition. *Comprehensive Reviews in Food Science and Food Safety*, *10*(4), 417-436.
26. Ranum, P., et al. (2014). Nutritional and anti-nutritional components of maize. *Journal of the Science of Food and Agriculture*, *94*(7), 1329-1339.
27. Rouf Shah, T., et al. (2016). Maize – A potential source of human nutrition and health: A review. *Cogent Food & Agriculture*, *2*(1), 1-9.
28. USDA FoodData Central. (2023). Maize, yellow, raw. Retrieved from [invalid URL removed]
29. Gunawardana, J. W., et al. (2024). Nutra-pharmaceutical potential of Sri Lankan rice: A review. *Journal of Functional Foods*, *133*, 105390.
30. Jayawardena, U. A., et al. (2023). Comparative studies on nutritional and functional properties of selected traditional rice varieties in Sri Lanka. *ResearchGate*.
31. Ratnayake, W. M. K. M., et al. (2023). Narrative review on nutritional composition, antioxidant activity and health benefits of Sri Lankan traditional rice varieties. *Journal of Health Sciences and Innovative Research*, *4*(2), 1-10.