

Revitalizing Health and Development through Millets: A Comprehensive Overview

Akhilesh Kumar Verma

Registrar
Ayurvedic evam Unani
Tibbi Chikitsa Paddhati Board, UP, Lucknow.

Abstract:

Nutrition stands as a cornerstone in the realms of health and development, influencing immune strength, pregnancy safety, reduced non-communicable disease risks, and extended lifespans. Despite these benefits, contemporary lifestyles and dietary habits contribute to adverse health outcomes like obesity and diabetes. In this context, millets emerge as a promising solution—being lightweight and nutritionally dense. Millets, encompassing a diverse range of small-seeded grasses, are globally cultivated as cereal grains for both human and animal consumption. Belonging to the Poaceae or Gramineae family (grass family), millets serve as a nutritional powerhouse, boasting high levels of protein, fiber, magnesium, phosphorus, copper, potassium, and manganese. This article delves into the significance of millets in our daily lives, emphasizing their potential to counteract prevalent health issues. Furthermore, various millet preparations are explored, providing insights on how to seamlessly integrate them into our everyday diets. This comprehensive review aims to underscore the vital role millets can play in promoting a healthier and more sustainable lifestyle.

Keywords: millets, kshudra dhanya, lifestyle, healthy.

Introduction

Incorporating millets into our daily lives has become a pivotal dietary modification due to their rich nutritional diversity and associated health advantages. Millet varieties such as Sorghum (Jowar), Sama (little millet), Ragi (finger millet), Bajra (foxtail millet), Variga (proso millet), Gavedhuka (adlay millet), Koradusha or Kodrava (Kodo millet), Shyamak (barnyard millet), among others, offer a spectrum of choices. Noteworthy is the fact that Ragi contains the least amount of fat, while Bajra and Sama are comparatively higher in fat content. In rural settings, millets are frequently consumed as a staple food, with India, China, Greece, Egypt, and Africa being major cultivators. Finger millets and Sorghum are common in rural diets, while other millets often serve as animal feed. Millets hold exceptional nutritional value, being an integral part of traditional diets across many Indian states for thousands of years. References in ancient texts, including Ayurvedic Samhitas and Charaksamhita, highlight millets like Shyamak and Koradusha, noting their medicinal properties and balancing effects on bodily elements. The importance of millets transcends their nutritional prowess. Millets outshine wheat and rice in fiber content and contain higher mineral concentrations. Finger millet, for instance, surpasses rice in calcium content by thirty times. Additionally, millets offer a plethora of micronutrients, essential fatty acids, and vital B vitamins crucial for cellular energy generation. Beyond their nutritional richness, millets exhibit various agricultural advantages. They thrive in pest-free conditions, eliminating the need for pesticides. Acting as anti-pest agents during storage, millets contribute to a sustainable agricultural ecosystem. They play a critical role in regional and farm-level food security, surviving in high-temperature and drought-prone environments without irrigation. Millets' short growing season, alkaline nature, gluten-free composition, and ability to thrive in low-water environments make them a resilient and health-conscious choice. Their cultivation requires less water and time, contributing to both environmental sustainability and dietary well-being.

Millets, hailed for their versatile nutritional profiles, play a crucial role in alleviating respiratory issues for asthmatic patients and mitigating the impact of migraines. The fiber content in pearl millets further contributes to a reduction in gallstone occurrences.

1) Major Millets

a) Pearl Millet: Renowned as Bajra, it thrives in India, particularly in Rajasthan. Not only a dietary staple but a robust contributor to health, pearl millet aids in glucose regulation, making it a heart-healthy choice. It has been linked to a decreased risk of diabetes and is associated with a lower incidence of gallstones.

b) Finger Millet (Ragi): Abundantly grown in India, Sri Lanka, and Ethiopia, Ragi stands out for its digestive benefits, anti-aging properties, and heart disease risk reduction. Emphasized by UN FAO for preventing malnutrition, Ragi is a rich source of natural calcium, iron, and aids in lactation, making it beneficial for various demographics.

2) Minor Millets

a) Foxtail Millet (Kangu): Originating in India and northern China, Foxtail millet aids in glucose release without altering metabolism. Rich in magnesium, it promotes heart health and is associated with a lower prevalence of diabetes.

b) Proso Millet (Cheenak): Known for its richness in Niacin, crucial for treating Pellagra, Proso millet is traditionally used as a restorative dish, especially after childbirth or illness.

c) Little Millet (Sama): Fortified with minerals like zinc, iron, potassium, and calcium, little millet aids in lowering cholesterol, promoting quick metabolism, and providing necessary lipids for weight loss. Its high fiber content contributes to overall digestive health.

d) Kodo Millet (Kodrava or Koradusha): Aiding in weight loss and rich in phytochemicals and antioxidants, Kodo millet is quickly absorbed and known for relieving hip and knee pain. Additionally, it regularizes menstruation in women.

e) Barnyard Millet (Shyamaka): Considered more nutritious than other cereal grains, barnyard millet is utilized for weight loss, offering a rich source of fiber, carbohydrates, protein, calcium, and phosphorus essential for bone growth.

Millets in Ayurveda: Ayurveda acknowledges millets as Kshudradhanya, possessing qualities such as being Ushna, having Kashaya and Madhura Ras, being Laghu, Lekhan, Vipaka is Katu, Ruksha, Vatakaraka, and Grahi. Each millet carries additional qualities, aligning with Ayurvedic principles and serving various therapeutic purposes. As these ancient grains make a resurgence in modern diets, their holistic health benefits and diverse applications underscore their significance in fostering overall well-being.

Sorghum (Jowar):

(a) Celiac Disease: For individuals grappling with celiac disease, an immune system response triggered by gluten, sorghum emerges as a gluten-free dietary alternative. Continuous intake of sorghum products showcases an inability to influence anti-transglutaminase antibodies, making it a viable option for those managing this condition.

(b) Obesity: As India confronts a rising obesity epidemic linked to chronic diseases like diabetes and cardiovascular issues, sorghum proves to be a valuable ally. Rich in dietary fiber, sorghum's unique chemical and physical properties contribute to satiety, control over digestion, and absorption, reducing the risk factors associated with obesity.

(c) Diabetes Mellitus: In the complex landscape of diabetes mellitus, whole grain foods, including sorghum, play a pivotal role. Studies reveal that processed sorghum varieties, particularly boiled Yellow Jowar flour, exhibit a lower glycemic index, providing a beneficial dietary management approach for diabetes.

(d) Coronary Heart Diseases: Empirical evidence strongly suggests that regular consumption of whole grains, such as sorghum, diminishes the risk of coronary heart diseases. Sorghum's inclusion in a balanced diet contributes to cardiovascular health.

(e) Cancer: Sorghum's anti-carcinogenic properties, substantiated by In Vivo and In Vitro studies, make it a noteworthy component in cancer prevention. The presence of polyphenols and tannins in sorghum demonstrates anti-mutagenic and anti-carcinogenic effects, emphasizing its potential positive impact on health.

Finger Millet (Nartaki):

Health Advantages: Finger millet, or Nartaki, holds multifaceted health benefits, making it a valuable addition to various health conditions: **Weight Management:** Tryptophan in finger millet aids in appetite control and

weight management. Its slow digestion rate and high fiber content contribute to a feeling of fullness, curbing excessive calorie intake. Bone Health: Rich in calcium, finger millet strengthens bones, proving to be a natural calcium source for both growing children and aging individuals. It plays a role in preventing diseases like osteoporosis and reducing the risk of fractures.

Diabetes Control: Phytochemicals in finger millet slow the digestion process, assisting in blood sugar level control for individuals with diabetes. Studies highlight its lower glycemic response, indicating a reduced ability to increase blood sugar levels compared to rice and wheat.

Discussion

Millets, the ancient grains that have been staples in various cultures, are increasingly gaining recognition for their nutritional potential and health benefits. Traditionally consumed for health and vitality, millets offer a nutritional profile comparable to common cereals such as rice, wheat, and barley, encompassing protein, carbohydrates, and energy content. The key to their health advantages lies in the presence of phytochemicals, including dietary fiber, polyphenols, tocopherols, and phytosterols, as well as an abundance of minerals, vitamins, trace elements, essential fatty acids, and amino acids. In the realm of Ayurveda, millets are recognized for their diverse properties, making them suitable for different constitutions and health conditions. Ayurvedic texts suggest that millets can be given in conditions related to Kapha, Pitta, and Raktaj Vyadhi. However, caution is advised in Vata jVyadhi, as millets tend to increase Vata Dosha. While specific indications for each millet are not explicitly outlined in ancient texts, their properties (Guna) and actions (Karma) provide valuable insights.

1) Kangu (Foxtail Millet): Kangu, with its Sangrahi property, finds indications in conditions like Atisara (diarrhea) and Grahani (sprue). Its dual nature of being both Brumhana (nutritive) and Shoshana (reducing) makes it suitable for addressing Dhatu Shoshana of overnourished Dhatus like Meda (adipose tissue) and Mamsa (muscle tissue). This duality allows Kangu to provide micronutrients to the body while simultaneously aiding in conditions like Sthoulya (obesity) and Prameha (diabetes). Additionally, Kangu's Bhagnasandhankarak property makes it indicated in Bhagna (fractures), and its overall Guna and Karma recommend its use in conditions like Kapha-Pitta Pradhan Twaka Vikara and Amavata. Scientifically, aqueous extracts of foxtail millets exhibit remarkable anti-hyperglycemic activity, adding a modern perspective to its traditional use.

2) Cheenak (Proso Millet): Cheenak, known as Proso millet, is recommended for Santarpana Janya Vyadhi, which includes conditions arising from excessive nourishment of body tissues such as Sthoulya (obesity), Prameha (diabetes mellitus), and Medoroga (diseases caused by excessive lipids). Its properties like Guru (heavy), Ruksha (reduces unctuousness), Kapha Hara (alleviates Kapha), and Brumhana (nutritive) align with its indications. Proso millet is particularly indicated in conditions like cardiovascular diseases and diabetes mellitus. This underlines its role not only in maintaining overall health but also in managing lifestyle-related ailments. The ancient wisdom of Ayurveda and the empirical evidence from modern scientific research converge to highlight the holistic health benefits of incorporating millets into our diets. From addressing digestive disorders to managing chronic conditions like diabetes and obesity, millets emerge as versatile grains with the potential to contribute to a balanced and nourishing lifestyle. As we look into the discourse surrounding millets, it becomes evident that these humble grains, often overlooked in modern diets, carry a wealth of nutritional goodness and therapeutic potential. Embracing millets in our daily meals can be seen as a harmonious blend of ancient wisdom and contemporary science, paving the way for a healthier and more balanced life. Finger millet, commonly known as Ragi, stands as an ancient grain with remarkable health benefits, addressing diverse aspects of well-being through its unique nutritional composition. From digestive health to cholesterol management, anemia alleviation, and mental well-being, Ragi has emerged as a versatile dietary inclusion with both traditional and contemporary significance. In the realm of digestive health, Ragi flour's inherent factors contribute to lowering the digestibility and absorption of starch, making it an excellent choice for those seeking gastrointestinal well-being. Beyond its digestive perks, Ragi plays a crucial role in cholesterol management. Packed with amino acids such as Lecithin and Methionine, Ragi aids in reducing cholesterol levels by eliminating excess fat from the liver, contributing to cardiovascular health. The nutritional richness of Ragi extends to its potential in addressing anemia. Serving as a natural source of iron, Ragi becomes a valuable ally in combating iron deficiency and supporting overall blood health. This dual action, targeting digestive health and nutrient supplementation, showcases Ragi's holistic approach to well-

being. Moreover, Ragi's nutritional profile lends itself to promoting relaxation and mental well-being. Beneficial in conditions of anxiety, depression, insomnia, and even migraines, Ragi stands out as a holistic addition to one's diet for mental health support. The amino acids and micronutrients present in Ragi contribute to these calming effects, providing a nutritional dimension to mental well-being. In exploring the versatility of millets, it becomes evident that the taste of these grains might not always align with mainstream preferences. However, various innovative and traditional preparation methods allow for the seamless inclusion of millets in everyday meals, ensuring both nutrition and palatability. Starting with healthier bread alternatives, millet-based breads surpass the nutritional benefits of regular bread, offering a wholesome and nutritious option. Moving on to delightful treats, laddoos made from millets, combined with flax seeds and dry fruits, become both a tasty and nutritious indulgence. Millets also find a place in traditional dishes, replacing rice in items like sweet pongal, bisibelebath, kheer, and mango rice, introducing a healthier twist to these classics. Millet's versatility shines through in breakfast items such as idli, dosa, and pancakes, diversifying the morning meal with nutrient-packed options. Savory and sweet varieties, including upma, sweet halwa, barfis, and vegetable pulao, showcase millets' adaptability to various culinary styles. Millets extend their influence to nutrient-rich chapatis, with options like bajra, sorghum, and ragi, offering fiber-rich alternatives tailored for those managing obesity and diabetes. Children, too, can benefit from millets, as millet porridge with fruits and dry fruits becomes a wholesome and nutritious start to their day. Adding a touch of innovation, cakes and cookies made from millets provide both a tasty and health-conscious dessert option for all age groups. Further exploring savory delights, millets seamlessly integrate into cutlets, dhokla, and various rice dishes, proving their versatility in both flavor and nutrition. For those seeking snack alternatives, roasted or puffed millets offer crunchy options that not only satisfy taste buds but also contribute to overall well-being. This diverse array of millet recipes, ranging from traditional staples to innovative and contemporary dishes, presents a comprehensive approach to embracing millets in daily life. In navigating the challenges of a sedentary lifestyle, these millet recipes stand as beacons of health, providing a balanced and nutritious foundation for individuals and families alike. The fusion of ancient wisdom regarding the nutritional benefits of millets with modern culinary innovation opens up a world of possibilities for those seeking vibrant living through their dietary choices.

Conclusion

In conclusion, the fast-paced nature of contemporary life often leads to malnourishment, stemming from either over-nourishment or undernourishment, primarily driven by a preference for fast food. Recognizing the detrimental impact of refined foods like rice, wheat, processed meats, and others prevalent in the modern diet, there is a compelling case for the incorporation of millets – an age-old, revered grain-like seed – into our daily dietary habits. Millet emerges as a nutritional powerhouse, particularly beneficial in addressing conditions arising from overnourishment and the prevalence of non-communicable diseases associated with a sedentary lifestyle. By opting for millets and steering clear of refined and processed food items, individuals can pave the way for a healthier life. Millets exhibit nutritional potential comparable to common cereals like rice, wheat, and barley, encompassing essential proteins, carbohydrates, and energy content. The health advantages of millets are largely attributed to the presence of phytochemicals such as polyphenols, tocopherols, phytosterols, and dietary fiber, alongside a wealth of minerals, vitamins, and trace elements. Epidemiological research consistently associates regular millet consumption with a reduced risk of chronic diseases, including diabetes, heart disease, cancer, and overall mortality. Therefore, embracing a diet enriched with a variety of fruits, vegetables, and millet grains holds the promise of enhancing health and diminishing the likelihood of chronic diseases. Despite the undeniable nutritional benefits, millets often face misconceptions, with some viewing them as "poor man's food." Overcoming this perception necessitates the implementation of processing techniques and standardization methods to elevate millet products to a scale where they can be embraced more widely. By doing so, the marketing of millets can be reframed, emphasizing their role not only as a nutritious option but also as a delicious and versatile addition to a balanced daily diet. In essence, the integration of millets into our daily meals represents a strategic and holistic approach to combat the health challenges posed by contemporary dietary patterns. The synergy of traditional wisdom about millets' nutritional virtues with modern culinary innovation creates a pathway for individuals to make informed and health-conscious choices, contributing to a more vibrant and resilient lifestyle.

REFERENCES:

1. Acharya charaka. Sutrasthana, AnnapanavidhiAdhyaya. In: Vaidya JadavajiTrikamji Acharya (ed.) CharakaSamhitha. Delhi: ChaukhambaPrakashan; 2011. p. 154.
2. Bhavamishra. Dhanyavarga. Dr K.C. Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 656-661.
3. Bhavamishra. Dhanyavarga. Dr K.C. Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 656-667.
4. Bhavamishra. Dhanyavarga. Dr K.C.Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 657.
5. Bhavamishra. Dhanyavarga. Dr K.C.Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 657-658.
6. Bhavamishra. Dhanyavarga. Dr K.C.Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 657-659.
7. Bhavamishra. Dhanyavarga. Dr K.C.Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 660.
8. Pooja Hassan G, Unnikrishnan PM, Sankanagoud Patil; An eyeshot on KshudraDhanyain Ayurveda, Journal of Ayurveda and Integrated Medical sciences, July-Aug 2021, Vol. 6, Issue 4.
9. Kimeera Ambati and Sucharitha KV; Millets- Review on Nutritional profiles and Health benefits, International Journal of Recent Scientific Research, July 2019, Vol 10, Issue 7(I) pp 33943-33948.
10. Amir Gull., Romee Jan., Gulzar Ahmad Nayik., Kamlesh Prasad and Pradyuman Kumar, Significance of Finger Millet in Nutrition, Health, and Value-added Products: A Review: Journal of Food Processing & Technology 2014: Vol.3.No.3, 1601-1608.
11. Stanley Joseph and A. Shangmugam. A study on Millets based cultivation and consumption in India. International Journal of Marketing, Financial Services & Management Research, April 2013 Vol.2, No. 4.3662.
12. Sarita, Ekta Singh. The potential of Millets: Nutrients Composition and Health Benefits. Journal of Scientific and Innovative Research, 2016 5(2): 46-50.
13. Bora P, Ragaee S, Marcone M. Characterisation of several types of millets as functional food ingredients. International journal of food sciences and nutrition. Aug 2019 18;70(6):714-24.
14. Shweta Malik, Pearl Millet-Nutritional Value and Medicinal Uses (Food & Nutrition) Dept. of Home Science, B.P. S Women's University Khanpur Kalan (Hry) www.ijariie.com, 2015 Vol-1 Issue-3.
15. ICAR - Indian Institute of Millets Research, 2017 (IIMR).
16. O.S.K. Reddy, Smart Millet, and Human Health, Green Universe Environmental Services Society.2017.
17. Jana Kalinova, nutritionally important components of Proso millets (*panicum miliaceum L.*) food 1(1), 91-100 global science books.
18. Deshpande, S. S., Mohapatra, D., Tripathi. M. K., and Sadvatha R. H. Kodo millet-Nutritional Value and Utilization in Indian Foods, ICAR-Central Institute of Agricultural Engineering, Nabibagh, Journal of Grain Processing and Storage 2015.Vol 2.
19. Saleh, A.S.M., Zhang, Q., Chen, J. and Shen. Q. Millet grains: Nutritional Quality, Processing, and Potential Health Benefits. Comprehensive Reviews in Food Science and Food Safety,2013. 12: 281-295.
20. Himanshu, Manish Chauhan, Sachin K Sonawne, S.S. Arya. Millets: A Nutritional source of the booster. Clinical Journal of Nutrition and Dietetics. 2018 Vol 1, Issue 1.
21. Shireesha Y, Kasetti RB, Nabi SA, Swapna S, Apparao C. Antihyperglycemic and hypolipidemic activities of *Setariaitalica* seeds in STZ diabetic rats. Pathophysiology. 2011;18:159-64.
22. Bhavamishra. Dhanyavarga. Dr K.C.Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 657.
23. Park KO, Ito Y, Nagasawa T, Choi MR and Nishizawa N. Effects of dietary Korean proso-millet protein on plasma adiponectin, HDL cholesterol, insulin levels and gene expression in obese type 2 diabetic mice. Bioscience Biotechnology and Biochemistry, 2008. 72(11):2918-2925.
24. Bhavamishra. Dhanyavarga. Dr K.C.Chunekar (cm.) Dr G.S Pandey (ed.) Bhavaprakasha Nighantu Varanasi: Chowkhamba Bharti Academy; 2002. p. 657-658.

25. Kumari SK and Thayumanavan B. Comparative study of resistant.