

**A CRITICAL REVIEW ON NUTRITION AND HEALTH BENEFITS OF MILLETS IN
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ABSTRACT

Ayurveda is an ancient science of life, that deals with different food and their nutritional values. Which is used by people in their diet and it provides nutrition, maintains health, and prevention from diseases. Millets are described in *Ayurveda* with their high nutritional value, they are small-seeded grass, used by different countries. Millets are useful for maintaining the body's dosha (Bioenergetic forces) i.e., *Vata* (Air elements in the body), *Pitta* (Fire elements in our body), and *Kapha* (water element of the body). They have many health benefits with their inherent qualities. Millets are highly tolerant to drought and other extreme weather conditions and it cultivates with minimum pesticides and fertilizers. Millets have antioxidant properties like phytates, polyphenols, tannins, anthocyanin, phytosterols, etc. Different studies conducted that shows millet is a better choice instead of other grain such as Rice, wheat etc. They found high amount of protein, vitamins, micronutrients, minerals, phytochemicals, and antioxidants are present in millet. This is helpful to prevent from various disease such as constipation, Irritable bowel movement, skin problems, having wound healing properties, and diabetes etc.

KEYWORDS: *Ayurveda*, Millets, Nutrient, antioxidants, Pesticide, Gluten free.**INTRODUCTION**

Millets, are Nutri-cereals, belong to the Poaceae family, considered an essential food in many regions of the world. *Ayurveda*, has described benefits of millets for healthy and diseased individuals in detail under *Dhanya varga* (Different variety of grains).^[1] They have gluten-free nature and other beneficial factors for health perspective, due to these factors they gaining popularity nowadays. It is rich in fibre and water helpful to prevent constipation. It contains 7-12 % of protein, 2-5% of fat, 65-75% carbohydrate and 15-20 % dietary fibre. Millets are highly tolerant to drought^[2] and other extreme weather conditions and it cultivates with minimum pesticides and fertilizers. Millets have antioxidant properties like phytates, polyphenols, tannins, anthocyanin, phytosterols, etc. Millets have properties to counter the effect of pest and diseases which helpful for farmers, they don't need to develops extra burden to save the crop.^[3]

AIM AND OBJECTIVES OF THE STUDY

The main aim and objective of this study are to describe the nutritional value, health benefits, and medicinal properties of millets and promote their use increased in the current era and day-to-day life.

METHODOLOGY

The methodology of the study is mainly based on ancient literature, field survey, Review, and research publications.

MILLETS

Millets have high nutritional properties^[4] and they don't need pesticides for growing. It is completely pest free and, in the storage, process, no fumigants or other methods are required for the millets.

TYPES OF MILLETS^[5]**> MAJOR MILLETS**

- Pearl millet
- Finger millet

> MINOR MILLETS

- Foxtail millet
- Proso millet
- Little millet
- Kodo millet
- Barnyard millet

**AYURVEDA MENTIONED DIFFERENT TYPES
OF MILLET^[6], THEY ARE**

- *Kangu (Priyangu)* - Foxtail millet
- *Shyamaka* - Barnyard millet

- *Koradusha (Kodrava)* - Kodo millet
- *Cheenaka* - Proso millet
- *Nartaki* - Finger millet
- *Gaveduka* - Adlay millet
- *Yavanaala* - Sorghum

DIFFERENT MILLETS AND THEIR NUTRIENTS^[7]

- 1) **Sorghum (Jowar):** It is rich in protein, fibre, riboflavin, folic acid etc.
- 2) **Pearl Millet (Bajra):** It has high protein and lipids content.
- 3) **Finger millet (Ragi):** They have high amount of calcium.
- 4) **Foxtail millet (Kakum or kangu):** This having copper and iron.

- 5) **Kodo Millets (Kodon):** they have high protein, fibre and low-fat contents.
- 6) **Barnyard millet (Sanwa):** It comprises fibre and iron
- 7) **Little millet (Kutki/Shaven):** It includes a high amount of iron.
- 8) **Proso millet (Chenna/ Barri):** It contains a high number of proteins.

Ayurveda described millets under *Dhanya Varga*, and given many synonyms like, *Kudhanya* (Inferior among cereals)^[8], *Kshudra Dhanya* (small sized cereals)^[9], and *Trina Dhanya* (grass derived cereals)^[10] Table-1 shows different nutrient and their values found in millet, which is given below-

Table 1: Nutrient Value of Millets.^[5]

S.NO.	MILLET	PROTEIN (gm)	FIBER (gm)	MINERAL (gm)	IRON (gm)	CALCIUM (gm)
1.	Sorghum	11	6.7	2.7	3.4	13
2.	Finger millet	7.3	3.6	2.7	3.9	344
3.	Foxtail millet	12.3	8	3.3	2.8	31
4.	Kodo millet	8.3	9	2.6	0.5	27
5.	Pearl millet	10.6	1.3	2.3	16.9	38
6.	Barnyard millet	11.2	10.1	4.4	15.2	1

MILLETS WITH THEIR HEALTH BENEFITS

1) **EASY TO DIGEST^{[12][13]}:** Millets have *laghu* in nature or properties so they are easy to digest with low fire or weak digestive elements in the stomach. These properties maintain the less development of the *Ama* (Toxins) in our body as compared to other grains such as rice and wheat etc.

2) **TRIDOSHIC NATURE:** Millets are maintaining all three *doshas* without the disbalance between them. So, promoting balance and well-being in different body types.

3) **COOLING EFFECTS:** Millets have *laghu* and *sheeta* properties as per *Ayurveda* that maintains the body fire and are helpful in the elevation of *pitta dosha*. Hence managing the symptoms which are associated with *pitta* such as excess heat, inflammation and acidity etc.

4) **RICH IN NUTRIENTS:** Millets have high nutritional qualities, rich in protein, fibre, low-fat elements and gluten-free nature. They are associated with a high number of vitamins, especially B-complex, minerals like iron, magnesium and phosphorus and antioxidants such as phytates, polyphenols, tannins, anthocyanin, phytosterols etc. they were helpful in maintaining the overall health, and immune system.

5) **REGULATION OF BLOOD SUGAR:** They have a very low glycaemic index as compared to other grains; this means less release of sugar in the bloodstream. So a great choice for diabetic patients^[14] for maintaining their weight and stabilization of blood sugar levels.^[15]

6) **REGULATE HEART HEALTH:** Millets have cardio-protective nature^[16], they are rich in fibre content and are high in *ruksha* (dry) element which is helpful in managing the cholesterol level for that reason managing the risk of heart diseases.^[17]

7) **HELPFUL IN WEIGHT LOSS:** They have high amounts of water and fibre and different minerals. So that they can helpful to reduce the appetite and supportive nature in weight loss.

8) **BONE HEALTH:** They are rich sources of minerals such as calcium, magnesium, phosphorus etc. which are essential elements for bone health.

9) **SKIN AND HAIR HEALTH:** They contribute to skin and hair health management due to the presence of essential vitamins and mineral sources. Their cooling nature helps to alleviate excess heat and inflammation-like conditions.

10) **GLUTEN-FREE NATURE^[18]:** They are helpful in gluten-sensitive and celiac disease patients due to their gluten-free nature. Overall *Ayurveda* emphasizes the

body constitutions i.e prakriti and imbalance in constitutions i.e development of vikriti or diseases. When we adding millets in our diet, they maintain the nutritional level of body, and create the balance between the dosha and maintains the imbalance of the body.

DISCUSSION

The nutritional values of millets are based on *Guna* (Properties) and *karma* (Action), these indications are-

- 1) **FOXTAIL MILLET (KANGU OR KAKUM):** The main action is to relieve the constipation by *sangrahi* properties i.e absorbs excess amount of water fluid helps to increase the bulk formation. It has *bringana* (nourishing) and *Shoshan* (reduction of moisture content in body) and best for patients with diabetes^[19] and obesity^[20] by providing the nourishment of micro-nutrients.^[21]
- 2) **BARNYARD MILLET (SANWA OR SHYAMAKA):** It can be used for Obesity, Diarrhoea, Irritable bowel syndrome^{[22][23]} by the presence of excess water content and nutrient. It is also helpful in Skin problems and Amavata i.e. Rheumatoid arthritis, Joshi S et al. (2016)^[24], due to low glycemic index main work on diabetes mellitus.
- 3) **KODO MILLETS (KORADUSHA/ KODRAVA):** It is mainly indicated for *Kleda shoshana* (dries up the moisture in body). It also has wound healing properties, decrease the *pitta* (fire element in body) and decrease the poisonous effect in body due to pacifies *pitta*.^[25]
- 4) **FINGER MILLET (NARTAKI OR RAGI):** It can be used for bleeding disorders, skin problems and having *balya* properties i.e., strengthen the body tissues and provides energy. Different studies showed role to overcome the oxidative stress released due to obesity.^[26]
- 5) **SORGHUM (YAVANAALA OR JAWAR):** It is useful in pacifies thirst, and *kapha* and *pitta*. A study shows it has rich source of micronutrient and phytochemicals.^[27]

CONCLUSION

Ayurveda is a science of life that describes the presence of high amount of nutrient in different grains, which is used by many countries. Millets having high nutritional properties and they grows with a smaller number of pesticides. It is completely pest free and in storage process no fumigants are required for the millets. Millets also have quality to counter many diseases such as constipation, irritable bowel syndrome, diabetes, skin problems, obesity and it gives strengthens towards the body tissues.

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