

## FINDING MILLETS: THE LOST SUPERFOOD

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### **Abstract :**

*Millets are the superfoods that can possibly provide a solution to various health conditions and diseases. In the present situation, it can be economically and nutritionally beneficial to encourage the production and consumption of millet on a daily basis. Millets are highly nutritive, rich in antioxidants, and high in dietary fibers which make them exceptionally good in the prevention and cure of various diseases. Even though the millet is cultivated there is still very little social awareness about its nutritional values and health benefits. The promotion of millet as a superfood is essential in the fight against malnutrition which is a major concern these days. Here, the potential of millet as a superfood is reviewed.*

**Keywords:** *Millets, Superfood, Nutrition, Anti-diabetic, Anti-cancer, Malnutrition*

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### **Introduction :**

The cultivation of millet began about 3500 years ago in India and is widely grown in the semiarid tropical regions. Millets are generally cultivated in the drylands where the rainfall is low and soil fertility is poor. Millets have proven to have various health benefits in diseases related to gut and metabolism over other staple crops like rice and wheat. Millets include a variety of grains like jowar (sorghum), ragi (finger millet), bajra (pearl millet), jo (barley), jae (oats), barri (proso millet), kangni (foxtail millet), kuttu (buckwheat millet), rajgira (amarnath millet), kutki (little millet), sanwa (barnyard millet), kodo millet (cow grass millet). Of these jowar, ragi and bajra are the most common. However, nowadays millet has been replaced in Indian meals by grains that are more popular like rice, wheat and pulses.

### **Nutritional values of millets :**

Millets are not only a major source of energy and protein but also have a high nutritional value as compared to the other major cereals like rice wheat and maize. Millets are unique among cereals because of their high calcium, iron, potassium, magnesium, phosphorous, zinc, dietary fibers, polyphenols and protein content (1). Also, being gluten-free makes the millets healthier and super easy to digest (2). Millets constitute of carbohydrates (65%), proteins and essential amino acids (9%), fat (3%) and dietary fiber (2-7%). Millets are 60% higher in crude proteins, 40% richer in lysine and methionine and 30% richer in threonine as compared to other cereals They are also rich sources of vitamins like- vitamin A, vitamin C and vitamin B-complex. They are very good sources of antioxidants and combinations of bioactive substances like resistant starch, oligosaccharides, lipids, flavonoids and phenolic acids. They also act as a

source of hormonally active lignans and phytosterols like phytoestrogens and phytocyanins. All these serve as nutraceutical and functional foods that have abundant benefits in human healthcare (3). These exceptional nutritional values make millets useful in the treatment of various diseases and conditions such as diabetes, obesity, thyroid, cancer gall stones, celiac disease, cardiovascular diseases, malnutrition, etc (4).

**Jowar :**

Jowar (sorghum) is rich in carbohydrates and proteins and serves as an excellent source of antioxidants such as polyphenols, flavonoids and condensed tannins. Since jowar is gluten-free it serves as a healthy diet for patients with celiac disease. Also, it is rich in dietary fibers and thus it acts as a superfood in tackling obesity as well. Jowar has a low glycemic index which makes it the preferable choice for patients with type 2 diabetes mellitus. Also, its high content of magnesium, vitamin E, phenolic compounds and tannins reduce the risk of diabetes as they manage insulin levels and reduce blood glucose spikes. Jowar has also been beneficial in coronary heart disease patients. Sorghum shows the presence of anti-carcinogenic compounds which lower the risk of various types of cancer. The high levels of antioxidants also play important role in degenerative diseases such as Alzheimer's, Parkinson, etc (5–7).

**Bajra :**

Bajra is the most widely grown type of millet in Asia and Africa. It has the highest protein content of about 9-13% and dietary fiber content of about 20.4% and also has a high amount of minerals like phosphorous, zinc, magnesium, etc. Pearl millets turn the content of the stomach alkaline due to its unique composition which help in the treatment of stomach ulcers. The high amount of magnesium in bajra help in the controlling blood pressure and maintain heart health and also help in lessening the severity of respiratory diseases like asthma and migraine. The high phosphorous content help in maintaining good bone health and development. The high fiber content help in maintaining good digestion and aid in weight loss and lessen the risk of gall stones (8,9).

**Ragi :**

Ragi is an excellent source of many nutrients but mainly iron, calcium and phosphorous. The high iron content is beneficial for patients suffering from anaemia. Ragi is known as a superfood as it has beneficial effects in many diseases including diabetes due to its low glycemic index, cardiovascular diseases because of the presence of lecithin and methionine which help in reducing the cholesterol levels, weight loss due to the presence of tryptophan which reduces the appetite. They also help in maintaining bone health and reducing the risk of diseases such as osteoporosis as it is rich in calcium. Ragi plays a major role in the treatment of malnutrition. A type of ragi has also been proven beneficial in increasing the milk production in lactating mothers. However, high consumption of ragi is contra-indicated in conditions like kidney stones (10–13).

**Barri :**

The proso millets or barri are also very rich in dietary fibers, proteins and minerals such as copper and magnesium. It has low glycemic index and thus reduces insulin spikes and improve blood glucose levels. Barri is found to be beneficial in maintain the cholesterol balance in the body by increasing the good cholesterol (HDL) and reducing the bad cholesterol (LDL and VLDL). It is a good facilitator in the development and maintenance of neural health as it is a rich source of lecithin. It also serves as a rich source of various essential amino acids such as methionine, leucine and isoleucine. Proso also has high content of vitamin B majorly vitamin B6 and folic acid (14,15).

**Kangni :**

It is known to be the one of the world's oldest cultivated crops. It is a major source of proteins, vitamins and minerals. It also has high level of fiber content which aid in the weight loss process. It lowers the risk of various degenerative diseases. It is medicinally used as astringent, digestive, emollient and stomachic and for treatment of dyspepsia and poor digestion. A variety of the foxtail millet is used as a medication for cholera and fever whereas the other variety acts as a diuretic and promotes virility. The high levels of magnesium help in the maintenance of heart condition (3,16,17).

**Sanwa :**

Barnyard millet also has superior nutritional values like other millets. The high fiber content of the sanwa ensures slow and steady release of sugars in the blood and help in maintaining the blood sugar levels. It is a reserve of natural oils rich in linoleic acid and tocopherols and thus used as an oil. Its high magnesium contents are very helpful in the reduction of migraine and cardiac attack incidents. Sanwa is relatively rich in iron content as compared to other millets which make it a good food for anaemic patients and patients with lifestyle disorders. Also, sanwa is found to be richer source of polyphenols and carotenoids (17,18).

**Kodo Millet :**

Kodo millet is also a very good aid in weight loss diets due to its rich fiber content. Kodo is a rich source of antioxidants and other bioactive compounds and is helpful to tackle various lifestyle disorders. It is also rich in lecithin which is essential for the proper functioning of the nervous system (19,20).

**Benefits of millets :**

Millets are a sustainable food supply for battling hunger in the face of a changing global climate because they are resistant to climatic stress, pests, and illnesses. Additionally, millets do not require a lot of water or other inputs, making them a sustainable method of combating climate change and creating robust agri-food systems. Millets can be produced in arid, sparsely

fertile, mountainous, tribal, and rain-fed regions. Millets also have shorter cultivation cycles, less expensive cultivation requirements, and are healthy for the land. Due to these characteristics, millets will only require a small initial investment to produce, making them a viable source of revenue for farmers. Millets can fit into many cropping systems specially, in the dryland and drought prone areas. They are resistant to many pests and disease and do not have any allelopathic effect on succeeding crop. Can also be integrate with animal component.

### **Conclusion :**

India has been consuming millets since ages. But their social awareness has decreased exceptionally in the past few years due to the large influence of western food and crops. A huge number of detailed studies on the millets indicate their exceptional nutritional values and health benefits. It is an upsetting condition today that all these millets which were once an essential part of the Indian meals are nowhere to be seen due to the dominance of inferior grains such as rice and wheat. The current lifestyle of humans demands drastic nutritional and dietary changes which can minimize the risk of various diseases that the mankind is facing today. Millets are proven beneficial in the major diseases seen today and their incorporation in diets will not only benefit the healthcare but also provide economic support as these crops do not require much water or soil fertility. Thus, it is essential to increase the social awareness about the millets as superfoods and avoid the health hazards in mankind.

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