

MILLET AS A SUPER FOOD

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Introduction :

Millets offer nutritional security and we should promote millets as they are highly nutritious.

Nutritional securities provided by Millets are:

- In general millets are rich source of fibers, minerals and B-complex vitamins. High fiber content and rich in health promoting phytochemicals like polyphenols, lignans, phytosterols, phytoestrogens, phytocyanins.
- Being non-glutinous, millets are safe for people suffering from gluten allergy and celiac disease.
- Millets are non-acid forming, easy to digest and non-allergenic.
- Millet have potential for protection against age-onset degenerative disease such as metabolic syndrome and Parkinson's diseases.

Millet is a staple food of many communities because it's easy to grow and can be used to make many different kinds of food like bread, beer, cereal, and other dishes. Even today, millet is a staple food around the world. Millet is one of the oldest cultivated grains in the world and has been grown throughout Africa and Southeast Asia for thousands of years.

History of millets :

- Millets have been important food staples in human history, particularly in Asia and Africa. They have been in cultivation in East Asia for the last 10,000 years.
- India has been the native home for little millet and kodo millet and were first domesticated in Indian sub-continent
- Millet is one of the oldest foods known to humans and possibly the first cereal grain used for domestic use. They have been in food use in India since 2500 BC.
- Millet is a great food to eat when you are trying to follow a healthy diet. It contains many vitamins and minerals, while being low in fat and high in fiber. One cup contains 320 calories , nearly every vitamin and mineral your body needs, and seven grams of fiber. This proves that millet can be a part of many different types of diets, whether you are on a gluten-free diet or trying to lose weight.

There are lots of Millet products are easily available in the market like

- Millet Noodles
- Millet Vermicelli
- Multi Millet Granola Cinnamon
- Multi Millets Almond Chocolate Granola

Benefits of these Millet products

- Improve blood sugar control and cholesterol levels
- Helps in weight loss.
- Low in calorie and high in dietary fiber.
- Good source of antioxidants.
- Millets are loaded with high amount of starch and proteins.

Body of Research paper:

Nutrition composition of millets :

- Parameter Protein (g) Fat (g) Minerals (g) Total dietary fiber (g) Insoluble dietary fiber (g) Soluble dietary fiber (g) CHO (g) Finger 7.20 1.90
- Nutrition composition of millet per 100g of edible portion
- **Vitamins and Mineral** composition of millet mg per 100g of edible portion Parameter Finger Proso Foxtail Little Kodo Barnyard Pearl Sorghum Vitamins
- Total carotenoids Thiamine Riboflavin Niacin
- Minerals Calcium Phosphorus Iron Magnesium Sodium Potassium Copper Zinc
- **Essential amino acid** (mg/g N) Parameter Finger Proso Foxtail Little Kodo Barnyard Pearl Sorghum Arginine - Histidine Lysine Tryptophan Phenyl alanine - Tyrosine Methionine Cystine Threonine LeucineValine

Medicinal benefits of millets :

Role of Millets in preventing disease such as

1. Cardiovascular disease
2. Diabetes Mellitus
3. Gastrointestinal Disorders

4. Cancer
5. Obesity

Present status of cardiovascular disease :

- Being a rich source of magnesium helps in reducing blood pressure and risk of heart attack especially in atherosclerosis.
- Potassium present in millets helps in keeping blood pressure low by acting as a vasodilator and help to reduce cardiovascular risk.
- The high fiber present in millets plays a major role in cholesterol lowering eliminating LDL.

Present status of diabetes mellitus :

- Its a chronic metabolic disorder characterized by hyperglycemia with alterations in carbohydrate, protein, and lipid metabolism.
- It considered as the most common endocrine disorder and results in deficient insulin production (type 1) or combined resistance to insulin action and the insulin-secretory response (type 2).
- The efficiency of insulin and glucose receptors in the body is increased by the significant levels of magnesium content present in millets and help in preventing diabetes.

Present status of gastrointestinal diseases

- An immune mediated enteropathic disease called celiac disease, which is usually triggered by the ingestion of gluten in susceptible individuals.
- Fiber content in millets helps in eliminating disorders like constipation, excess gas, bloating and cramping.
- Peptic ulcers are open sores that develop on the inside lining of stomach and upper portion of small intestine.
- Peptic ulcers include:
 - Gastric ulcers that occur on the inside of the stomach
 - Duodenal ulcers that occur on the inside of the upper portion of small intestine.

Present status of cancer :

- **Millet grains** based on literature values are known to be rich in phenolic acids, tannins, and phytate .
- These nutrients reduce the risk for colon and breast cancer in animals.
- Recent research has revealed that fiber as one of the best and easiest ways to prevent the onset of breast cancer in women.
- They can reduce their chances of breast cancer by more than 50% by eating more than

30 gm of fiber every day.

- Finger millet is playing important role in preventing cancer.

Present status of obesity :

- India is home to second highest number of young people who have excess weight.
- By 2025, India will have over 17 million obese children are concerned, according to a study.
- In the world there are nearly 108 million children and more than 600 million adults with BMI exceeding 30, the threshold for obesity.
- China had 15.3 million children with obesity and India 14.4 million.
- Among adults, the U.S. topped the list with 79.4 million people with obesity and china came second with 57.3 million people.

Benefits of different types of millets :

Importance of finger millet :

- Annual plant widely grown as a cereal in the arid areas of Africa and Asia.
- It remains one of the main ingredients of the staple diet in Karnataka.
- Nutritionally, finger millet is good source of nutrients especially of calcium, other minerals and fibre. It is now established that phytates, polyphenols and tannins can health, aging and metabolic diseases.

Medicinal benefits of finger millet :

Finger millet/ Ragi for losing weight :

- Ragi contains an amino acid called Tryptophan, which lowers appetite and helps in keeping weight in control.
- Ragi is digested at a slower rate thus keeps one away from intake of excessive calories. Also, fibers present in ragi give a feeling of fullness thus controls excessive food consumption.

Finger millet/ Ragi for bone health:

- Ragi is rich in Calcium, which helps in strengthening bones. It is an excellent source of natural calcium for growing children and aging people.
- Ragi consumption helps in development of bones in growing children and in maintenance of bone health in adults. Ragi is prevents diseases such as osteoporosis and could reduce risk of fracture.

Finger millet/ Ragi for diabetes :

- Finger millet's phytochemicals help in slowing digestion process. This helps in controlling blood sugar level in condition of diabetes.
- In a study conducted in 2000, and observed that Finger Millet based diet helps diabetic as it contains higher fibre than rice and wheat. In addition, the study found that diet based on whole finger millet has lower glycemic response i.e. lower ability to increase blood sugar level.

Finger millet/ Ragi for lowering blood cholesterol :

- Finger millet contains amino acids Lecithin and Methionine, which help in bringing down cholesterol level by eliminating excess fat from Liver.
- Finger Millet also contains Threonine amino acid, which hinders fat formation in the liver, which brings cholesterol level of the body down.

Finger millet/ Ragi for anaemia:

- Ragi is a very good source of natural Iron. Ragi consumption helps in condition of Anaemia.

Finger millet/ Ragi for relaxation:

- Ragi consumption helps in relaxing body naturally. It is beneficial in conditions of anxiety, depression and insomnia (sleepless nights). Ragi is also useful for migraines.

Finger Millet/ Ragi for Protein/ Amino Acids:

- Ragi is rich in Amino Acids, which are vital in normal functioning of body and are essential for repairing body tissues. Finger Millet contains Tryptophan, Threonine, Valine, Isoleucine and Methionine amino acids.

Finger Millet for other health conditions:

- If consumed regularly, Ragi could help in keeping malnutrition, degenerative diseases and premature aging at bay.
- Green Ragi recommended for conditions of blood pressure, liver disorders, and asthma and heart weakness.
- Green Ragi also recommended to lactating mothers in condition of lack of milk production.

Finger millet for wound healing :

- The perfect wound healing process is interrupted in diseased conditions like diabetes and age associated biochemical phenomenon due to increased level of reactive oxygen species.

- Free oxygen radicals damage the cells in the zone of stasis, which lead to necrosis and conversion of superficial wound into a deeper wound.
- Antioxidants significantly prevent tissue damage and stimulate the wound healing process

Importance of foxtail millet :

- The foxtail millet is also known as Italian millet. It is one of the world's oldest cultivated crops.
- In the northern area of China, it has been widely used as a nourishing gruel or soup for pregnant and nursing women and which is applied to food therapy. It recorded that millet has many nutritious and medical functions.
- Foxtail yellow seeded cultivars, medicinally used as astringent, digestive, emollient and stomachic. This millet contains 12.3% crude protein and 3.3% minerals. It is second most cultivated millet.
- The plant is one of the oldest cultivated crops, being in cultivation from about 5,000 BC in India and China, from where cultivation has spread to many areas of the world.
- It also has a range of local medicinal uses. The plant where mainly grown for home consumption, but also traded internationally on a small scale.

Medicinal benefits of foxtail millet :

- The aqueous extracts of foxtail millets have excellent anti- hyperglycemic activity.
- Also used in the treatment of dyspepsia; poor digestion and food stagnancy in abdomen. White seeds are refrigerant and used in the treatment of cholera and fever while the green seeds are diuretic and strengthening to virility.

Importance of barnyard millet :

- Japanese millet (*Echinochloaesculenta*) is an introduced, annual, warm- season grass that is grown primarily as forage and wild life habitat in the United States.
- Barnyard millet Type-2 diabetes Prevent heart attack Energy to the body Lowers triglycerides Lower blood glucose Lowers serum cholesterol

Importance of proso millet :

- Proso millet is one of the few types of millet not cultivated in africa. In the united states, former soviet union and some south american countries, it is primarily grown for livestock feed.
- As a grain fodder, it is very deficient in lysine and needs complementation. It is third

most cultivated millet. Species used a grass as a crop.

- Protein content in proso millet grains is comparable with that of wheat, but the share of essential amino acids (leucine, isoleucine and methionine) is substantially higher in proso millet.

Medicinal benefits of proso millet :

- Improved plasma levels of adiponectin, high density lipoprotein (hdl) cholesterol in genetically obese type -2 diabetic mice under high fat conditions were observed on feeding proso millet.

Importance of kodo millet :

- kodo millet is an annual grain that is grown in primarily in india, but also in the philippines, indonesia, vietnam, thailand and in west africa where it originates. • the kodo millet, also known as cow grass, rice grass, ditch millet, native paspalum, or indian crown grass originates in tropical africa and it is estimated to have been domesticated in india 3000 years ago.

Medicinal importance of kodo millet :

- Kodo millet strengthening nervous system beneficial for who are suffering signs of cvd, high blood pressure antioxidant property beneficial to postmenopausal women

Importance of little millet :

- It is commonly known as kutki, little millet. In india the people have begun to look beyond the basic nutritional benefits of food to prevent diseases and enhance health.
- Cereals especially small millets provide an opportunity to improve the health of people, reduce health care costs and support economic development in rural, tribal and hilly communities.
- The study demonstrated that little millet is not only a source of nutrients but also rich source of fiber. Hence, there is need to explore the opportunities towards development of diversified foods for household consumption to achieve nutrition security on sustainable basis.

Medicinal importance of little millet :

- Little millet hypoglycemic and hypolipidemic effects stable the blood sugar level potent antioxidants promoting health in diabetes, cvd, gi disease, cataract, cancer

Importance of brown top millet :

- Locally called as pedda-sama, and korne, limited cultivation, largely confined southern india.

- It is used both a human food crop and fodder.
- In usa used as a fodder crop, largely to provide food for game birds.
- It was introduced from india 1915.
- Brown top millet is known by local names which translate to “ illegal wife of little millet” because tendency to grow within field of little millet as a mimic weed.
- Cultivated more in karnataka, andhra pradesh, tamil nadu.

Conclusion:

Millets have been a staple of the Indian diet, especially in rural India, for years and remain prevalent even today. They have been a large contributor to Indians’ balanced diets. The government of India has identified millets as a safe bet to enhance farmers’ income and as a reliable grain to ensure India’s nutritional and food security.

Recently, New Delhi hosted the Global Millets Conference, wherein as many as 100 Indian millet exhibitors and around 100 international buyers from countries around the world participated. The event was aimed at further promoting and developing the global millet market.

According to the International Crop Research Institute for the Semi-Arid Tropics, more than 90 million people depend on millets in their diet. While this is already a vast number of people, proponents of millet-production are of the opinion that a greater number of people should include millets to their diet. Millets are versatile grains that grow in half the time as wheat and use 70% less water than rice, providing a multi-fold benefit.

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availability. Journal of Food

- Processing and Preservation, 30: 269-279. 7. Yeung, H.C. (1985). Handbook of Chinese Herbs and Formulas. Institute of Chinese Medicine. India has signalled the beginning of preparations for the International Year of Millets 2023,
- designated last year by the UNGA following an initiative by New Delhi. The government has been hard-selling millets as nutri-cereals; however, its push is yet to gain widespread traction. Tags: International Year of Millets 2023, Millets, small-grained cereals, sorghum (jowar), pearl millet (bajra), foxtail millet (kangni/ Italian millet), little millet (kutki), kodo millet, finger millet (ragi/ mandua), proso millet (cheena/ common millet), barnyard millet (sawa/ sanwa/ jhangora), United States, China, Australia, India, Argentina, Nigeria, Asia, Africa, Kharif Crop, Agriculture Ministry, powerhouses of nutrition, Nutri Cereals, Story of Millets, United Nations General Assembly, India, National Food Security Act, NFSA, Rice, wheat, coarse grains, foodgrains, Food Corporation of India, PDS, MSP, Minimum Support Price,