

Millets- An Innovative Way of Value-Added Products

¹Satyajit Babasaheb Korade, Rosalind Rajkhowa² and Simpy Das³

¹PhD Scholar, Mahatma Phule Krishi, Vidyapeeth, Rahuri, Maharashtra, India

²M.Sc. Scholar, Assam Agricultural University, Assam

³M.Sc. Scholar, Department of pathology, Assam Agricultural University, Nagaon Assam

ARTICLE ID: 21

Abstract

The oldest edible grain that humans are aware of is called "millet," which is a cereal grain used for cooking. In India, millets have long been a prized crop and provide a mainstay diet for around one-third of the population. Research indicates that millets were probably farmed concurrently throughout Asia and Africa for thousands of years, as they are widely grown in India. The six most significant grains in the world are millets. There are many varieties of millets, but the four main kinds are finger millet (*Eleusine coracana*), proso or white millet (*Panicum miliaceum*), pearl millet (*Pennisetum glaucum*), and foxtail millet (*Setaria italica*). The others include Kodo millet (*Paspalum scrobiculatum*), Guinea millet (*Brachiaria deflexa*), Barnyard millet (*Echinochloa* spp.), and brown top millet (*Urochloa romosa*). The most common types of millet are pearl and hulled varieties, which have a flavor that is somewhat sweet and somewhat nutty. Compared to rice, millets are a richer source of minerals, dietary fiber, fat (4%) and protein (8%). It has high levels of dietary fiber and non-starchy polysaccharides, or calcium. Their main protein components are glutelin and plasmins. In addition to being extremely nutrient-dense, non-glutinous, and non-acidic, millet is also the least allergic food.

Introduction

The modest jowar, bajra, and ragi, formerly dubbed the "poor man's diet," are now fashionable. These are indigenous to India and are regarded as significantly more nutrient-dense than South American quinoa or chia, which are currently trendy among affluent Indians. Most significantly, they cost only 1/4 of what imported grains do. In the semiarid tropics and drylands of Africa and Asia, the state of the planet has rendered them "famine crops." Sorghum (*Sorghum bicolor*), pearl millet (*Pennisetum glaucum*), finger millet (*Eleusine coracana*), foxtail millet (*Setaria italica*), barnyard millet (*Echinochloa frumentacea*), kodo millet (*Paspalum scrobiculatum*), proso millet (*Panicum miliaceum*), and little millet (*Panicum*



miliare) are the important millets cultivated in African and Asian countries. Millets are a group of small-seeded crops and probably the world's earliest food plants domesticated by humans. They are very micronutrient-rich, have the capacity to thrive in the most extreme climates, and have a distinct amino acid profile and dietary fiber content. The potential advantages of using coarse grains and millets as antioxidants, superior fillers, and cholesterol lowerers in the treatment of many ailments, such as esophageal cancer, hormone-dependent malignancies, and Type 2 diabetes mellitus, have been brought to light by their therapeutic capabilities. Nevertheless, their use in food is restricted by the presence of anti-nutrients, polyphenolic compounds, and pigments. Whey, milk solids, and pearl millet can all be used in food items to reduce vitamin deficiencies and protein malnutrition. Even though milk is regarded as "Nature's Perfect Food," it also lacks some essential elements. Nevertheless, creating "Composite Foods" by mixing milk with grains or millet has opened up new possibilities for both health-conscious individuals and food processors. These days, millets—more especially, pearl millet—are processed more quickly, and it's important to get rid of some unfavorable factors that might discourage people from consuming more millets. Thus, pearl millet processing is crucial for developing value-added goods (high-fiber foods with low Glycemic index for diabetics), extending shelf life, and lowering antinutrients.

Value Added Conventional Millet Based Food Products

The following are some of the factors that contribute to an increased risk of "non-communicable disorders": obesity, diabetes mellitus, cardiovascular disease (CVD), overweight, hypertension, osteoporosis, and a long list of other conditions. Other contributing factors include changing lifestyle, urbanization, age, race, specific nutritional status, attested immunity, socioeconomic status, sedentary lifestyle, stress, and changing food patterns. One's nutrition is also indirectly influenced by the more complex communication of modern life. Fast food is generally excellent, but because it only has a limited amount of fresh fruit and vegetables added to it—some of which are simply used as garnish—it is high in saturated fat and low in dietary fiber. With the fast urbanization, the market for semi-processed/cooked and ready-to-eat goods is growing at a pace of 20%. Finding regional staples that are non-cholesterogenic, hypoglycemic, farmer-friendly, climate-resistant, and encourage usage in demand-driven lifestyles is a challenge. Of all the ancient cereal grains, millet naturally ranks first on the list of their naturally occurring nutraceuticals. Due to its function in the continuous

production of the neurotransmitter "serotonin," millet, which has nutraceutical qualities, demonstrates restorative remedy against stress problems and restores sense of wellbeing, calm, and relaxation. In addition to providing phytochemicals, phytoestrogens, antioxidants, and other nutrients that can help prevent NCDs including diabetes, cardiovascular disease, osteoporosis, overweight, obesity, and mental stress, millets are also used to make lifestyle products for people of all ages. In India, millet is only used in certain areas and by a particular group, particularly in Assam. But millet blends nicely with everyday foods without adding any overpowering flavors. They might replace lifestyle junk goods as basics for ready-to-eat (RTE), ready-to-eat (RTU), mixes, and other foods, making them into "non-junk" meals. Mixing millets with local legumes, oilseeds that grew in a day and reached a sprout length of one centimeter might even be served as millet salad. Millets may also be processed into a variety of products, including breakfast flakes, RTE meals, basic convenience foods, nutritious convenience foods, and snacks. The tasty grain millet has a variable consistency depending on how it is cooked. Furthermore, millet is a great grain substitute for those who are gluten intolerant because it doesn't contain gluten. When these tiny, nutrient-rich grains make up about 70% of noodles or pasta, the dish is not only going to taste great but also be good for you. Cake, biscuits, chikki, and bread are a few ready-to-eat (RTE) items that may contain millet flour (finger or foxtail) when combined with other grain flour. Nuts like bhujia, murukku, nimki, and khurma are manufactured from millet. Fast food is often produced with refined flour and oil, but when combined with millet flour, it may provide a tasty and healthier spin on dishes like spaghetti, noodles, momo, pancakes, dosa, idli, and steam cakes, among other things. Whole millets may also be used to make a variety of sweets, such as kheer and pudding. For regular usage, millet dal may also be prepared by combining it with any type of pulse. Similarly, khichri can be prepared using millet grains and enhanced with vegetables, pulses, and spices to enhance its nutritional content. You may make and eat millet flour paratha and chapati with any kind of sauce or chutney when you mix it with wheat flour at a ratio of 700g to 300g.

Major concerns and future perspectives:

Even with its high nutritious content, "flour rancidity," or the development of an off-flavor and a "mousy" odor in pearl millet flour that can occur anywhere from a few hours to four to five days after milling, is one of the major obstacles to the grain's wider commercial



use. It reduces shelf life, degrades flour quality, and creates questions about food safety. Improper storage conditions make the restriction worse for rural families, making it harder for rural women to reach markets and making their struggles more intense. Research on the biological and genetic components of rancidity in pearl millet has been limited thus far; most efforts have been directed at developing physical therapies, such as post-harvest processing, storage, and packaging. Therefore, it's important to determine what could be causing the off tastes in pearl millet flour in order to prolong its shelf life. While it has been demonstrated that a number of processing techniques, such as decortication, heat treatment, and grain blanching, can increase flour's shelf life. To prevent the formation of rancidity, however, it may be more effective to adjust the grain composition with desirable parameters rather than using processing techniques.

Conclusion

For centuries, millets have been an integral part of the traditional meals of millions of Indians. However, commercial crops have surpassed millets in the last few decades due to better access to the inputs those crops require, a decline in demand brought on by shifting dietary preferences, and the more affordable availability of cereals like wheat and rice through the Public Distribution System (PDS). However, millets are high in fiber, which lowers the risk of diabetes and cholesterol, and they are easy to digest. They are also rich in micronutrients including iron, magnesium, phosphorus, and potassium. It suggests that if included in the diet, millet has the potential to aid in the fight against several illnesses and malnutrition. In this regard, an India-sponsored resolution designating 2023 as the worldwide year of millets was accepted by the UN General Assembly. The designation of 2023 as the "International Year of Millets" would undoubtedly bolster these endeavors and establish millets as a well-liked and healthful dietary option.

References

- FAO (1991) Food and Agriculture Organization. Amino acid scoring pattern. In: Protein quality evaluation. FAO/WHO Food and Nutrition Paper, Italy. pp 12–24.
- FAO (1995) Food and Agriculture Organization. Sorghum and millets in human nutrition. FAO, Rome, Italy
- Jaybhave RV, Pardeshi IL, Vengaiyah PC, Srivastav PP (2014) Processing and technology for millet-based food products: a review. *J Ready Eat Food* 2:32–48.



Mallesi NG (2014) post-harvest processing of millets for value addition. <http://isites.harvard.edu/fs/docs/icb.topic868074>. Cited 21 Jul 2014.

Sehgal A, Kwatra A (2003) Processing and utilization of pearl millet for nutrition security. Proceeding of national seminar on Recent trend in millet processing and utilization held at CCS HAU, Hissar, India. pp 1–6.

Verma V, Patel S (2013) Value added products from nutri-cereals: finger millet (*Eleusine coracana*). Emir J Food Agric 25:169–176.

