



Nutritional importance of millets

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The rural and tribal population in developing countries depends heavily on cereals and millets for their protein requirements. Millet is a name applied to a number of cereals characterized by their small seed. These are known as “pettit mais” or tropical crops. India is the largest producer of many kinds of millets which are often referred to as coarse cereals. These millets are categorized into major millets (*Jowar* and *Bajra*) and minor / small millets which includes several food crops namely finger millet (ragi, *Eleusine coracana*), little millet (kutki, *Panicum milliare*), Foxtail millet (kangni, *Setaria italica*) Barnyard millet (sanwan, *Echinochloa frumentacea*) kodo (*Paspalum scrobiculatum* L.) and proso millet (*Panicum miliaceum* L.). During the very early ages millets are thought to have been one of the staple foods in Central and Eastern Asia (mainly in China, India and Russia), Europe and some parts of Africa.

From world food production point of view small millets are not very important because they contribute less than 1 per cent of the total production in the world. But they are significant as food crops in their respective agro-ecosystem. They are mostly grown in marginal areas or under agricultural conditions, where major cereals fail to give sustainable yield. In India the states of Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu, part of Rajasthan, Madhya Pradesh, Bihar and Orissa produce millets. The total production of small millets in India was 3380 thousand tonnes and in M.P. was 76 thousand tonnes (www.mp.nic.in). The major districts / divisions producing small millets in M.P. are Jabalpur, Mandla, Dindori, Rewa and Sagar etc. Foxtail millet or Italian millet (*Setaria italica* L.) also known as Kakun, Kangni, Tenai and Navane, is generally grown as a rainfed crop in India. The origin of foxtail is last to antiquity, but it

probably reached India at least some centuries before the Christian era and spread across South East Asia into Indonesia, Islands.

Barnyard millet or sanwan millet (*Echinochloa frumentacea* L.) is a short plant, frequently grown in the oriental countries and India. The grain is eaten just like rice by the poor classes, but sometimes it is brewed for beer. It is also used as feed for cage birds. The height of barnyard millet varies between 50 and 100 cm, the inflorescence consists of a panicle frequently tinged with purples bearing upto 15 lateral branches. It is also known as banti, sanwan and shama.

Little millet (*Panicum miliare*) is commonly known in India kutki, samai and mutaki plants in little millet vary from 60 to 170 cm in height. The inflorescence is 14 to 15 cm long erect, open and highly branched. These branches sometimes drop at maturity.

Nutritional importance of millets:

Foxtail millet, little millet and barnyard millet possess husk and bran similar to rough rice or paddy. The bran from most of the coarse cereals contains colored seed coat and also some anti-nutritional factors. The nutrient composition of these grains is comparable to rice or wheat.

Some of them are even nutritionally superior to other cereals. Carbohydrates are the major seed constituent followed by protein and lipids in the millets. Starch form the predominant carbohydrate although, non-starchy polysaccharides account for about 20 per cent of the total carbohydrates in most of these cereals which lysine happens to be the most limiting amino acid of these minor millets.

However, realizing the nutrient composition of these grains they are now referred as nutri-cereals. Since their protein has well balanced amino-acid profile and a good source of methionine and cysteine. These essential amino acids are of special benefit to people who depend on plant



food for protein requirement. The millet grains contain a high proportion of carbohydrates, which is in the form of non – starchy polysaccharides and dietary fibres which helps in prevention of constipation and lowering of cholesterol. Slow release of glucose to the blood stream during digestion of millets is beneficial to diabetic patients Millet is generally superior to wheat, corn and rice in terms of protein content. It is also a good source of the minerals phosphorus and magnesium, as well as B vitamins such as thiamine, riboflavin, niacin and B6. Millets are also rich in health promoting phyto-chemicals like polyphenols, lignans, phytosterols, phyto-oestrogens, phytocyanins. These function as antioxidants, immune modulators, detoxifying agents etc. and hence, protect against age-related degenerative diseases like cardiovascular diseases (CVD), diabetes, cancer etc. Some of the known nutrients vitamins, minerals, essential fatty acids also have benefits in terms of prevention of degenerative diseases besides their known functions of preventing nutritional deficiency

diseases. Being non-glutinous, millets are safe for people suffering from gluten allergy and celiac disease. They are non-acid forming, easy to digest and non-allergenic Millets have potential for protection against age-onset degenerative diseases. Consumption of millets reduces risk of heart disease, protects from diabetes, improves digestive system, lowers the risk of cancer, detoxifies the body, increases immunity in respiratory health, increases energy levels and improves muscular and neural systems and are protective against several degenerative diseases such as metabolic syndrome and Parkinson's disease. The important nutrients present in millets include resistant starch, oligosaccharides, lipids, antioxidants such as phenolic acids, avenanthramides, flavonoids, lignans and phytosterols which are believed to be responsible for many health benefits. Now-a-days extension workers will create awareness and ensure that the highly nutritious millets consumption is popularized .

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