



Traditional and Nutritional Health benefits of Nutri-cereals (Millets)

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Abstract

Introduction: Ayurveda is science of management of disease via medicinal *herbal* and mineral drugs along with prevention of disease through adequate Diet. In various *Samhita Anna varga* is classified into many subdivisions in which *Dhanya varga* first and foremost important *varga* that is described, as *prana* (life) is flourished through '*Anna*'. *Dhanya varga* is further divided in to *Suka dhanya*, *Shali*, *Simbi dhanya*, *Brihi dhanya*, *Kudhanya (Trin dhanya)* in various classical textual. *Kudhanya varga* is compared with Nutri-cereals (Millets) Aim: The aim of the study is to detail the nutritive values *and various properties of Kudhanya varga (Millets)* to prevent disease occurrence and many life style disorders. *Trin dhanya* description has been collected from *Samhita and Nighantu* along with their synonyms, *properties*, and *action* in various disorders. **Discussion:** In this article nutritional and health profile of Sorghum, Pearl millet, Finger millet, Foxtail millet, Common millet, Little millet, Barnyard millet and Kodo millet has been highlighted. Benefits of millets as nutrition are easy to grow, low cultivation efforts, disease fighting capability and easily digestible. *Kudhanya Dravya* are small seeded *Dhanya* which are rich source of various

minerals iron, magnesium, phosphorus, iodine, sodium, potassium etc which help to prevent from various deficiencies and also several life style disorders. **Conclusion:** Various countries are fighting with nutritional deficiency or heavy nutritional dietary habits. So it is high need to convert our nutritional value of *Trin dhanya* (Millets) as supplements and disease combating agents.

Key words: *Trin dhanya*, Nutritional value, *Ayurveda*, *Diet*

Introduction

Three 'Tryaupstambha'--- *Aahar*, *Nidra*, *Bhramcharya* are mentioned in *Ayurveda*. Out of these *Aahar* is main pillar that maintain the 'Swasthya'¹. *Poshan* is harbouring or nourishing the body via proper *Aahar*. *Dhanya varga* is the main group of *Aahar* necessary for *Poshan*². *Aacharya Charaka* mentioned the general properties of *Kshudra dhanya* are *Kashaya*, *Madhura rasa*, *sheet virya*, *laghu*, *ruksha guna*, *katu Vipaka* and actions such as *kled shoskar*, *grahi*, *lekhnnya*, *vatakarak*, *pitta-kapha-rakta vikar har*³ *Bhavparakash* divided all *Dhanya varga* into five categories *Shali dhanya*, *Brihi dhanya*, *Suka dhanya*, *Simbi dhanya*, *Kshudra dhanya*. *Bhavprakash Nighantu* mentioned synonyms of *Kshudra dhanya* as *Kudhanya varga* or *Trin dhanya*⁴.

Millets are folk custom small grains grown and consumed in Indian from more than 5000 years. Millets are small grained, annual, warm weather cereals belonging to Poaceae family. They rain-fed, hardy grains which have low requirement of water and fertility when compared to other cereals. They have highly tolerance power to drought and other extreme weather conditions. Major Millets are Sorghum (*Jowar*), Pearl Millet (*Bajra*) and Finger Millet (*Ragi*). Minor Millets are Foxtail (*Kanngani/Kakun*), Proso Millet (*Cheena*), Kodo millet (*Kordusha*), Barnyard millet (*Sawa/Sanwa*), Little Millets (*kutki*), Brown top millet. and two pseudo millets are Amaranth (*Rajgira/Chaulai*), Buck- wheat (*Kuttu*). On the basis of grain size Millets are divided as above. Amaranth (*Rajgira/Chaulai*), Buck- wheat (*Kuttu*) are called Pseudo millets as these are not part of the Poaceae family, to which 'true' grains belong, however their dietary nutritional value are similar to 'true' grains⁵. Ministry of Agriculture and Farmers Welfare has acknowledged the importance of Millets and termed Millets as "Nutri-Cereals" from commercial, health and nutritional point of view. .2023 is declared as "International Year of Millets" by Food and Agricultural Organization (FAO). All these reflect the importance of millets. In *Bhaishjya Ratnavali Kangu*, *Kordusha*, *Shyamaka*, *Venu*

yava are *Pathya kudhanya* in *Prameha*⁶, *Venu yava*, *kordusha*, *Shyamaka*, *Kangu* are *Pathya* in *Medo roga*(*Sthaulya*)⁷ and *Shyamaka* is *Pathya* for *Vidradhi* (*abcess*)⁸. Similarly in *Sushruta Samhita* some of *Pathya Kudhanya* mentioned in *Kustha* (*Skin disorder*), *Prameha* (*Diabetes*) and *Sthaulya* (*Obesity*) are *kordusha*, *Shyamaka*, *Udalaka*⁹.

Material and methods

A comprehensive classical literary search of *Ayurvedic Samhita and Nighantu* has been made to review for medical efficacy and therapeutic uses. The nutritional value of *Kudhanya* are also searched and prepared from PUBMED and Google Scholar.

Classical Description of Millets (*Kudhanya Varga*)^{10,11,12}

Kudhanya	Synonyms	Rasadi guna	Dosha Prabhavv(eff ect on dosha)	Karmav(action)
Yava Nala (<i>Sorghum vulgare</i>)	<i>Panera, Jowara, Dev dhanya, Anil, Jurnavika</i>	<i>Ruksha, Laghu, Madhura, Kashaya, Sheet</i>	<i>Rakta-Pitta-Kapha har</i>	<i>Vrshya (aphrodisiac), Kled kar(fibrous),rakta vikar har(effective in blood disorders)</i>
Vajra anna (Bajra) ^{13,14} <i>Pennisetum typhoideum</i> Rich. Pearl Millet	<i>Nali, Nalika, Nilakana, Nilasasya, Agradhanya, Sajjaka, Varjari, Varharika, Vajranna, Barjaree</i>	<i>Madhura, ruksha laghu, ushna virya, katu vipaka</i>	<i>Shleshmahara (Pacifies Kapha dosha).</i>	<i>Rakta-pitta har, Vishhar(anti-posionous), Shula har (pain reliver), Arshoghna (effective in piles)</i>
Ragi ¹⁵ (<i>Trin dhanya vishesh</i> — Finger millet	<i>Lanchan, Bahudal Kanis, Guch kanis</i>	<i>Tikta, Madhura, Kashya(astringe nt), Sheet</i>	<i>Pitta samaka</i>	<i>Balya (strengthen), Rakta-Pitta har</i>
Kodrava (kodo) <i>Paspallum seraboiculatu m Linn.</i> Kodo millets	<i>Kordush, Kuchal, Madanagraj</i>	<i>Ruksha, Guru Madhura, Tikta(bitter), Sheet</i>	<i>Kapha-Pitta har Vata kar</i>	<i>Pathya, Madkarak(Grahi(constipative), Shoshan (drying)</i> <i>Van kodo—Udal Ushna, Grahi, extremely Vatakaraka (aggravate vata Madhumeha har</i>

				(anti-diabetic)
Shyamaka (Sanwa) <i>Panicum frumentaceum/ Echinochloa esculenta</i> Japanese Barnyard millet	<i>Shyam, Tribeej, Avipriya, Sukumar, Rajdhanya, Trin Beejuttam</i>	<i>Ruksha, Madhura, Kashya, Singdha, Laghu, Sheet</i>	<i>Vata kar Kapha- Pitta har</i>	<i>Sangrahi (consipative), Vishhar, ,Shoshaka (cause dryness/scrapper)</i>
Kanguni (<i>Papaver dubium/ Setaria italica Beauv</i>) Foxtail millet	<i>Kangani, Chinak, Pitta tandul, Vatal, Sukumar Priyangu</i>	<i>Madhura, Kashya, Sheet, Ruksha, Guru</i>	<i>Vatakar, Pitta har Kapha har</i>	<i>Ruchya(delicious), Dahahar(prevent burning sensation), Bhagna Sandhan kar (Highly efficient in repairing fractured bones.)</i> <i>Brighna (nourishing), very effective for horses.</i> <i>Out of four Kanguni (black, red, white, yellow) yellow Kanguni is superior</i>
Cheenak/barri Vari/ Cheenaka <i>Panicum millaceum Linn.</i> Indian Millet Proso millet	<i>Kakakangu, sushlakshna, shlakshna, Kangu bheda</i>	<i>Madhura, Kashya (astringent) Sheet, Ruksha, Guru(heavy)</i>	<i>Vatakar, Pitta har Kapha har</i>	<i>Simila Property like Kanguni (Fox tail Millet)</i>
Varak (type of cheena) <i>Panicum miliari</i>	<i>Varak, Sthul, Kanguk, Ruksha, Sthul Prikanguk</i>	<i>Madhura, Kashya, Ruksha</i>	<i>Vata-pitta kar</i>	<i>Same as Cheena</i>

Choti Kanguni¹⁶ <i>Panicum ramosum</i> Brown top Millet	<i>Hari Kanguni</i>	-	-	-
Kutiki/shavan kuri¹⁷ <i>Panicum miliare</i> Little millet	<i>Trin dhnaya vishesh</i>	<i>Madhura(sweet)</i>	----	<i>Balya (strengthen), Pakva—beneficial for horses</i>
Ramdana/Rajgir¹⁸ <i>Amaranthus caudatus</i> Linn Amaranth	<i>Chaulai beej</i>	<i>Laghu, ruksha, sheet</i>	<i>Rakta shodhka(Blood purifier)</i>	<i>Laxative, improve appetite, beneficial in piles, burning micturition</i>
Udalaka (kuttu) <i>Fagopyrum esculentum</i> Buckwheat¹⁹	<i>Kakeshparniti, Udal, shukbhava, sukpriya, puja suka²⁰</i>	<i>Laghu, ruksha, madhura, kashaya, Ushna Virya</i>	<i>Kapha har</i>	<i>Badhmutra vida (decreased flow of urine and stool)</i>

Distribution of Millets in India ²¹

Pearl millet (*Bajra*) and Sorghum (*Jowara*) are primary crop and allied crops respectively in the desert regions of Rajasthan, in the eastern parts of Rajasthan and Gujarat. *Sorghum* is also sown as major crop in the Telangana, Andhra Pradesh, Maharashtra, and parts of Central India, while it is considered as fodder crop in some of the Southern regions. Likewise, Finger millet is a primary crop in Tamil Nadu and Gujarat, while the same is a minor crop in Telangana. Further, the small millets like Finger Millet, Foxtail Millet, Barnyard Millet, Little Millet and Proso Millet are found in most of the southern and central states in India especially wherever annual rainfall is below 350 mm, perhaps where no other cereal crop can grow under such moisture stress.

Vernacular Names of *Kudhanya*²² (Major and Minor Millets)

English	Sorghum	Pearl Millet	Finger millet	Little millet	Kodommillet	Foxtail/ Italian millet	Barnyardmillet	Proso millet
Hindi	Jowar	Bajra	Mandua	Kutki	Kodon	Kangni, Kakum	Sanwa, Jhango n	Barre
Sanskrit	-	-	Nandimukhi, Madhuli	-	Kodara	Kanguni	Shyama	Chiná
Kannada	Jola	Sajjai	Ragi	Same	Harka	Navane	Oodalu	Baragu
Tamil	Cholam	Kambo o	Kelvaragu	Samai	Varagu	Tenai	Kuthiravaa li	Panivarag u
Telugu	Jonna	Sajjalu	Ragulu	Samalu	Arikel u, Arika	Korra, Korralu	Udalu, Kodisam a	Varigul u, Varagal u
Malayalam	Cholam	Kambo o	Moothari	Chama	Varagu	Thina	-	Panivarag u
Marathi	Jcwari	Bajri	Nachni	Sava	Kodra	Kang, Rala	Shamul	Vari
Gujarati	Juar	Bajri	Nagli, Bavto	Gajro, Kuri	Kodra	Kang	Sama	Cheno
Bengali	Juar	Bajra	Mandua	Kangani	Kodo	Kaon	Shamula	Cheena
Punjab i	-	Bajra	Mandhuka, Mandhal	Swank	Kodra	Kangni	Swank	Cheena

Nutritional and health benefits of Major Millets

Sorghum vulgare (Yava nala/Jowara)

Sorghum has potential antioxidant capacity which can act against reactive oxidative species, thereby reducing cellular damage in various diseases such as Alzheimer's disease, myocardial infarction, atherosclerosis, Parkinson disease, auto-immune diseases²³. Consumption of sorghum has positive health impacts on cancer, has been proven in vivo and in vitro studies. The polyphenols and tannins present in sorghum have anti-mutagenic and anti-carcinogenic properties²⁴. and can act against human melanoma cells, as well as positive

melanogenic activity²⁵. The authors studied 21 communities over a period of 6 years and found consumption of sorghum showed lower mortality from oesophageal cancer than wheat and corn. It can be concluded that anti-carcinogenic compounds present in sorghum lowered risk of oesophageal cancer²⁶. Empirical evidences suggest that regular consumption of whole grains reduces the risk of CVD^{27,28,29}. Researchers analysed the diet records of 40-75 years old subjects for a period of 14 years and detect intake of millets grains 40g/ per day reduces the risk of Chronic heart disease by 20%³⁰. Sorghum is rich in dietary fibre and low glycemic index, which could help in prevention and control of Diabetes mellitus. The fibre, magnesium, vitamin –E, phenolic compounds and tannins present in foods reduces the risk of diabetes as they slower the sudden increase of blood glucose and insulin levels³¹. Blood glucose level of non- obese patients with non-insulin-dependent diabetes mellitus (NIDDM), who consumed sorghum bran papadi, showed considerable reduction³². Celiac disease is caused by negative effect of gluten to immune system and it may lead to severe abdominal issues. Sorghum can be a healthy diet or those who are ailing from celiac disease as it is gluten free³³. Empirical evidences suggest that intake of high dietary fibre decreases the incidence of obesity³⁴. Foods rich in dietary fibre improve the large bowel function and slows the digestion and absorption process, thereby reducing the risk of chronic diseases (1994). It aids to the hunger satisfaction, increases satiety and thereby reducing the risk of development of obesity³⁵.

Finger Millet (Ragi)

Nutritional and Health benefits of Finger Millet

It contains low level of protein but sulphur rich amino acid and known for antioxidant activity. *Ragi* is a natural means of iron supply. *Ragi* consumption helps in condition of Anaemia. Green *Ragi* is recommended for conditions of blood pressure, liver disorders, *asthma* and heart weakness. Green *Ragi* is also recommended to lactating mothers in condition of lack of milk production³⁶. It is beneficial in conditions of anxiety, depression, and insomnia (sleepless nights)³⁷. *Ragi* helps in controlling blood sugar level in condition of diabetes Also, the study found that diet base from whole finger millet has lower glycaemic response *i.e.* lower ability to increase blood sugar level³⁸. This is due to presence of factors in *ragi* flour which lower digestibility and absorption of starch. *Ragi* is rich in Amino Acids which are essential for normal functioning of body and repair the wear tear in body. Finger Millet is a source of many amino acids like Tryptophan, Isoleucine, Valine and Methionine amino acids. Tryptophan lowers appetite and keep the obesity at bay. Finger millet contains amino acids

Lecithin and Methionine which help in bringing down cholesterol level by eliminating excess fat from Liver. Threonine amino acid present in it decrease fat formation in the liver, and lowers total cholesterol level in body. Isoleucine helps in muscle repair, blood formation contributes to bone formation and improves skin health³⁹. Finger Millet is the richest source of calcium, also highest mineral content. *Ragi* keeps diseases such as osteoporosis at bay and could reduce risk of fracture due to calcium content⁴⁰. However, its high nutritional value it could increase oxalic acid in the body. Therefore, it is not recommended to patients having kidney stones (Urinary Calculi). *Ragi* preparations food are *Ragi Roti*, *Ragi Dosa*, *Ragi Porridge*, *Ragi Upma*, *Ragi Cakes*, *Ragi Biscuits* are few popular dishes of *Ragi*⁴¹.

Pearl Millet (Bajra)

Nutritional and Health benefits of Pearl Millets

Pearl Millet has the highest protein content source and many essential many amino acids. Magnesium, Phosphorus, Zinc are the main minerals found in *Ragi*. The lignin and phytonutrients in millet act as strong antioxidants thus preventing heart related diseases⁴². High amounts of magnesium present in pearl millet have been shown to control blood pressure and reduce heart stress. Phosphorus is very essential for bone growth and development as well as for development of ATP⁴³. Pearl millet turns the stomach alkaline and prevents occurrence of stomach ulcers. Pearl insoluble fibre content causes reduction the excessive bile and thus in turn gall stone formation too. Pearl millet with hold hunger for a long period of time with feeling of fullness and thus helps in lowering the overall intake of food⁴⁴. Pearl Millets are the grains which do not have any gluten so suitable for people with celiac disease. Pearl millet contains a type of phytic acid which increase cholesterol metabolism and balance the levels of cholesterol in the body⁴⁵.

Nutritional and Health Importance of Small/Minor Millets

Minor millets are rich source of copper and iron and great health benefits and due to high levels of insoluble dietary fibre, phytates, phytochemicals catechins, flavonoids etc. Unlike rice, they releases glucose steadily without affecting the metabolism of the body. The incidence of diabetes is less among the population which consumes small millet diet⁴⁶.

Fox tail Millet or Italian millet (*Koda*)

This millet contains 12.3% crude protein and 3.3% minerals⁴⁷. It contains a high amount of lecithin necessary for cell membrane and is a good for strengthening the nervous system. It has high protein content, low fat and very high fibre content.

Vitamins B is present in Kodo and especially niacin, pyridoxin and folic acid and also source of minerals such as calcium, iron, potassium, magnesium and zinc. The aqueous extracts of foxtail millets have excellent anti-hyperglycaemic activity⁴⁸⁻⁴⁹.

Barnyard millet or Japanese barnyard millet (*Shayamaka*)

Commonly known as *ooda*, *oodalu*, *sawan*, *sanwa* and *sanwank*. Millet oil is rich in linoleic acid and tocopherols. Nutritionally, it is a good source of protein, magnesium and phosphorus. The carbohydrate content of barnyard millet is low and slowly digestible, which makes the barnyard millet highly recommendable for people engaged in sedentary activities⁵⁰. It also shows a high degree of retrogradation of amylase, which facilitates the formation of higher amounts of resistant starches. Hence it can be potentially recommended for the patients with cardiovascular disease and diabetes mellitus. Magnesium has the ability to counter act effects of migraine and heart attacks, while, phosphorus is an essential component of adenosine triphosphate (ATP)⁵¹.

Proso millet (*Cheenak*)

Proso Millet is the best alternative crop for diversifying and intensifying winter wheat-based dry land production systems. Proso Millet can generate 356 Kcal per 100 gm. The protein content is similar to that of wheat, but it contains no gluten. The protein content was found to be (11.6% of dry matter) and was significantly rich in essential amino acids (leucine, isoleucine, and methionine)⁵². It is rich in vitamins and minerals such as copper and magnesium. Proso millet is rich source vitamin-B6 and folic acid. Proso millet also improve glycaemic responses and plasma levels⁵³. In addition Proso has protective effects against D-galactosamine-induced liver injury in rats and reflect that proso millet protein could be a potential therapeutic intervention in type-2 diabetes⁵⁴.

Brown Top Millet

Commonly known as *Panicum ramosum*, one of the type of seeds of Priyangu (Kanguni). The millets are small-seeded cereals with excellent nutritional attributes that are even superior to staple cereals i.e. wheat and rice⁵⁵. Millets are non-glutinous, non-acid forming and easy to digest, loaded with high phytochemicals and antioxidant levels. Browntop millet is one of the nutritious minor millets which is called “Korale” in Kannada and “Karlakki” in Mandya region and “Andukorralu” in Telangana and AP, Karnataka. The regular intake of

this nutrition grain lessens the risk for cardiovascular disease, obesity, and digestive problems⁵⁶.

Little millet (*Kutki/Shvan/Kuri*)

It is smaller than other millets. It is high in iron content. It has high antioxidant activities. It contains about 38% of dietary fiber⁵⁷.

Pseudo Millets

Amaranth (*Rajgira*) (*Chaulai beej*)

Amaranthus caudatus Linn is commonly known as *Ramdana* or *Rajgira* belongs to Amaranthaceae family. Preliminary evidence suggests that Amaranth seed can reduce total cholesterol and LDL. Antimicrobial peptides have been isolated from seeds. It is also considered as Blood-purifier, diuretic; used in piles⁵⁸.

Udalaka (*Kuttu*)

Fagopyrum esculentum Moench. (Buck wheat) is commonly known as *Kuttu* and is very common millet that is used especially during Navratri, a Hindu festival that marks fasting for eight to nine days by devotees. It is native to Central Asia; now grown as minor grain-crop in hilly regions of North India and the Nilgiris. The seed are commonly used in colic, choleraic diarrhoea and abdominal obstructions. Buckwheat is a good source of lysine and other amino acids. The flour is reported to repress exogenous hypercholesterolemia and promotes accumulation of triglyceride in the liver of rats. Seed oil exhibits antimicrobial activity against *Bacillus anthracis*, *E. coli* and *Salmonella paratyphi*⁵⁹.

Proximate Composition and Dietary Fibre in Millets (per 100 g)

Millets and Cereals	Moisture (g)	Protein (g)	Ash (g)	Total Fat (g)	Dietary Fibre (g)			Carbohydrates (g)	Energy (KJ)
					Total	Insoluble	Soluble		
Bajra (<i>Pennisetum typhoideum</i>)	08.97 ± 0.60	10.96 ± 0.26	1.37 ± 0.17	5.43 ± 0.64	11.49 ± 0.62	9.14 ± 0.58	2.34 ± 0.42	61.78 ± 0.85	1456 ± 18
Sorghum (<i>Sorghum vulgare</i>)	09.01 ± 0.77	09.97 ± 0.43	1.39 ± 0.34	1.73 ± 0.31	10.22 ± 0.49	8.49 ± 0.40	1.73 ± 0.40	67.68 ± 1.03	1398 ± 13
Ragi (<i>Eleusine coracana</i>)	10.89 ± 0.61	07.16 ± 0.63	2.04 ± 0.34	1.92 ± 0.14	11.18 ± 1.14	9.51 ± 0.65	1.67 ± 0.55	66.82 ± 0.73	1342 ± 10

Little Millet (<i>Panicum miliare</i>)		14.23 ± 0.45	08.92 ± 1.09	1.72 ± 0.27	2.55 ± 0.13	06.39 ± 0.60	5.45 ± 0.48	2.27 ± 0.52	65.55 ± 1.29	1449 ± 19
Kodo Millet		14.23 ± 0.45	08.92 ± 1.09	1.72 ± 0.27	2.55 ± 0.13	06.39 ± 0.60	4.29 ± 0.82	2.11 ± 0.34	66.19 ± 1.19	1388 ± 10
Foxtail Millet *		-	12.30	-	4.30	-	-	-	60.09	331
Barnyard Millet *		-	06.20	-	2.20	-	-	-	65.55	307
Proso Millet *		-	12.50	-	1.10	-	-	-	70.04	341
Wheat	Whole	10.58 ± 1.11	10.59 ± 0.60	1.42 ± 0.19	1.47 ± 0.05	11.23 ± 0.77	9.63 ± 0.19	1.60 ± 0.075	64.72 ± 1.74	1347 ± 23
	Refined flour	11.34 ± 0.93	10.36 ± 0.29	0.51 ± 0.07	0.76 ± 0.07	02.76 ± 0.29	2.14 ± 0.30	0.62 ± 0.14	74.27 ± 0.92	1472 ± 16
	Ati ta	11.10 ± 0.35	10.57 ± 0.37	1.28 ± 0.19	1.53 ± 0.12	11.36 ± 0.29	9.73 ± 0.47	1.63 ± 0.64	64.17 ± 0.32	1340 ± 07
	Semolina	08.94 ± 0.68	11.38 ± 0.37	0.80 ± 0.17	0.74 ± 0.10	09.72 ± 0.74	8.16 ± 0.58	1.55 ± 0.18	68.43 ± 0.99	1396 ± 18
Rice	Raw Brown	09.33 ± 0.39	09.16 ± 0.75	1.04 ± 0.18	1.24 ± 0.08	04.43 ± 0.54	3.60 ± 0.55	0.82 ± 0.15	74.80 ± 0.85	1480 ± 10
	Raw milled	09.93 ± 0.75	07.94 ± 0.58	0.56 ± 0.08	0.52 ± 0.05	02.81 ± 0.42	1.99 ± 0.39	0.82 ± 0.22	78.24 ± 0.68	1491 ± 15
	Parboiled	10.09 ± 0.43	07.89 ± 0.63	0.65 ± 0.8	0.55 ± 0.08	03.74 ± 0.36	2.98 ± 0.35	0.76 ± 0.09	77.16 ± 0.76	1471 ± 8
Amaranth Seed	Black	09.89	14.59	02.78	5.74	07.02	5.76	1.26	59.98	1490
	Pale Brown	09.20 ± 0.40	13.27 ± 0.34	3.05 ± 0.30	5.56 ± 0.3	07.47 ± 0.09	5.80 ± 0.17	1.67 ± 0.21	61.46 ± 0.60	1489 ± 10
Maize	Dr y	09.26 ± 0.55	08.80 ± 0.49	1.17 ± 0.16	3.77 ± 0.48	12.24 ± 0.93	11.29 ± 0.85	0.94 ± 0.18	64.77 ± 1.58	1398 ± 25

Indian Food Composition Tables, NIN - 2017; *Nutritive value of Indian Foods, NIN - 2007.

Discussion

Millets which are mentioned in *Ayurveda Textuals* are discussed under *Kudhanya varga* having many correlating properties and action (*laghu, kashaya, lekhnnya*), parallel to researches supporting their action in various diseases and serving as *pathya* in them. Millets are good source of vitamins and rich in micronutrients minerals such as iron, zinc, folic acid, calcium etc. Most of millets can be grown on low fertility soils and many of them are also grown with low fertilizer quantity. They are mostly pest free crops and grow better in extreme condition. Millets are gluten free, highly nutritious, and rich in dietary fibre. They are low Glycaemic Index (GI), so do not cause huge spike in blood sugar.

Conclusion

Millets should be integral part of our daily diet. In *Ayurveda* Millets properties are *Laghu, Kapha har, Lekhniya* due to which these are highly recommended in management of life style disorders. It is quite evident from various research that all millets are highly beneficial for various disorders like obesity, hypertension, diabetes and supplements for various minerals and vitamins. Highly beneficial for consumption in case of gluten sensitivity related with irritable bowel syndrome (*Grahni*) as dietary fibre content in millets has water absorbing and bulking property. Effective in reducing risk of gastrointestinal conditions of gastric ulcers and colon, oesophageal cancer due to their anti-oxidant property. Millets act as prebiotic feeding microflora in our inner ecosystem.



Sorghum Vulgare



Pearl Millet



Finger Millet



Proso Millet



Kodo Millet



Fox Tail Millet



Brown Top Millet



Barnyard Millet



Little Millet



Amarathus (Pseudo cereal)



Buck Wheat (Pseudo cereal)

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