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An eyeshot on *Kshudra Dhanya* in Ayurveda

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ABSTRACT

Kshudra Danya is a group of small seeded cereals used as human food since ages. They are popular by the name millets. As Millets are packed with nutrients, they have numerous health benefits. Ayurveda has a distinguished explanation of *Kshudra Danya* (millets) with their specific qualities and effects, based on which their indications and contraindications can be elicited. This analysis may help in understanding the right usage of *Kshudra Danya* (millets) to avail their complete health benefits.

Key words: *Kshudra Danya*, Millets, Ayurveda, Santarpanajanya Vyadhi, Vata Vyadhi

INTRODUCTION

As the recent years have paved the way for many new diseases, mankind has started moving towards being fit and healthy. Among various measures adopted for this purpose, dietary changes play a vital role. These altered dietary practices have incorporated the use of millets in our diet by highlighting their nutritional richness and health benefits.^[1] There are many varieties of millets available and are being used in different conditions. But whether these millets happen to be the right choice of diet for everyone is the subject to be analysed.

Ayurveda, giving immense importance to the diet of both healthy and diseased, has explained these millets

in detail under *Dhanya Varga* (category of cereals).^[2] Here is an attempt made to understand the qualities and functions of millets along with their indications, contra-indications, right processing and administration.

The use of millets in the Indian diet can be traced back to a very ancient era.^[3] Apart from high nutrition, there are many other reasons for cultivating millets for ages.

1. Drought resistant:^[4] Millets require very less amount of water compared to other cereals for their cultivation, thus they were mainly grown in water scarce areas and they could even sustain during droughts.
2. Resistant to pests and diseases:^[5] Millets show a great resistance to pests and diseases which minimises the burden of farmers along with added benefit to health.
3. Short growing season:^[6] Maturity of millets occurs within 60-100 days
4. Remarkable nutritive values:^[7] They are highly rich in phytochemicals, and micronutrients
5. Alkaline forming grain:^[8] Helps to maintain the P^H balance in the body.

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6. Gluten free:^[9] Gluten intolerance is one of the major Gastro-intestinal issues seen nowadays. Millets being gluten free becomes a choice for those.

Types of millets^[10]

Major millets

- Pearl millet
- Finger millet

Minor millets

- Foxtail millet
- Proso millet
- Little millet
- Kodo millet
- Barnyard millet

Structure of Millet grain:^[11]

Bran: The multi-layered outer skin of the kernel that helps to protect the other two parts of the kernel from sunlight, pests, water, and disease.

It contains important antioxidants, iron, zinc, copper, magnesium, B vitamins, fiber, and phytonutrients.

Germ: The embryo, which, if fertilized by pollen, will sprout into a new plant.

It contains B vitamins, vitamin E, antioxidants, phytonutrients, and unsaturated fats.

Endosperm: The germ's food supply, which, if the grain were allowed to grow, would provide essential energy to the young plant.

As the largest portion of the kernel, the endosperm contains starchy carbohydrates, proteins, and small amounts of vitamins and minerals.

Ayurveda explains millets in detail under *Dhanya Varga*. Millets have been given many synonyms like, *Kudhanya* (Inferior among cereals)^[12], *Kshudra Dhanya* (small sized cereals)^[13], and *Trina Dhanya* (grass derived cereals).^[14]

The general *Guna* and *Karma* (qualities and effects) of millets are,^{[15] [16]}

Table 1: Rasapanchaka of Millets

Rasa	<i>Kashaya-Madhura</i>
Vikapa	<i>Katu</i>
Veerya	<i>Sheeta</i>
Guna	<i>Laghu, Ruksha</i>
Karma	<i>Lekhana, Vrishya, Kledashoshana, Baddhamalakara</i>
Effect on Tridosha & Dhatu	<i>Kapha-Pittahara, Vatala, Rakta Shaamaka</i>

List of millets according to Ayurveda are:^[17]

- *Kangu* (Priyangu) - Foxtail millet
- *Shyamaka* - Barnyard millet
- *Koradusha* (Kodrava) - Kodo millet
- *Cheenaka* - Proso millet
- *Nartaki* - Finger millet
- *Gaveduka* - Adlay millet
- *Yavanaala* - Sorghum

Apart from general properties, the special and specific attributes of millets are ^[18, 19]

1. *Kangu/Priyangu* (*Setaria italica* - Foxtail millet)

Guru (heavy for digestion), *Sangrahi* (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion), *Brumhana* (nourishes the body tissues), *Shoshana* (dries up excessive moisture), *Bhagnasandhanakrit* (fracture healing), *Durjara* (difficult for digestion) and *Vrishya* (aphrodisiac)

2. *Shyamaka* (*Echinochloa frumentacea* - Barnyard millet)

Sangrahi (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion) *Dhatu shoshaka* (dries up the body tissues).

3. Koradusha/ Kodrava (*Paspalum scrobiculatum* - Kodo millet)

Madhura-Tikta rasa (sweet-bitter in taste), *Guru* (heavy for digestion), *Param Graahi* (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion), *Vishahara* (anti-poisonous), *Avrishya* (Antaphrodisiac) *Patya* in *Vrana* (best diet in wounds and ulcers)

4. Cheenaka (*Panicum miliaceum* - Proso millet)

Guru (heavy for digestion), *Durjara* (difficult for digestion), *Brumhana* (nourishes the body tissues) *Bhagnasandhanakara* (promotes fracture healing)

5. Nartaki (*Eleusine coracana* - Finger millet)

Tikta-Madhura -Kahaya Rasa (bitter-sweet-astringent in taste), *Sheeta* (cold in potency-anabolic),

Snigdha (unctuousness), *Balya* (promotes strength) *Vrishya* (aphrodisiac)

6. Gaveduka (*Coix lachryma jobi* - Adlay millet)

Katu-Madhura Rasa (pungent-sweet in taste), *Karshyakaari* (emaciating) *Kapha Hara* (pacifies *Kapha Dosh*)

Other properties are said to be similar to *Shyamaka* i.e., *Sangrahi* (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion) *Dhatu Shoshaka* (dries up the tissues).

7. Yavanaala (*Sorghum vulgare* - Sorghum)

Avrishya (Antaphrodisiac), *Ruchya* (enhances taste perception), *Trishghna* (pacifies excessive thirst) *Kledaghna* (pacifies excessive moisture content)

DISCUSSION

Analysing the general qualities and effects of millets gives an obvious idea that millets are best advised in *Kaphaja Roga* (diseases due to *Kapha*), *Pittaja Roga* (diseases due to *Pitta*) and *Raktadushti* (vitiation of blood). It is always necessary to avoid the use of millets in *Vataja Roga* (diseases due to *Vata*) as it aggravates the condition. Based on this understanding the gross indications for use of millets are, *Sthoulya* (obesity), *Kushta* (skin diseases), *Prameha* (Diabetes),

Atisaara (Diarrhea), *Medoroga* (Diseases due to excessive lipids), *Vrana* (wounds and ulcers) and other *Santarpanajanya Vyadhi* (diseases due to over nourishment of single or multiple tissues) which are usually lifestyle disorders. Sarita ES et al. 2016^[20] and Polkampally S^[21] reported that Millets are beneficial in chronic conditions like Obesity and Diabete Mellitus.

Advising millets as per individual's *Agni Bala* (Digestive capacity) is also very important as they are *guru* (Heavy) and *Ruksha* (dry) which makes them difficult (*Durjara*) for easy digestion due to more amount of dietary fibre, protein and less quantity of carbohydrates compared to other cereals.^{[22][23]} But both these qualities give an added benefit of satiety for a long time and they have *Lekhana* (Scraping) and *Kledashoshana* (dries up excessive moisture) action which is useful in treating *Santapanajanya Vyadhi* (diseases due to over nourishment of single or multiple tissues). Though millets are heavy for digestion, it is mentioned as *Laghu* (Lightness) in general qualities which can be understood as the after effect of proper digestion of millets on the body is, it imparts lightness.

Most of the Millets are among gluten free foods and thus they can be a choice of diet in IBS. Wahnschaffe U et al. (2007)^[24] and Vazquez-Roque MI et al. (2013)^[25] reported in their studies that a gluten free diet can reverse the mechanism of IBS.

The specific indications of each millet are not mentioned but, looking at their *Guna* (properties) and *Karma* (Actions), indications can be derived.

1) *Kangu* (Foxtail millet) which is *Sangrahi* (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion) can be indicated in *Atisara* (Diarrhea), *Grahani* (Irritable Bowel Syndrome). *Kangu* is both *Brumhana* (Nourishing) and *Shoshana* (dries up excessing moisture) which means it can be used for *Dhatu Shoshana* (reduction of body tissues) of over nourished *Dhatu*s like *Meda* (Adipose tissue) and *Mamsa* (Muscle tissue) meanwhile it can also provide nourishment by supplying micro-nutrients.^[26] This principle works best in conditions like *Sthoulya* (Obesity) and *Prameha* (Diabetes)

Mellitus). Nayak S et al. (2021)^[27] reported on blood glucose level reduction in type 2 Diabetes on using multi-millet therapeutic food which includes Foxtail millet too. It is also indicated in *Asthi Bhagna* (fractures) due to its *Bhagnasandhanakrit Karma* (Facilitates fracture healing) and based on its *Guna-Karma* (Properties and actions), other conditions like *Kapha-Pitta Pradhana Twak Vikara* (Skin problems due to vitiation of *Kapha* and *Pitta*), *Amavata* (Rheumatoid Arthritis) can be the indications.

2) *Shyamaka* (Barnyard millet) can be indicated in *Atisara* (Diarrhea), *Grahani* (Irritable Bowel Syndrome) as it is *Sangrahi* (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion), *Badda Vitkara* (compactness of faeces), *Santarpana Janya Vyadhi* (Diseases due to over nourishment) like *Sthoulya* (Obesity), *Prameha* (Diabetes Mellitus), *Medoroga* (Diseases due to excessive lipids) as it is *Shoshana* (Dries up excessive moisture), *Ruksha* (Reduces unctuousness), *Badda Mutrakara* (Promotes normal formation of urine), *Lekhaniya* (Scraping), other *Kapha-Pitta Pradhana Rogas* (Diseases due to vitiated *Kapha* and *Pitta*) like *Twak Vikara* (Skin Diseases), *Amavata* (Rheumatoid Arthritis) are also indicated. Joshi S et al. (2016)^[28] reported a low glycemic index of Barnyard millet rice which is useful in controlling Diabetes Mellitus.

3) *Koradusha/ Kodrava* (Kodo millet) is indicated in *Grahani* (Irritable Bowel Syndrome) due to *Param Grahi* (absorbs excessive fluids and helps for normal formation of faeces and enhances digestion), *Badda Vitkara* (compactness of faeces), *Vrana* (Wound and ulcers) and *Santarpana Janya Vyadhi* (Diseases due to over nourishment of body tissues) like *Sthoulya* (Obesity), *Prameha* (Diabetes Mellitus), *Medoroga* (Diseases due to excessive lipids) due to *Kleda Shoshana* (Dries up excessive moisture), *Ruksha* (Reduces unctuousness), *Lekhana* (scraping), *Vatarakra* (Increases *Vata*), due to *Pitta-Rakta Shamaka* (Pacifies vitiated *Pitta* and Blood), *Vishartha* (Affected due to poison) as it is *Visha Hara* (Pacifies effects of poison) and other *Kapha-Pitta Pradhana Roga* (Diseases due to vitiated *Kapha* and *Pitta*).

Chauhan M et al. (2018) reported the usefulness of millets in preventing Cardio-vascular diseases.^[29]

4) *Cheenaka* (Proso millet) is indicated in *Santarpana Janya Vyadhi* (Diseases due to over nourishment of body tissues) like *Sthoulya* (Obesity), *Prameha* (Diabetes Mellitus), *Medoroga* (Diseases due to excessive lipids) due to *Guru* (Heavy), *Ruksha* (Reduces unctuousness), *Kapha Hara* (Pacifies *Kapha*), *Brumhana* (Nourishing), *Asthibhagna* (Fracture) and *Kapha Pradhana Roga* (Diseases due to vitiated *Kapha*). Jun DY et al. (2014)^[30] reported on pro-apoptotic and anti-adipocytic activities toward adipocytes which is useful in Obesity. Shimanuki S et al (2006)^[31] reported on the ability of Proso millet in increasing the HDL levels and thus may have strong protective effects against the risk of Coronary Heart Disease development.

5) *Nartaki* (Finger millet) can advised in *Raktapitta* (Bleeding disorders), *Amlapitta* (Gastric disturbances), *Twak Roga* (Skin diseases), as it is *Tikta-Madhura* (Bitter-Sweet), *Kashaya Rasa* (Astringent taste), *Sheeta* (cold in potency – anabolic in action), *Snigdha Gunayukta* (Property of Unctuousness), *Durbala* (Loss of energy) due to *Balya Karma* (helps to improve energy), *Sthoulya* (Obesity) and *Prameha* (Diabetes Mellitus) as it is *Tikta-Kashaya* (Bitter and Astringent in taste) & *Balya* (Increases strength and energy). Murtaza N et al. (2014)^[32] reported on anti-obese property of Finger millet and also its role in overcome the oxidative stress induced because of obesity. Kumari PL et al. (2002)^[33] reported the potential action of Finger millet against hyperglycemia in Non-insulin dependent Diabetes Mellitus. Srivastava K et al. (2010)^[34] reported Finger millet as a storehouse of nutrients which helps in energy yielding on consumption.

6) *Gaveduka* (Adlay millet) can especially be indicated in *Sthoulya* (Obesity) and *Sthula Pramehi* (Diabetes mellitus which leads to overweight) and other *Kapha Pradhana Vyadhi* (Diseases due to *Kapha*) as it is *Karshyakaari* (Imparts weight loss), *Kapha Hara* (Pacifies *Kapha*). Corke H et al. (2016)^[35] reviewed

Adlay millet and mentioned its use in Diabetes, Rheumatism etc.

7) *Yavanaala* (sorghum) is best advised in *Raktapitta* (Bleeding disorders), *Amlapitta* (Gastric disturbances), *Twak Roga* (Skin diseases) as it is *Pittaghna* (Pacifies vitiated *Pitta*), *Rakta Shamaka* (Pacifies vitiated *Pitta*), *Trishna* (Thirst), *Sthoulya* (Obesity), *Prameha* (Diabetes Mellitus) as it is *Tikta-Kashaya* in Rasa (Bitter and Astringent in taste), *Trishnaghna* (Pacifies thirst), *Kaphahara* (Pacifies *Kapha*). Lucy OF et al. (2012)^[36] reported Sorghum as a potential source of nutrients and phytochemicals. Shen RL et al. (2015)^[37] reported on anti-obese and the anti-diabetic properties of Sorghum.

This analysis also enlightens about contra-indications of Millets. Most of the Millets in general are *Ruksha* (Reduces Unctuousness), *Vatacara* (Increases *Vata*) which makes them unsuitable for *Vata Pradhana Vyadhi* (Diseases due *Vata* dominance) like *Sandhigata Vata* (Osteo Arthritis), *Shoola* (Conditions with pain), *Karshya* (Under-weight), *Shosha* (Emaciated) etc and due to *Durjarata* (Difficult in digesting) they are not to be used in *Ajeerna* (Indigestion), *Mandagni* (Reduced digestion capacity) and *Vibandha* (Indigestion because of *Vata* that leads to bloating). If Millets have to be used in above said conditions then *Samskara* (Processing) which helps in balancing *Vata* (one among three bio-forces governing the nervous functioning of body) and eases digestion like soaking Millets in warm water before cooking, adding ghee with the preparation, adding *Deepana-Pachana* (Drugs that enhances digestion) and *Vata Shamaka Prakshepakas* (Spices that pacifies *Vata*) etc need to have opted and *Matra* (quantity and frequency) should be regulated. Saleh AS et al. (2013)^[38] reported that traditional processing of millets like soaking and cooking helps reduce anti-nutritional components and enhances the nutritional quality and bio-availability of millet grains.

In this regard one more important aspect needs to be highlighted is that Ayurveda never recommends millets under the list of *Nitya Sevaniya Ahara* (foods to be used regularly), which emphasizes that millets

should not be used on a daily basis. This is also signified by the term *Kudhanya* attributed to millets, which means they are inferior among cereals. Gaitan E et al. (1989)^[39] reported anti-thyroid and goitrogenic activity of pearl millet on regular consumption especially in iodine deficiency areas. This enlightens that even in healthy individuals' millets need to be consumed in moderate quantities and frequency.

CONCLUSION

Modern sophisticated sedentary lifestyle is giving rise to epidemic of Non-communicable diseases and Millets are best to be used in these *Santarpanajanya Vikara* (Diseases due to over nourishment) and *Kapha-Pitta Doshaja Vikara* (Diseases due to *Kapha* and *Pitta*). Millets can be used as a preventive diet in healthy and therapeutic diet in diseased. But they should be avoided or cautiously used in *Vataja Vyadhi* (Diseases due to vitiated *Vata*). Assessing *Agni* (Digestive capacity) of an individual before advising Millets is very much necessary. There are a lot of *Patya Kalpanas* (Food preparations) that can be prepared out of Millets so, preparation that suits both *Rogi* (Patient) and *Roga* (Disease) can be chosen to avail complete health benefits out of Millets.

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