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Review Article

A NOVEL APPROACH OF AYURVEDA TOWARDS THE UNDERSTANDING OF *SHOOKDHANYA VARGA* (CEREALS) AND THEIR FUNDAMENTAL CHARACTERISTICS AND HEALTH BENEFITS: A CRITICAL STUDY

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ABSTRACT

In order to achieve the healthy life, it is important to follow the first principal of Ayurveda which is *Ahara* (diet). The importance of *Ahara* in life is described by *Acharaya charak* in classical texts, where every aspect of *Ahara* including its regular intake, different categories has been elaborated aptly. In *Charak samhita*, Acharya has classified the *Ahara* in 12 different categories. Among these, *Shookdhanya* (cereals) is first one. *Shashtika* (rice) *Vrihi* (rice), *Yava (*barley*), Godhum* (wheat) are categorized under *Shookdhanya* (cereals). The food of these groups has similar pharmacological properties with *Madhur rasa* (sweet in taste), *Madhur vipak* (sweet after digestion) and *Vata kaphahar* action. According to modern science *Shook dhanya dravya* are included in monocotyledon and energy giving food. Energy giving food mainly includes cereal groups like wheat, rice, maize (corn), oats, Jowar, Ragi, and Bajra. Here an attempt has been made to study the fundamental characteristics and health benefits of the class of cereals (*Shookadhanya* group of *Ahara*).

INTRODUCTION

In Ayurveda, an optimal state of health can only be achieved when there is proper balance of *Trayopsthamba* (three pillars of life). *Ahara* (diet), *Nidra* (sleep) and *Brahamcharya* (abstinence) are mentioned as *Trayopsthamba* in Ayurveda which helps to attain health of individual. *Ahara* (diet) plays important role to attain the good health and wellness, which is why it is considered as first and foremost pillar of Ayurveda. *Preenan* (nutrition), *Bala krit* (strength), *Ayu vivardhanam* (enhance life span), *Ojo vardhanam* (enhance the *Ojas*) are the health effects achieved by wholesome and healthy *Ahara* (diet). In Ayurveda, rule for *Ahara* (diet) varies per individual, as every individual has their own digestive capacity. So there is special assertion for the quality and quantity of *Ahara* (diet) for healthy life*.* *Ahara* (diet) taken in specific quantity helps to achieve strength, vigour, complexion; thus, nourishing the health of tissues.

In modern science, nutrition is determined by the quantity of *Ahara* (diet) i.e., size, portion of size and calorie intake. Hence it is difficult to define the Ayurvedic nutrition by that perspective.

It is important to consider body constitution (*Dosha*), digestive power (*Agni bala*) as well as the quality and properties of *Ahara* like *Guru* (heavy for digestion), *Laghu* (light for digestion) in order to contrive the portion size for each individual. So diet must be formulated selectively which should compliment not only the physical conditions of person but also the seasonal and daily changes that encircle an individual.

Based on all these things, Ayurveda has classified various *Aharadravya* (food groups) which works together by providing maximum absorption of essential nutrients and proper digestion. These *Ahara varga* (food group) are characterised according to their action on individual, their unique qualities like *Rasa* (taste), *Virya* (potency) and *Vipak* (pharmacological effect) and their effect on digestion.

In *Annapanvidhi adhyay* of *Charak samhita,* Acharya charak has explained all dietary products under different categories which are known as *Varga*. Total of 12 *Varga* has been discussed in that chapter

includes *Shook dhanya* (cereals), *Shami dhanya*, *Mamsa varga*, *Shakavarga* (vegetable), *Phal varga* (fruit), *Harita varga*, *Madya varga*, *Gorasa varga* (milk), *Ambu varga*, *Ikshu varga*, *Kritanna varga* and *Ahara yogi*. Among these *Varga, Shook dhanya* (cereals) *Varga* is first one as all important dietary products are included in this group. *Shook* means spike or bristle and *Dhanya* means consisting of grains. *Acharya* has explained some of *Shook dhanya dravya* with their properties including *Shashtika* (rice), *Vrihi* (rice), *Yava* (barley), *Godhum* (wheat) which are essential for daily nutrition and good health. All the *Dravya* included in *Shookdhanya varga* (cereals) are *Madhur in Rasa* (taste), *Sheeta in Virya* (potency) and are *Madhur in Vipak* (sweet after digestion). *Acharya sushrut* has described the *Shook dhanya varga* in *Mudgadi, Shali* and *Kudhanya Varga.* According to modern science, *Shook dhanya dravya* are included in monocotolydon and energy giving food. Rice, wheat, corn, Jowar are mainly included in these food group which are great source of energy. These cereals are nutritional source for energy, protein, carbohydrates, vit.B1, etc.

Hence the attempt has been made to explore this group of *Ahara* (diet) which is utilized daily in every individual's life, so as to understand the nutritional importance of *Shookdhanya dravya*.

Need for the Study

In this era, there is a need to compare and correlate the differences in characteristics and functions amongst different groups of *Shookdhanya* and cereals. Hence this study was undertaken to scientifically explore the differences between *Shookdhanya* and cereals to get the option for medicinal intake as well as *Pathya* in various disease. It will also help as prevention from various deficiency diseases, and supportive diet.

MATERIAL AND METHODS

Methodology

1. Collection of references on *Ahar Varga* (classification of Food) and *Shookdhanya Varga* (class of cereals) from different Ayurvedic *Samhitas.*
2. Collection of references on cereals from modern science textbooks, international journals, World Wide Web references etc.
3. Tabulation and comparison of the *Shookdhanya Varga* and cereals with each other for their fundamental characteristics i.e., Ayurvedic properties, functions and health benefits along with their nutritional value.
4. Critical analysis of the observations and results and drawing the conclusions.

Table 1: Pharmacodynamics of *Shook dhanya varga* (cereals)[1,2,3]

Shook dhanya	*Rasa*	*Virya*	*Vipak*	*Guna*	*Dosh karma*
Shali (Rice Paddy/ Oryza Sativa	*Madhura*	*Sheeta*	*Katu*	*Laghu, Snigdha*	*Vata- kapha har*
Shashtika (Rice)	*Madhura*	*Sheeta*	*Madhura*	*Laghu, Snigdha, Mrudu*	*Tridosh shaman*
Vrihi (Rice)	*Madhura*	*Sheeta*	*Madhura*	*Guru*	*Tridosha vardhak*
Yava (Barley/ Hordeum Vulgare)	*Madhura, Kashay*	*Sheeta*	*Katu*	*Guru, Sara, Ruksha*	*Vata vardhak*
Godhum(Wheat/ Triticum Vulgare)	*Madhura*	*Sheeta*	-	*Guru, Snigdh, Sara*	*Vata pitta shaman*
Shyamaka	*Kashay, Madhura*	*Ushna*	*Kashay*	*Ushna, Ruksha*	*Kaphaghna*

Table 2: Review of *Shook dhanya varga* (cereals)[4,5,6]

Shook dhanya Varieties mentioned in *Samhitas*			
	Charak Samhita	*Sushrut Samhita*	*Ashtang Hriday*
Shali (Rice Paddy/ Oryza Sativa	*Raktashali, Mahashali, Kalam, Shakunahruta, Churnaka, Deerghashuka, Gour, Panduka, Languli, Sugandhak, Lohavala, Sarivakhya, Pramodaka, Patanga, Tapaneeya, Yavak, Hayan, Panshu, Naishadha.*	*Lohit Shali, Kalam, Kardamak, Panduka, Sugandhak, Shakunahruta, Pushpandak, Pundarik, Mahashali, Sheet, Bheeruk, Rodhra, Pushpak, Deerghashuka, Kanchanak, Mahisha, Mahashuka, Hayanak,*	*Raktashali, Kalam, Turnak, Shakunahrut, Saramukha, Deerghashuka, Rodhrashuka, Sugandhik, Pundra, Pandu, Pundareeka, Pramod, Gourasariva, Kanchan, Mahisha, Shuka, Dushaka, Kusumandak, Langala, Lohavala,*

		Dushak, Mahadushak	*Kardama, Sheetabheeruka, Patanga, Tapaneeya, Yavaka, Hayana, Pansu, Bashpa, Naishadha*
Shashti (Rice)	*Gour, Krishna, Varak, Uddlaka, Cheena, Sharad, Ujjvala, Durdara, Gandhana, Kuruvinda.*	*Shashtik, Kanguka, Mukundak, Peetak, Pramodak, Mahashashtik, Churnak, Kurvak* and *Kedar.*	*Gour Shashtika Asitagour Shasthika.*
Vrihi (Rice)		*Krishna Brihi, Shalamukha, Jatumukha, Nandimukha, Lavakshi, Tvaritak, Kukkutandak, Paravatak, Patal*	
Yava (Barley/ Hordeum Vulgare)	-	-	-
Godhum (Wheat/ TriticumVulgare)	*Madhuli, Nandmukhi*		

Table 3: Types of various cereals[7],[8]

Cereals	Types
Wheat	Spring wheat, winter wheat, durum wheat, common wheat, club wheat, hard red, soft red, white
Rice	Jaya, Surekha, Palakadan Matta, Njavara, Pokkali, Kuruva, Basmati
Maize	Flour corn, pop corn, dent corn, flint corn, sweet corn, waxy corn, amylomaize, pod corn
Barley	Two row barley, six row barley
Oats	-
Millet	Pearl millet, foxtail millet, proso millet, finger millet

Table 4: Nutritional values of cereals[9]

Cereals	Nutritional source for
Wheat	Fat, protein, iron
Rice	Carbohydrates, protein, fat, vit. B1, vit. B3, vit. B5, vit. B9, folic acid, iron, magnesium, potassium
Maize	Carbohydrates, fat, protein, water, vit. A, vit. B1, vit. NE, vit. B3, vit. B6, vit. C, iron, magnesium, potassium
Barley	Carbohydrates, fat, protein, vit. B1, vit. B2, vit. B3, vit. B5, amino acid
Oats	Carbohydrates, fat, protein, vit. B1, vit. B2, vit. B3, vit. B9, vit. K, vit. E, calcium, iron, potassium
Millets	Protein, vit. B6, niacin, folic acid, calcium, iron, potassium, zinc

Table 5: Analytical study of Cereals

Parameters	Test observation		
	Wheat	**Rice**	**Barley**
Description A. Colour B. Odour C. Taste	Brown Odourless Tasteless	White to brown Odourless Tasteless	Brown Odourless Tasteless
Moisture (percent by mass)	3.6%	0.8%	1.8%

Extraneous matter		0.3%	0.3%
Other edible grains (percent by mass)	NA	NA	NA
Damaged grains (percent by mass)		0.3%	0.4%
Immature and shriveled Grains (percent by mass)		0.2%	0.4%

Table 6: Health effects of cereals on body[10,11,12,13]

Cereals	**Health effects**
Yava (Barley / Hordeum Vulgare)	Lowering the cholesterol Risk of heart disease Condition like *Vrana*, *Visarp* *Shwasa roga* (respiratory disease)
Godhuma (Wheat/ Triticum Vulgare)	In *Vatarakta*, along with *Ghrit* and goat's milk. In *Asthibhagna*, used locally with *Ghrit*. In *Kaphaj shool* with honey
Jowar (Great Millet/Sorghum Vulgare)	In reducing obesity In heart diseases
Bajra (Pearl Millet/Pennisetum glaucum)	In lowering blood glucose level In heart diseases In lowering cholesterol level Decreases triglycerides and c- reactive protein
Vrihi (Rice)	In heart diseases Inflammatory conditions
Shashtika dhanya (Rice)	In muscle dystrophy In joint pain

Yava (Barley/Hordeum Vulgare)

Yava has been classified under the *Shookdhanya varga* (cereals) by *Acharya charak*, who has also described this *Dravya* in *Shramahara, Chardinigrhana* and *Swedopaga mahakashaya*. *Acharya Sushrut* has mentioned *Yava* in *Mudgadi varga*. According to Ayurveda, *Yava* has *Kashay rasa* (astringent in taste), *Ruksha* (dry) and *Laghu* (light) in *Guna, Sheeta* in *Virya* (cold potency) and *Madhur vipak* (sweet after digestion). All these properties help to aggravate *Vata* and pacify *Kapha* thus increasing the strength of the body.[10,14] In modern science *Yava* is considered as barley which is rich source of carbohydrates. Barley comprises of potassium, calcium, and magnesium which are essential to maintain the normal blood pressure. As it is rich with fibre, helps to lower the cholesterol in blood.

The uniqueness of Ayurveda lies in the wise prescriptions of various dietetic preparations of *Yava*/ Barley for both weight reduction and weight promotion along with maintenance of normal weight. The in depth understanding of the basic principles of Ayurveda denotes the similar clinical utility of *Yava* in diabetes, cholesterol, blood pressure etc.

Godhuma (Wheat/Triticum Vulgare)

In *Shookdhanya varga* (cereals), *Godhuma* (wheat) has been mentioned by *Acharya Charak* while *Acharya Sushrut* classifies *Godhum* in *Mudgadi varga*. It is enclosed with *Madhur rasa* (sweet in taste), *Snigdha, Guru* (heavy) *Guna, Sheeta virya* (cold potency) and *Madhur vipak* (sweet after digestion). These pharmacological properties of *Godhum* help to pacify the *Vata* and *Pitta dosha*[12,15]. Wheat flour consists of protein like glutelin and gliadin which are commonly known as gluten. The strength of the wheat flour is based on the quality of gluten used.[13]

Jowar (Great Millet/Sorghum Vulgare)

In Ayurveda Jowar is described as *Madhur - Kashay rasa* (sweet in taste) with *Laghu* (light) *Guna*, having *Sheeta virya* (cold potency) which help to nullify the *Vata* and *Kapha dosha*. It consists of nutrients such as calcium, potassium, iron, phosphorus. In Jowar, vit. B12, vit. B1 and phytochemicals are present in high amount which increases its nutritional value in diet.

Shalidhanya (Rice Paddy/Oryza Sativa)

Dhanya matured in *Hemant rutu* is said to be *Shali dhanya* by *Bhavprakash.* Different varieties of *Shali dhanya* such as *Rakta shali, Mahashali, Kalam* are

described by *Acharya Charak* in *Shali dhanya varga*. Among these varieties, *Raktashali* is considered as *Shreshtha* (best). According to pharmacological properties it is *Madhur* in *Rasa* (sweet in taste), *Laghu* (light) *Guna* and *Sheeta virya* (cold in potency). *Shali dhanya* helps to pacify all three *Dosha* of body. In modern science, there are 3 varieties of rice has been mentioned, i.e., paddy rice, brown rice and white rice.[17]

Paddy rice - Rice with inedible husk

Brown rice- Rice is milled to remove the bran and germ, after removal of husk

White rice- By winnowing, husk is removed from grain

Bajra (Pearl Millet/Pennisetum glaucum)

In Ayurveda, *Bajra* is *Madhur in Rasa (*sweet in taste), *Ruksha* (dry) in *Guna* and having *Virya ushna* (hot in potency). This makes bajra to propitiate the *Vata* and *Kapha dosha*. Presence of B-complex vitamins, magnesium, niacin, carbohydrates and it's low glycemic index makes bajra important cereal in diet[18]. The pearl millet bran has low mineral matter but its germ fraction is rich in oil, protein and ash.

Vrihi Dhanya (Rice)

In Ayurveda, *Vrihi* has been mentioned in both *Shookdhanya* and *Shalidhanya varga* of *Ahara* by *Acharyas*. *Vrihi* is mainly cultivated in rainy season. *Krishna* type of *Vrihi* is considered as *Shrestha* (best) among *Vrihi Dhanya*. *Vrihi* is *Madhura in Rasa* (sweet in taste), *Guru* (not easily digestible), *Ushna Virya* (hot in potency) with *Amla Vipaka* (sour after digestion).[19]

Shashtika Dhanya (Rice)

Shashtika has been categorised in both *Shalidhanya* and *Shookdhanya varga* (Cereals) of *Ahara*. It is one of type of rice which mainly cultivates in summer season. *Shashtika Dhanya* has been considered as *Madhura in Rasa* (sweet in taste), *Laghu* (light), *Sheeta Virya* (cold in potency).[20]

Table no. 7: Different *Kalpana's* of Cereals[21]

Cereal	Kalpana
Godhum	*Payasa, Godhumika, Shukta*
Shashtika	*Peya, Vilepi, Manda, Pruthuka, Shukta, Odana, Krushara*
Yava	*Manda*
Bajra	*Manda*
Shali dhanya	*Peya, Manda, Pruthuka*

Utility in *Ahara* (Diet)[21]

Pathya Kalpana is basic and simple preparation of Ayurveda, which maintains and strengthen *Jatharagni* (digestive power). It also makes the food pleasurable thus acting over both body and mind. So *Pathya Kalpana* should be advised as a diet plan in healthy individuals. Various preparation of *ahara* has

been explained by *Acharya* in Ayurveda which includes *Manda, Peya, Vilepi, Bhakta,* etc. *Shook dhanya* (cereals) *dravya* are easy to prepare with this methods which makes them palatable. *Manda, Peya, Vilepi, Bhakta* are various food preparation made with *Shook dhanya dravya* like *Shashtika, Shali, Godhuma.* Thus *Pathya Kalpana* should be incorporated in our daily diet regime to achieve the basic aims of Ayurveda as firstly to maintain the health of a healthy person & to treat the disease thereafter.[22] Also in *Charak Samhita, Acharya* has explained various *Sanskar* (cooking methods) for the processing of food which includes *Toya sannikarsh, Agni sannikarsh, Manthan, Desha, kala,* so as to preserve the nutritive content of food and to inflate the nutritive value of food.[23]

OBSERVATION AND RESULTS

Cereals are seeds or grains of any grass which is cultivated to gain the edible part of its grains. Most of the cereals have common dietary properties as they are full of vitamins, fats, carbohydrates, protein. They are also used as source of calcium and iron. Starch is the main component of cereals and consists of 6 to 12% of protein. Cereals in the form of whole grains are rich in vitamin B, which is present only in outer bran of grains. Cholesterol is totally absent in the cereals which is why chances of heart diseases due to consumption of cereals are low. Also, they are deficit with the uric acid. The absorption of carbohydrates present in cereals is comparatively slow, as it disintegrates firstly into starch and then into glucose. This process helps to maintain the blood sugar level in body. Cereals in the form of whole grains are rich with fibre, which plays major role not only in digestive process but also in maintaining cholesterol level normal. The cereals in the form of whole grains possess some phytochemicals namely lignans, phytic acid, saponin, oryzanol, phenolic compounds. These phytochemicals help in prevention of heart diseases, diabetic disorder and cancer. Also, cereals are used as dietary supplement for vitamin B12, vitamin B6, iron and fibre. These constituent and properties of cereals makes them indispensable part of diet in every individual. As various refining processes reduce their nutritional value as in this process outer bran is removed or grains are polished. After comparing the Ayurvedic properties and functions of *Shookdhanya varga* (cereals), it is observed that all of them are *Madhur* in *Rasa* (sweet in taste) with *Sheeta Virya* (cold in potency) except *Shyamak* which has *Ushna Virya* (hot in potency). *Shali* and *Shashtika* have *Laghu* and *Snigdha Guna* with *Tridosha Shaman* property. Whereas, all other *Dhanya Vrihi*, *Yava*, *Godhuma* and *Shymaka* are *Guru* (not easily digestible) in *Guna*. The Nutrient based approach of modern dietetics and nutrition looks similar to the Ayurvedic understanding but Ayurveda focuses more on their uses based on the

basic characteristics like *Rasa* (taste), *Guna* (qualities), *Veerya* (potency), *Vipaka* (taste conversion after digestion, *Prabhav* (special effect of the herb) and also uniquely prescribes their effects on a long-term administration.

DISCUSSION

Shookdhanya (cereals) includes different varieties of rice, usually they are *Madhura in Rasa*. So they can be related to source of carbohydrate. Because of *Madhura Rasa*, they are useful in *Vataja* and *Pittaj* disease. Corns and bristle are divided in 6 categories. These are *Shali* (rice), *Shastika* (rice), *Vreehi* (rice), *Shyamaka* (rice), *Yava* (barley) and *Godhuma* (wheat). This class contains mainly cereals including different varieties of rice. Red variety is best among the rice varieties. It pacifies thirst and *Tridoshas*. These *Shali* types of corns are *Madhura in Rasa* (sweet in taste) and wholesome for body as they add to growth of *Rasa* (body fluid), blood, muscle fat, bone marrow, *Ojas*, semen and longevity.

All the ingredients of *Shookdhanya varga* (cereals), it is observed that all of them are *Madhur* in *rasa* (sweet in taste) with *Sheeta Virya* (potency) except *Shyamak* which has *Ushna Virya* (hot in potency). *Shali and Shashtika* have *Laghu* and *Snigdha guna* with *Tridosha shaman* property. Whereas, all other *Dhanya Vrihi, Yava, Godhuma* and *Shymaka* are *Guru* (not easily digestible) in *Guna.*

Ingredients of *Shooka varga* (cereals) are mostly included in *Ahara* which is why they are placed at foremost position in classification. *Shook* means spike or bristle and *Dhanya* means consisting of grains. In Ayurveda, all the Acharya has explained three types of *Shookdhanya* (cereals) namely *Shali, Shashtika and Vrihi.* Their names are based mainly on the season in which they are cultivated and region of cultivation. *Shookdhnaya* namely *Yava*, *Godhuma* are mentioned and used since ancient time but the explanation about other *Shookdhanya* (cereals) *Dravya* like *Jowar, Bajra* is not present in *Samhita*. The properties and qualities of *Shookdhanya dravya* are based on land, time and region where they are cultivated. Thus we can analyse quality of *Dhanya* which we use today according to qualities mentioned in *Samhita* and region where it grows. It has been observed that *Godhum* (wheat), *Shali* (rice) and *Yava* (barley) are indispensable part of diet in *Samhita* period.

CONCLUSION

For boosting the health and elimination of diseases Ayurveda emphasise the use of nutritional food in daily diet. As most of the health issues arise due to indisposed diet and lifestyles, it is essential to understand healthy eating habits with proper cooking methods. As in Ayurveda different *Sanskar* (cooking method) were mentioned which are used to enhance the properties of food mainly washing, soaking, rinsing to steaming, boiling, roasting, frying etc. Each of these include the varied combination of fire and water without which the food cannot be cooked, resulting in conversion of basic attributes of the food like colour, smell, texture, taste and other nutritive elements in some or other way. As *Shook dhanya* (cereals) *dravya* are rich in all nutrients and easy for digestion, they are helpful in prevention of various diseases. So to achieve these health effects on body, it is essential to discover various *Sanskar* (cooking methods) for food. Of course more research work in this field is required to achieve some definite qualitative and quantitative results.

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