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KNOW THE PULSES & CEREALS BEFORE YOU EAT- A NUTRITIVE REVIEW ON SHIMBI & SHUKA DHANYA VARGA

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ABSTRACT

Nutritious diet (*Ahara*) or we can say balanced diet is the key to follow the first principle of Ayurveda in order to maintain a healthy life. In Ayurveda Acharya *Charak* has mentioned regular intake of food articles belongs to different categories of food. Acharya *charak* has classified Aahar(diet) in twelve categories. Among these, *shuka dhanya* is the first one and *shimbi dhanya* is the second. In modern literature, *shuka dhanya* has been classified in monocotyledons & energy giving food. Energy giving food mainly includes cereals group like wheat, rice, maize, oats, jowar, ragi & bajara. Ancient acharyas has mentioned some *shuka dhanya dravyas* with their *gunas* like *shashtika*, *vrihi*, *yava*, wheat which play an important role in prevention of diseases. Likewise, in modern literature, *shimbi dhanya* has been classified in dicotyledons & valuable sources of protein as well as being low in saturated fat, sodium & also cholesterol free. Pulses includes all beans, peas, & lentils like green gram, black gram, *rajmah*, horse gram, moth beans, Bengal gram, lentils/masoor dal etc. Ancient acharyas has mentioned some *shimbidhanya dravyas* with their *gunas* like *mudga*, *masha*, *rajamash*, *kulattha*, *makushthak*, *chanaka*, *masoor*, *tila* which plays an important role in prevention of diseases.

KEYWORDS: Ayurveda, *Aahar*, *Shuka-shimbi dhanya varga*, Pulses & cereals nutritive values.

INTRODUCTION

Ayurveda has a unique role in prevention of disease as well as treatment of diseases vide *Ahara* (diet), *Vihara* (lifestyle) and *Aachara* (behavioral pattern). Amongst them *Ahara* i.e.,

diet is the most efficient and important one. Acharya *Charaka* mentioned that "*Rogascha aharasambhava*".[1] Which denotes *Roga* (diseases) is originated from *Ahara*. Therefore, Acharyas have advised to take only those food items which are beneficial for maintaining the health. Ayurveda recommends that while diet is not applicable for curing all the diseases, but can controlled diseases by doing adjustment in diet and maintaining proper eating habits. Infact Ayurveda is based on *Trayopstambha* i.e., three pillars of Ayurveda which are the basics of healthy human life that are *Ahara* (diet), *Nidra* (proper sleep), *Brahmacharya* (Abstinence from excessive sexual and mental activity).[2,3] Basically, Ayurveda focuses on two principles i.e., prevention or maintaining the health and the second one is treatment of disease.[4] Thus there is a saying "prevention is better than cure". Acharyas suggest that "*Matrashi Syat*" (Diet in definite quantity) or Balanced diet is responsible for maintaining of healthy life. Healthy and nutritional diet is always advisable in order to prevent the affliction of diseases as it is well known that "prevention is better than cure".

How much we will give importance for our diet that much we can lead a healthy life. Our body built, mental power, activities even our economic and social status are based on food. Major problem that is faced by the community is changing food habits. All are behind taste, no one have time to assess food. That's why now most of the people upper or lower class are equally suffering with nutritional deficiency disorders. Instead of low calorie and nutrient sufficient food community using more fast food. Also, additives like Ajinomoto, Mionase along with wrong cooking practice make the food just for taste stuff and not a nutritional supplement. In present era calcium deficiency acts like a slow poison. Likewise, Diabetes, Coronary heart disease and Cancer are spreading more day by day. So, we can maintain a nutritional status that enables us to grow well and enjoy good health.

Pulses (Legumes)

Pulses comprise a variety of grams, also known as dals. Most commonly eaten pulses are Bengal grams (*tuvar* or *arhar*), green gram (*mung*), and black gram (*urd*). Others include lentils (masoor), peas and beans. Pulses contain 20 to 25 per cent of proteins, which is double that found in wheat and three times that found in rice. In fact, pulses contain more protein than eggs, fish or flesh foods. But it regards to quality, pulses proteins are inferior to animal proteins. Pulse proteins are poor in methionine and to a lesser extent in cysteine. On the other hands they are rich in lysine. In addition, pulses are rich in minerals and B – groups vitamins such as riboflavin and thiamine. In the dry state, pulses do not contain vitamin C.

Germinating pulses, however, contain higher concentration of vitamins, especially vitamin C and B vitamins. Fermentation also modifies the nutritive value of pulses in that the vitamin content particularly that of riboflavin, thiamine and niacin is enhanced.

Although pulses are called "poor man's meat", they are eaten by the rich and poor alike in India. They give variety to diet and make the food more palatable. Table 1 gives the nutritive value of some common pulses.[5]

Table 1: Nutritive value of Pulses.

Pulses	Energy (kcal)	Moist-ure (g)	Protein (g)	Fat (g)	Mine-rals (g)	Carbohy-drate (g)	Fibre (g)	Calorie (mg)	Phosph-orus (mg)	Iron (mg)
Green gram	348	10	24	1	3	60	1	75	405	4
Black gram	347	11	24	1	3	60	1	154	385	4
Rajmas-h	346	12	23	1	3	61	5	260	410	5
Horse gram	321	12	22	0	3	57	5	287	311	7
Moth beans	330	11	24	1	3	56	4	202	230	9
Bengal grams	372	10	21	6	3	60	1	56	331	5
Masoor	343	12	25	1	2	59	1	69	293	7

Nutritive review of *shimbi dhanya varga*

Mudga (Phaseolus mango Linn.)

Shimbi dhanya utilised in the form of soup, *mudga* is the best. It is astringent and sweet in taste, pungent in *vipaka*, unctuous, cold in potency, light and non-slime. It alleviates the vitiated *kapha* and *pitta*.[6]

***Masha* (Phaseolus radiata Linn.)**

Masha is aphrodisiac. It exceedingly alleviates the vitiated *vata*; It is unctuous, hot in potency, sweet, heavy and strength promoting. It produces excreta in large quantity and semen instantaneously.[7]

***Rajamasa* (Vingna cylindrika Skeels)**

Rajamasa is laxative and palatable. It reduces semen, alleviates *kapha* and *amlapitta* (acid dyspepsia). It aggravates *vata.* It is unctuous, astringent, non-slime and heavy.[8]

***Kulattha* (Dolichos biflorus Linn.)**

It is hot in potency, astringent in taste and sour in *vipaka*. It reduces semen and alleviates the vitiated *kapha* as well as *vata.* It is constipative and is useful for patients suffering from coughing, hic-cup, dyspnoea and piles.[9]

Makustha (Phaseolus aconitifolius Jacq.)

It is sweet in taste and *vipaka*, constipative, unctuous and cold in potency. It is useful for patients suffering from *raktapitta* (a disease characterised by bleeding from various parts of the body), fever etc.[10]

***Chanak* (Cicer arietinum Linn.) & *Masoor* (Lens culinaris Medic.)**

They are light, cold in potency, sweet with accompanying astringent taste and unctuous. In the form of soup and ointment, they are useful for patients suffering from diseases due to the vitiation of *pitta* and *kapha*. Of them, *masoor* is constipative. *Kalaya* (Lathyrus sativus Linn.) considerably aggravates *vata*.[11]

***Adhaki* (Cajanus cajan Millsp)**

Adhaki alleviates the vitiation of *kapha* and *pitta* but aggravates *vata*.[12]

***Tila* (Sesamum indicum Linn.)**

Tila is unctuous, hot in potency, sweet, bitter, astringent and pungent in taste. It is conductive to the growth of the skin and hair. It is strength promoting. It alleviates the vitiation of *vata* and aggravates *kapha* and *pitta*.[13]

Table 2: Shimbi Dhanya Ras-panchak.

Dhanya	***Rasa***	***Vipaka***	***Virya***	***Gunakarma***
Moodga	*Kashaya, Madhur*	*Katu*	*Sheeta*	*Ruksha, Laghu, Vishad Kapha-pitta Nashak*
Masha	*Madhur*		*Ushna*	*Snigdha, Guru, Sara, Kapha-pittakarak, Virekakruta, Balya, Bahumala, Vatahar, Stanyakaro*
Rajanasha	*Madhur*	*Amla*		*Ruksha, Sara, Vishada, Ruchya, Guru, Viryanashak, Vatakaraka, Stanyaruchipradashcha, Mutral*
Kulaltha	*Kashaya*	*Amla*	*Ushna*	*Kapha-Shukrahara, Vatanashaka, Grahinaha, Kasa, Hikka, Swasa, Arshahitaha, Shukrashmari, Peenas, Pitta-raktavardhaka*
Makushthak	*Madhur*	*Madhur*	*Sheeta*	*Ruksha, Grahi, Rakatapitta, Jwara me pathya, Krumikarah*
Nishpav/Sem				*Vat-Pittakarak, Stanya-mutrakara, Guru, Sara, Vidahi, Drukashukrakaphashophavishapaha*
Kalaya				*Prachuranilaha*
Arahad/Aadhaki				*Kapha-pittaghni, Nativataprakopani*
Chanak/Masoor	*Madhur*		*Sheeta*	*Laghu, Ruksha, Pitta Shleshmaj rogo me bahyaAalepanartha,*

				Vatavardhaka, Kapha-Rakta-Pittaghna, Masoorabaddhavarchasa
Atasi & Kusumbhab-eej	*Madhur, Tikta*	*Katu*	*Ushna*	*Snigdha, Kapha-Pittakarak, Guru, Drushtinashaka, Shukranashaka,*
Tila	*Madhur, Tikta, Kashaya, Katu*		*Ushna*	*Snigdha, Twacha aur Kesha ke liye Hitakar, Balavardhak, Vatanashak, Kapha-Pittavardhaka*

Cereals

Cereals (i.e., rice, wheat) constitute the bulk of the daily diet. Rice is the staple food of more than the half the human race. Next to rice, wheat is the most important cereal. Maize ranks next to rice and wheat in the world consumption. Cereals are the main sources of energy (carbohydrates). They also contribute significant qualities of proteins (6 to 12 per cent), minerals and B - groups vitamins. In terms of energy, cereals provide about 350 kcal per 100 grams. Considering the large amounts in which they are consumed, cereals contribute 70 to 80 per cent of the total energy intake, and more than 50 per cent of protein intake in typical Indian diets. Cereal proteins are poor in nutritive quality, being deficient in the essential amino acids, lysine. However, if cereals are eaten with pulses, as in common in the traditional Indian diets, cereal and pulse proteins complement each other and provide a more balanced and "complete" protein intake. Table 3 gives the nutritive value of some common cereals.[14]

Table 3: Nutritive value of Cereals.

Cereals	Carbohydrate (gm)	Protein (gm)	Fat (gm)	Calorie	Calcium (mg)	Iron (gm)	Vit. A	Vit. B
Rice	78.2	6.3	0.5	345	10	3.1		0.09
Wheat	70.00	11.6	1.7	341	41	11.5	49	0.49
Barley	73.00	12	2.3	354	3	19		0.15
Maize	74.03	9.42	4.74	365	7	2.71	1	
Sorghum	72.6	10.4	1.9	349	25	5.8	79	0.37
Brown rice	23	2.6	0.9	111	1	2		0.05
Finger Millet (Ragi)	72.6	7.7	1.5	336	350	3.9	0.42	0.19
Little Millet (*Sava*)	60.9	9.7	5.2	329	17	9.3	0.30	0.09
Foxtail Millet (*Kanguni*)	63.2	11.2	4	329	31	2.8	0.59	0.11
Barnyard Millet (*Shyamaka*)	55	11	3.9	300	22	18.6	0.33	0.1
Kodo Millet (*Koradusha*)	66.6	9.8	3.6	353	35	1.7	0.15	0.09

Nutritive review of *Suka Dhanya Varga*

Acharya *Charaka* has described twelve types of *Ahara* in *Annapana Vidhi Adhyaya*, among them, *Suka Dhanya* is the first one. *Chakrapani* has differentiated *Suka dhanya* into 3 classes' viz. *Shali, Shashtika and Vrihi*. As its name suggests, *Suka dhanya* are corns with spikes. Acharya *Sushruta* has not mentioned *Suka Dhanya Varga* by name, but *Dravyas* of *Suka*

Dhanya Vargas has been described in *Mudgadi*, *Shali* and *Kudhanya Varga*. Ancient Acharyas has mentioned some *Shuka Dhanya Dravyas* with their *Gunas* (qualities) like *Shasthika, Vrihi* (variety of rice), *Yava*, and *Godhuma* which play an important role in prevention of diseases. Those *dravyas* sustain qualities like *Sheeta* (cold in potency), *Swadu* (sweet in taste) and in *Swadu Vipaka* (sweet in digestion). These are used as *Vatavardhaka, Alpavarchasa, Brimhana, Sukrala* and *Mutrala.*[15]

***Rakta shali* (Oryza sativa Linn).**

Rakta Shali is of best quality rather than other varieties, as it poses *Madhura* in *Rasa, Laghu, Sheeta Virya* and pacifies all three *Doshas.*[16]

Shashtika shali

In *Charaka Samhita Shashtika shali* are having qualities like – *Sheeta Virya, Snigdha, Aguru, Madhura, Tridosaghna* and *Sthira.*[17]

Vrihi Dhanya

In *Charaka Samhita Vrihi Dhanya* are having qualities like - *Madhura* in *Rasa, Guru, Ushna Virya, Amla Vipaka. Dalhan* has mentioned that it poses *Amadhuara* or *Katu Vipaka*. In *Astanga Samgraha* and *Astanga Hridaya Vrihi* and *Shashtika* are mentioned together having *Amla Vipaka* same as *Charaka Samhita*.[18]

***Syamaka* (Setaria italica Beauv) & *Koradusa* (Paspalim scrobiculatum Linn).**

They are astringent and sweet in taste, cold in potency, bowel – binding drying and light. They aggravate *vata,* and alleviate *kapha* as well as *pitta*. Corns similar to *syamaka* in property.[19]

Yava (Hordium vulgare)

Yava has included *Sukadhanya Varga* in *Charaka Samhita* while *Sushruta* in *Mudgadi Varga. Charaka* has included *Yava* in *shramahara, Chardinigrahana,* and *Swedopaga Mahakashaya*. In Ayurveda, pharmacodynamics of *Yava* is *Ruksha* (dry), *Sheeta Virya* (cold in potency), *Laghu* (light in digestion), *Madhura* (sweet) and *Kashaya* (astringent taste), aggravates *Vata* and increases the amount of faeces. Also it enhances the body strength and pacifies *Kaphaja* disorders.[20] It is best known as *Stanyavardhaka, Medohara* (helps in reducing fat) when used with *Amalaki Churna*. *Yava* is useful in diseases like *Vrana* and

Visharpa, Yava is used with *Madhuka Churna* externally. Inhaled *Dhuma* of *Yava Churna* with *Ghrita* is said to be beneficial in *Swasha Roga (Asthma).*[21]

Godhuma (Triticum aestivum L).

Sushruta explaining qualities like *Snigdha* (unctuous), *Guru* (not easily digestible), *Sheeta Virya* (cold in potency), and *Madhura* (sweet in taste) and specify *Vata* and *Pitta dosha*.[22] *Godhuma* can be used with *Ghrita* and *aja kshir* in *Vatarakta* (osteoarthritis). It can also be used with *Ghrita* externally in *Asthibhanga* (bone fracture). *Godhuma* with *Madhu* is beneficial in *Kaphaja Shula* (pain).[23]

Jowar (Sorghum vulgare)

Jowar has qualities like *Madhura* and *Kashaya* in *rasa, Laghu, Sheeta Virya* and pacifies *Vata* and *Kapha dosa*.

Bajara (Pennisetum glaucum)

Bajra has qualities like *Madhura* in *Rasa, Ruksha, Usna Virya* and pacifies *Vata* and *Kapha Dosha.*[24]

Nagali/Ragi (Finger Millet)

Ragi is a rich source of Calcium, Iron, Protein, Fiber and other minerals. The cereal has low fat content and contains mainly unsaturated fat. It is easy to digest and does not contain gluten; people who are sensitive to gluten can easily consume Finger Millet. Ragi is considered one of the most nutritious cereals.

Table 4: *Shuka Dhanya Ras-panchak.*

Shuka Dhanya	***Ras***	***Vipak***	***Virya***	***Gunakarma***
Raktashali	*Madhur*	*Madhur*	*Sheeta*	*Vatakarak, Baddhalpavarchas, Snigdha, Bruhana, Shukramutral, Trushnahara, Tridoshahara*
Shashtikashali	*Madhur*		*Sheeta*	*Snigdha, Tridoshanashaka, Sthiratmaka, Pittakarak, Bruhana, Kapha-shukrala*
Brihidhanya	*Madhur*	*Amla*	*Ushna*	*Pittakaraka, Guru, Alpaabhishyandi*
Pataldhanya				*Mutra, Purisha, Ushma, Tridosha Vardhaka*
Kodo & Sava (Shyamak)	*Madhur*		*Sheeta*	*Laghu, Vatal, Kapha-Pittaghna, Sangrahi, Shoshana, Vishapaha*
Yava	*Kashaya*	*Madhur*	*Sheeta*	*Ruksha, Vatavardhaka, Vrushya, Malavardhaka, Stharyakruta, Balavardhaka, Sleshmavikaranuta, Vraneshu, Pathya*
Godhuma	*Madhur*		*Sheeta*	*Sandhanakruta, Guru, Vataharo, Stharyakara, Jivaniya, Bruhana, Vrushya, Snigdha, ittanashaka, Sara, Shukraruchipradashcha, Kaphakara*

DISCUSSION

Among all pulses while comparing calcium content gram per 100gram soya beans, rajma, moth bean, horse gram, sesame seeds contain highest. And among this soya bean contains high amount of calcium (240mg/100g), protein (43.2mg/100g) and phosphorous (690mg/100g). Sesame seeds also is rich in calcium (1450mg/100g) and iron (17.73g/100g). Calcium will absorb more easily in presence of phosphorous and while metabolism it makes a chemical bond with protein and enter to the transport system. Green gram is recommended for daily intake even though it contain 75mg/100g calcium but it rich in phosphorous and protein. In case of horsegram it contains highest amount of calcium (287mg/100g). Rajma also having high calcium (260mg/100g) and phosphorous (410mg/100g) content. Moth beans are also rich in calcium (202mg/100g). But over view of pulses it is rich in protein, calcium and phosphorous. So, it will satisfy your daily calcium needs. Pulses are rich in minerals like Ca, P, Mg. etc. and vitamin - B group vitamins like riboflavin, thiamine.

Pulses in Calcium Deficiency

Based on one article published in 2015, it shows that in 2011 globally 3.5 and 1.1 people were at risk of calcium and zinc deficiency. RDA of calcium for adult between 19 to 50 years is 1000mg/day. Woman above 50 and men above 70 need 1200mg/day.[25]

Pulses are the dry seeds of legumes that contain small amount of fat. Those with high amount of fat are referred to as leguminous oil seeds (soybean and peanut). In addition to the basic nutrients, pulses also contain other constituents called bioactive compounds which could have health enhancing and disease prevention properties such as polyphenols, phytoestrogens and pigments. Commonly using pulses are peas, beans, lentils, chick peas, fava beans, cowpea and pigeon pea etc. Protein content of pulses is twice as that of cereals, that's why they become most economical source of proteins. There is less methionine (amino acid) than animal proteins but higher in lysine content make them good supplement to rice. Pulses and beans are reputed to lower blood cholesterol and help diabetics by reducing post meal rise in blood sugar. Dried beans lower serum lipids.

Cereals are originated from Ceras, which means Roman goddess of harvest and agriculture. Cereal is combination of endosperm, germ and bran. Cereals are abundant source of vitamins, minerals, carbohydrate, fat, oils and protein. Endosperm is obtained when the bran and germ layer get dethatched, which is carbohydrate. During processing, bran germ gets refined from cereals which make them less healthy. Whole grain cereals mainly include entire grain

kernel, which is a rich source of healthy fibre. For controlling blood sugar levels and reducing risk of heart diseases Fibre is a very important factor. The whole grain cereals contain some phytochemicals having some health benefits. These phytochemicals include.[26] 1. Lignin's- lower the risk the heart disease and slow cancer. 2. Phytic acid- reduces the glycemic index of food which is helpful for diabetic patients and protects against the cell developing colon cancer. 3. Saponins, phytosterols, oryzanol have been found to lower blood cholesterol. 4. Phenolioc compounds- have antioxidant effects. Cereals are rich source of niacin, iron, riboflavin and thiamine and most cereals have abundant fibre contain, especially barley, oat and wheat.

Cereals in diabetes

For maintains of blood glucose level some whole grains are helpful like i.e. oat meal, whole wheat flower, wheat bran, whole corn meal, barley, brown rice. Oats and barley are abundant in soluble dietary fibre i.e. βglucan which helps in reducing postprandial glucose and insulin responses and also in maintaining glycemic control and regulating blood lipids.[27] Along with fibre content, oats and barley having low glycemic index which is helpful in maintaining of blood glucose level.

Cereals in Coronary Heart Diseases

The outer layers of cereals contain phenolic acids, which are antioxidants and plays as a protective potential against CHD. These phenolic acid in cereals brans after they gets absorbed in adequate in adequate amounts, which are beneficial for circulated system. The United States Food and Drug Administration (FAD) suggested that βglucan of about 3 gm. or more per day from barley or oats may reduce the risk of coronary heart disease.[28]

Cereals in Cancer

Cereals are mainly phytoestrogens of the lignin family. These phytoestrogens may play as a protective effect against hormone related cancers. Barley is abundant with soluble as well as insoluble fibre. Soluble fibre i.e. β- glucan is helpful in type 2 diabetics. Insoluble fibre present in barley may be helpful in maintaining regular bowel function and in lowering the risk for certain cancers such as colon cancer.

CONCLUSION

Regular consumption of *Shimbi Dhanya* (pulses) like *Mudga* (green gram), *Rajma* and *soya bean* etc., shows valuable result in health promotion and prevention from various calcium

deficiency diseases (osteopenia, osteoporosis). Germination, soaking, boiling and soup are excellent methods to utilize maximum yield of calcium from pulses. It is also stated as, for Swastharakshana a person should daily indulge in Hitahara and Hitavihara Sevana so that can avoid various lifestyle disorder. In order to live healthy, one must alive in harmony with his surroundings and follow a diet suitable to one's on bodily constitution.

As discussed above in *Caraka Samhita*, *Sushruta Samhita* and *Vagbhata*, cereals should be taken in diet daily in certain amount for promotion of health and prevention from diseases like *Meda roga*, *Sthaulya* etc. it is advised to take regularly *Yava* and *Shashtika, Shali Dhanya* for maintenance of health and prevention from diseases. Cereals are chosen for the consumption as they have higher fiber. Cereals which are an important nutrient that helps to prevent weight gain and heart disease, in diabetes and cancer.

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