SHIMBHI DHANYA VARGA (GROUP OF LEGUMES AND PULSES): A PREVENTIVE AND CURATIVE PERSPECTIVE

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ABSTRACT

In recent years there is a sharp increase in lifestyle disorders such as cardiovascular disease, diabetes mellitus etc. Therefore we ought to be more careful about food and our Life-style. Health promotion can be done by the pearls of knowledge from Ayurveda – the science for the achievement of long, happy and healthy life. Charaka Samhita describes about the twelve categories of naturally nourishing food. One among them is the varieties of pulses such as Mudga (green gram), Masha (Black gram), Adhaki (Red gram) and Makushtha (lentil), Rajashimbi (Soyabean), Satina (peas), etc., which have been described in Shamidhanya Varga and are also called Vaidala (dicotyledons). This category of pulses is main source of proteins for vegetarians. The dietary importance of legume seeds is expected to grow in the years, because of the growing need of proteins (and other nutrients) as a result of increasing world population. This article is an attempt to analyze the Shimbhi Dhanya Varga mentioned in Ayurveda on a scientific basis.

Key words: Shimbi Dhanya, Pulses, Mudga, Health promotion

INTRODUCTION

“Let food be thy medicine and medicine be thy food.” - Hippocrates, the father of Greek medicine.

The fundamental principle for the positive health was expressed by Vagbhata as – "Hitabhuk, Mitabhuk, Ritubhuk". Hitabhuk: means to eat the food which is wholesome and nourishing to an individual and not merely for taste. Mitabhuk: means eat moderately (only that much which is essential for sustenance of the vitality and stamina of the body) or one third of the stomach capacity. Ritubhuk: means to eat the food prepared in a proper way suitable for a particular season. Even in modern day word Nutraceutical is used which means “any food, or part of food, considered to provide health benefits, including the prevention and treatment of disease”.

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". Ayurveda emphasizes on preventive aspects rather than curative. Food (Ahara) is the foremost among the three sub pillars of life as per Ayurvedic classics, Nidra and Abrahmacharya being other two. Nutritious diet is the key to prevent many common health problems. Acharya Charaka advocates regular intake of food articles be-
longing to different groups like Shasthika (variety of rice), Shali (variety of rice), Yava (barley), Mudga (Green gram), Saïndhava (rock salt), Amalaka (Indian gooseberry), Jangala mamsa rasa (meat of terrestrial animals), Madhu (honey), water, Payah (milk), Sarpi (ghee) for prevention of diseases and health promotion. These food groups have to be consumed in combination regularly. Among them Shimbi Dhanya or Shami Dhanya (Pulses) form an important group which supply the required proteins, one among the proximate principles and body building foods as per modern. Especially for the vegetarians pulses form the most important source of proteins and they are also called as poor man’s beef.

In Sushruta Samhita, the category of pulses is known as Mudgadi Varga, Vadala (dicotyledons) or Shimbi Dhanya. They are commonly used as food under the name of Mudga (Green gram), Vanamudga (wild variety of green gram), Kalaya (peas), Makustha (moth bean) Masura (Lentils), Mangalaya(a variety of masura), Canaka (Bengal gram), Satina(a variety of of pea), triputa(pea), Harenu(a variety of pea), Adhaki(red gram) etc. They are Kashaya (Astringent), Madhura (sweet) in taste, cold in Virya (potency) and Katu (pungent) in Vipaka. They generate vayu, arrest the flow of urine and evacuation of stool and alleviate Pitta and Kapha. Acharya Vagbhata states Mudga (green gram), Adhaki (red gram), Masura (Lentils) and other varieties belong to the group called Shimbi Dhanya (those having pods/legumes). They are said to be Vibandhakrut (cause constipation), Kashaya, Swadu (astringent sweet in taste), Grahi (absorbent), Katu vipaka (pungent after digestion), Sheeta (cold in potency), Laghu (easily digestible).

**Mudga (Green gram/Vigna radiata Linn.)**

The word Mudga in Sanskrit means “that which brings joy, delight and gladness”. The pharmacodyanmics of Mudga in Ayurveda has been explained to be that as Madhura (sweet), Kashaya (astringent) in taste, Laghu (light for digestion), Ruksha (dry), Sheetvirya (cold in potency), Katu Vipaka (post digestive transformation into pungency) and it exhibits Kaphapittahara Vatakarat (pacifies kapha and pitta whereas aggravates vata) property. It is known to be Drustiprasadaka (improves quality of vision). Mudga (green gram) is the best among Shimbi Dhanyo. Moong dal is a dieter friendly dal rich in iron (3.9 mg/100gm) and potassium (1150mg/100gm). Iron helps maintain hemoglobin levels and potassium helps reduce blood pressure, a boon for hypertensive people. Its soup can be given in Jvara and Udara Roga. Its Payasa form is beneficial externally as Upanaha in Daha, Shool And Vatarakta. Mudga Hima is beneficial in Raktapitta and with Pippali it cures thirst and vomiting. Kantakari mixed Mudga Yusha is said to be Shvasa Kasahara. Mudga Yusha with Amalaki it is beneficial in Prameha and Kustha.

**Masha (Black gram/Phaseolus mungo-Linn.)**

Black gram is Snigdha (unctuous), Balya (increases strength), increases Kapha and Pitta, Malakara (increases bulk of faeces), Sara (laxative), Guru (not easily digestible), Ushna (hot in potency), Vatahara (mitigate Vata), Madhura (sweet in taste), and Shukra Vruddhikara, Virekakrut (in-
creases semen and promotes ejaculation strength). The qualities of black gram are similar to the fruits of Kakandola and Atmagaufa (Mucuna pruriens).

Black gram is known as Urad Dal in Hindi. In texts of Ayurveda it is known as “Masha”. Black gram is mainly grown in South Asia. It is store house of calcium, potassium, iron, magnesium, copper, manganese etc. Urad dal contains vitamins and dietary fibers. Due to high potassium content Urad Dal acts as an aphrodisiac. It produces excreta in large quantity and semen instantaneously and heavy to digest and increases the moistness of body tissues. High blood pressure occurs due to high sodium level and low potassium level. Black gram contains plenty of potassium. This helps to balance sodium potassium level and reduce hypertension or high blood pressure. There is a strong link between hypertension or high blood pressure and erectile dysfunction. As potassium helps to reduce high blood pressure, it also helps in erectile dysfunction. Aggravated Vata leads to many diseases including problems like erectile dysfunction, premature ejaculation, low sperm count and motility etc. Hence Ayurveda Acharyas recommend use of “Masha” in such health conditions as the unctuous, heavy and strength promoting property along with hot potency helps to alleviate the Vata. “Masha” or Urad Dal is used in the form of hot poul-tice in inflammation of joints and muscle pain. Massaging with herbal oil processed with Masha reduces pain and inflammation and also brings about bulk in the muscles by its nourishing and strengthening nature. Hence Acharyas recommend it in nervous system problems like nervous debility, par-tial paralysis, facial paralysis and other disorders. Masha brings about moistness along with increase in bulk of the faeces, hence it is recommended in conditions like constipation and piles.

**Rajamasha (Vigna cylindrica Skeels)**

Rajamasha (Alsendra /big sized black gram/ Vigna cylindrica Skeels) is laxative and palatable. It reduces semen, alleviates Kapha and Amlapitta (acid dyspepsia). It aggravates Vata. It is unctuous, astringent, non slimy and heavy.

**Chanaka (Cicer arietinum Linn)**

Chanaka (Cicer arietinum Linn), Khandika (a variety of kaly lathyrus sativus) and Makustha (Phaseolus aconitifolius Jacq.) are sweet in taste and Vipaka. It is sweet with accompanying astringent taste and unctuous. Chanaka is Laghu, Ruksha, Shita, Vatavardhaka in property. It is Tridoshshamaka when use with Ghrita. In the form of soup and anointment, it is useful for the patient suffering from the vitiation of Pitta and Kapha. Bengal gram dal is rich in B-vitamins. It is full of fiber which helps diabetics to control their blood sugar levels. It also has potassium and folic acid. The fiber in it helps lower cholesterol levels thus helpful in preventing heart problems.

In Sushruta’s view Makusthaka (moth) is Krimikara (vermigenous), but according to Acharya Charaka it is beneficial in Raktapitta, Jvara, Atisara, Yakshma as it is sweet in taste and Vipaka and cool in potency. Further Acharya Sushruta mentions it as alleviator of Pitta and Kapha, rectifier of deranged blood vessels and tends to bring on a loss of virile power and with Ghrita, it is best Tridosha Shamana.

**Adhaki (red gram/Cajanus cajan Linn.)**
Adhaki (red gram) is laghu, ruksha, kasaya madhura, shita varna grahi and alleviates the vitiating Kapha and Pitta, but aggravates Vata. Contrary to that Acharya Sushruta opines that the Adhaki does not excessively agitate the Vayu in the organism.  

Apart from protein and fiber, it contains folic acid which helps to prevent anemia and is also important for pregnant women as it is essential for foetal development and can prevent neural tube birth defects such as spina bifida. It is low in calories, so is good for people who are on weight loss diets. It also helps to control blood sugar levels. It is beneficial in obesity. Its Yusha is useful in Pittaatisara. Dhoomvarti of its leaves are beneficial in Hikka. In Vatarakta its Yusha with Ghrita is advocated.

But Harenu and Satina are Ruksha, Madhura, Shita, Vatavardhaka, Raktapitta-shamaka and tend to constipate bowel. Masura (lentil, Lens culinaris Medic) Masura is laghu, ruksha, madhura rasa, madhura vipaka, shita, vatal, kaphapitta shamak, raktapittahara, javaraghan and grahi. Masura induces constipation and Kalaya increases Vata. Masoor dal helps to reduce blood sugar levels in especially controlling the blood sugar that spikes after a meal, controls hypertension, prevents anemia and lowers cholesterol.

Kulattha (Horse gram, Dolichos biflours Linn.) Kulattha (horse gram/ Dolichos biflours Linn.) is Ushna (hot in potency), Kashaya (astringent), Amlapaka (sour at the end of digestion). It reduces semen and alleviates the vitiated Kapha as well as Vata. It is constipative and is useful in urinary stones (Shukrashmari). Acharya Sushruta advocate a rare species Vanya Kulattha, which pacifies the deranged Kapha and proves curative in cases of Anaha, obesity, piles, hiccough, Shwasa and dyspnoea. It may bring the episodes of hemoptysis and proves beneficial in eye disorder. Acharya Vagbhata states that this pulse increases bleeding disorders and is not recommended in such conditions, like menorrhagia.

Horse gram is a minor legume used in India having a good nutritional quality. The scientific studies have recently shown to prevent atherosclerosis in rats and may be a potential functional food for the prevention of hyper lipidemic atherosclerosis. An α-amylase inhibitor from horse gram seeds has recently been shown to have anti hyperglycemic potential. Extracts from horse gram plants have shown potential for treating several human infections.

Shimbhi - Double bean (Phaseolus lunatus Linn.)

According to Acharya Charaka Shimbhi are unctuous and astringent, aggravate Vata in the Koshta. It is neither aphrodisiac nor conducive to eyes. It produces wind during the process of digestion therefore they must be taken together with some unctuous substance by strong person. Acharya Sushruta advocates that they are antitoxic, reduce Kapha and power of sight. They are imperfectly digested and acquire a pungent taste in digestion.

Rajashimbi(Soyabean/ Glycine max Merril.) Soya bean is guru, snigdha, madhura kashaya, usna, durjara, vatashamka, snyajan nan and balya.

Nishpava (a type of Shimbhi/ Doichous lab-lab Linn)
Nishpava (a type of Shimbi) is guru, ruksha, sar, amla vipaka, usna virya, kaphaghna sukraghna aggravates Vata, Pitta, bleeding disorders; it increases breast milk production and promotes urine formation.

**Tila (Sesamum indicum Linn.)**

Tila (Sesamum indicum Linn.) in this group described by Acharya Charaka has Ushna (hot in potency), Tvachya (good for the skin), Sheetasparsha (cold on touch), Keshya (good for hairs), Balya (strengthening), Guru (hard to digest), Alpamutra (produces little quantity of urine), Katu paka (pungent at the end of digestion), Medhakrut (increases intelligence), Agnikrut (increases digestive function) property, and increases Kapha and Pitta.

The Khandika (Khesari) popularly known as Lathyrus sativus is Ruksha, Madhura, Tikta, Kashaya, Shita, Vatavardhaka, Kaphapittahara and Vibbondhakara. It leads to development of lathyrism, on prolonged use due to the presence of toxin known as Beta oxalyl amino alanine. The reference of this disease is found in Bhava Prakash by the name Kalaya Khanja as spastic paraplegia.

**Tuvari (Phaseolous vulgaris)**

Tuvari (Phaseolous vulgaris) is having Laghu, Tiksha, Ushna, Kaphahara, Dipana, Grahi, Krimighna and Kustaghna property. The red kidney bean (Phaseolus vulgaris) has lectin, called phytohaemagglutinin (PHA), which is not digested this leads to a weight loss, atrophy of skeletal muscle and thymus. It also induces changes in the hormonal levels in the body and stimulates the blood cell mitosis. Lectins bind to the brush border epithelium of the digestive tract and can be endocytosed into the circulation. Pusztai et al. showed that high doses of PHA (0.2-0.8 g/kg b.wt. per day) cause damage of the small intestine mucosa induce coliform bacteria overgrowth in the intestine lumen and increase lipid mobilization and glucose oxidation.

**Mineral and trace elements contents of different pulses**

(All values are mg. per 100 gm of edible portion)

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<th>Na</th>
<th>K</th>
<th>Cu</th>
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<td>1.01</td>
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<td>0.012</td>
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<td>1.81</td>
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Lentil, whole
Lentil, dhal
Moth beans
Peas green
Peas dry
Rajmah
Red gram, whole
Red gram dhal
Soyabean (black)
Soyabean (white)

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**DISCUSSION**

The term "pulse", as used by the United Nations' Food and Agricultural Organization (FAO), is reserved for crops harvested solely for the dry seed. FAO recognizes 11 primary pulses. This excludes green beans and green peas, which are considered vegetable crops. Also excluded are crops that are mainly grown for oil extraction (oil-seeds like soybeans and peanuts).

Legumes contain a number of bioactive substances including enzyme inhibitors, lectins, phytates, oligosaccharides, and phenolic compounds that play metabolic roles in humans. Enzyme inhibitors and lectins can reduce protein digestibility and nutrient absorption, respectively, but both have little effect after cooking. Phytic acid can diminish mineral bioavailability. Some phenolic compounds can also reduce protein digestibility and mineral bioavailability, while galacto-oligosaccharides may induce flatulence. These are scientific evidences for the general properties of Shimbi Dhanya. On the other hand, these same compounds may have protective effects against cancer. Phytic acid has antioxidant and DNA protective effects, phenolic compounds such as flavonoids and phenolic acids exhibit antioxidant and other specific properties and galacto-oligosaccharides may exert probiotic activity.

**Pulses for healthy complete diet**

Pulses provide protein, complex carbohydrates, and several vitamins and minerals. Like other plant-based foods, they contain no cholesterol and little fat or sodium. Pulses are good source of thiamine, riboflavin, niacin, pyridoxamine, pyridoxal and pyridoxine. Pulses also provide iron, magnesium, phosphorus, zinc and other minerals, which play a variety of roles in maintaining good health. Pulses like pea and beans contain about 20% (dry weight) while soyabean upto 38–40%. The legume seeds are among the richest food sources of proteins and amino acids for human and animals. All legumes are relatively low in sulphur-containing amino acids, like methionine, cysteine and tryptophan, but the amounts of another essential amino acid, lysine are much greater than in the cereal grains. The cereal are rich in amino acid like methionine, thus when consumed daily together they supplement each other.

**Pulses as Antioxidant**

Legume seed proteins exhibit free radical scavenging capacities. Horse gram (brown and black), cowpea (brown), com-
mon bean and *Masura* (moth bean) showed high protein content and also exhibited good DPPH scavenging activity, ferric reducing and reducing power activity. Comparatively, pea (white and green) and chick pea (white, green, brown) showed less antioxidant activity. As the legumes are rich in antioxidants they can be considered as *Ajasrika Rasayanas* that have to be consumed daily.

As legumes have high protein content with high antioxidant activity they can be used as a food supplement and natural antioxidants. Therefore play a crucial role in the prevention of chronic diseases such as cancer and heart disease, cancer, diabetes, and Alzheimers’s disease which are due to oxidative stress in body.

**Pulses and cardiovascular diseases**

Many pulses have *Kaphamedohara* Property hence are *Pathya* in cardiovascular disease and obesity which are proven through modern researches. Consumption of legumes has been associated with reduced risk of coronary heart disease and cardiovascular disease (CVD); legume consumption of four times or more per week compared with less than once a week, was associated with 22% lower risk of CHD, and 11% lower risk of CVD. The study, led by Dr Peter Zahradka from the University of Manitoba, also suggested that consuming pulses like beans, peas, lentils and chickpeas can reverse the changes that happen in blood vessels due to high blood pressure. In October 1999, the U.S. Food and Drug Administration (FDA) approved a health claim that ≥6.25 g of soya bean protein per serving reduces risk of heart disease. In particular, a daily soya bean protein intake of 25 g was considered beneficial, based on a number of previous clinical observations. They also reduce total and LDL cholesterol levels, blood pressure blood pressure.

**Pulses and diabetes**

Pulses like green gram and horse gram are *Kaphahara*, hence *Pathya* in diabetes. A substantial increase in dietary intake of legumes as replacement food for more rapidly digested carbohydrate might therefore be expected to improve glycaemic control and thus reduce incident diabetes. *Mung bean* (*Vigna radiata*) is an excellent source of vitamins, minerals and protein with its essential amino acid profile comparable to that of soybean and kidney bean making it an attractive option for diabetic patients. It is also well documented that certain proteins in green gram exert both antifungal and antibacterial activity.

**Pulses and cancer**

An inverse association between vegetables, particularly dark green/dark yellow vegetables, legumes, and allium vegetables, with endometrial cancer risk had been evident. Dark green/dark yellow vegetables contain high levels of carotenoids, folates (with beans as an excellent dietary source) vitamin C, and riboflavin. Carotenoids and vitamin C may inhibit endometrial carcinogenesis via antioxidant effects, while folate influences DNA stability via its important role in the synthesis of nucleotides and DNA methylation. Folate also could affect carcinogenesis in numerous specific cancers (Kim et al., 2000 and Lucock, 2000).

**Pulses and obesity**

The pulses when consumed in whole grain form are *Guru* and *Ruksha* hence *Pathya* in obesity. Study suggest person consuming whole grains, beans, and legumes, had the lower BMI, small waist circumference (WC), and the small mean annual increase in
One small trial performed in Mexico compared a low- and a high-GI diet, providing 63 g vs. 55 g, respectively, of carbohydrate from cereals and legumes. The low-GI diet (high in whole-grain bread and beans and with less white bread and rice) resulted in improved glycemic control and greater weight loss.

**CONCLUSION**

The pulses should be consumed daily in the form of diet for health promotion and disease prevention. Even Acharya Charaka emphasizes on the daily intake of green gram and other pulses for the maintenance of health along with *Shuka Dhanyas, Phala* and *Shaka varga*. The pulses help in body building, stimulation of the immune system, regulation of lipid and hormone metabolism and detoxification of enzymes. They are beneficial in variety of diseases like Diabetes mellitus, hypertension, carcinoma etc.

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