

Preventive and curative aspect of *shimbi dhanya varga* (pulses)**w.s.r. to calcium deficiency****Shubhangi S. Kshirsagar^{1*}, Vidya A. Thatere (Wasnik)², V. G. Patrikar³**

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Abstract

Calcium is important for optimal bone health throughout human life. Also Phosphorus and Magnesium are among minerals and they have an important role in the bone metabolism. If we don't get enough Calcium, you could face the problems related to weak bone, children may not reach their full potential adult height and adults may have low bone mass, which is a risk factor for osteoporosis. In recent years, use of medicinal Calcium is increased, because the community has become concerned about Calcium deficiency in their bone health.

In Ayurved Samhitas, there is a brief description about various *Aahar vargas* (Naturally nourishing food). *Shimbi varga* (Pulses) is one of them. According to Ayurveda most of *dravyas* of *Shimbi varga* are *vatashamak* and *Vata* resides in *Asthi dhatu*. According to modern science *Asthi* (bone) is main site

of Calcium. *Shimbi varga* contains rich amount of Ca, P, Mg and proteins & which is necessary for bone health. If we get these minerals from our diet, they are more effective and they are easily available and has no side effects. Therefore the use of these pulses in regular diet shows preventive and curative aspect in Calcium deficiency disorders.

Keywords : calcium, *aahar varga*, *shimbi dhanya*, *asthi dhatu*.

Introduction

Acharya Charaka said that, the body and diseases are formed by food (diet), wholesome and unwholesome food are responsible for happiness and misery respectively [1]. Most of the diseases are produced due to improper food. So the intelligent and self-controlled person should consume *hitaahar* (proper, healthy and nutritious diet), *mitaahar* (in right quantity) and *kalbhaji* (at the right time) to prevent the occurrence of diseases due to *vishmashana* [2]. And

also the aim of Ayurveda is to maintain the health of healthy person and cure the diseased person[3]. For the prevention of disease *Hitahar* (balanced diet) and *hitkar vihar* is necessary. Hence *Aahar* (diet) has main place in subpillars of life in Ayurveda[4].

Nutritious diet is necessary to prevent many common health problems. Nutrients are organic inorganic complexes contained in the food. There are about 50 different nutrients which are normally supplied through food we eat. Each nutrient has specific function in the body. Most of the natural food contains more than one nutrient. They may be divided into two parts – a) Macronutrients—these are proteins, fats and carbohydrates; which are often called “proximate principles” because they form the main bulk of our food. b) Micronutrients – these are vitamins and minerals. They are called micronutrients because they required in small amount which may vary from a fraction of a milligram to several grams [5].

In Ayurveda, various types of *Ahar* *vargas* are mentioned viz..*Shukdhanya*,*Shami/Shimbidhanya*. According to modern science *Shimbidhanya* comprises as pulses i.e.a variety of grams. Most commonly eaten pulses are redgram (*aadhaki*), bengalgram (*chanak*), green gram (*mudga*), black gram (*mash*) and other which include lentil (*masur*), peas (*kalaya*). They contain 20-25% of protein which is double that found in wheat and three times that found in rice and more proteins than eggs and fish but the quality of proteins is slightly inferior

than that of the animal protein. Pulses are the back bone of protein nutrition in India. They are more economical than meat (about half the price of meat). Pulses are rich in minerals like Ca, P, Mg etc. and vitamin B group vitamins like riboflavin, thiamine. Pulses are also called as “poor man’s meat”[6].

Due to high nutritious value of pulses, 2016 was declared as the international year of pulses by sixtyeighth session of United Nations general assembly on December 2013. Purpose of this programme is to raise awareness about the nutritional values of pulses. Also this programme promotes the production of pulses world wide, improve crop rotation and trade in pulses [7]. Pulses contain maximum amount of proteins, Calcium, Phosphorus and other minerals and vitamins. Therefore government of India has included these pulses in different community health programmes like special nutrition programme, balwadi nutrition programme, integrated child development scheme (ICDS) and mid day meal programme [8].

Calcium is a major mineral element of the body. An average adult body contains about 1200gm of calcium of which over 98% is found in the bones. The amount of Calcium in the blood is 10mg/dl. Ionized Calcium in the plasma has many vital functions including formation of bones and teeth, coagulation of blood, contraction of muscles, cardiac actions etc [9].

According to WHO, osteoporosis is the second only to cardiovascular disease as global health care problem and medical studies show a 50yr old woman has a similar risk of dying from hip fracture as from breast cancer. 1 in 3

females and 1 in 5 males over 50 suffers from osteoporosis in India, making India is one of the largest affected country in the world [10]. Among Indian women aged 30 to 60 yrs from low calcium groups reported with the high prevalence of osteopenia (52%) and osteoporosis (29%)[11].

In today's modern era, there are increased in lifestyle disorders like cardiovascular, musculo skeletal disease. Therefore peoples are more conscious about their diet and lifestyle. For that purpose most of educated peoples are taking multivitamins, Ca and Iron tablet without physicians advice. This is the sign of peoples who aware about their overall health. But there are some side effects of this medicinal form of Ca, Iron and multivitamins &also they are not completely absorbed in the body and they are costly. When we get these types of minerals and vitamins in the form of daily diet, then there are less chances of the occurrence of their deficiency disorders. So automatically prevention of these disorders and when deficiency occurred then these nutrients could be given in the form of pathyahaar for the management of the deficiency disorders.

Aim and objectives :

1. To study the literature about *Shimbi dhanya varga* according to Ayurveda.
2. To study the literature about pulses or legumes according to modern science.
3. To study the literature about Calcium, its deficiency.

Material and methods :

References were collected from Ayurved classics, preventive and social medicine, national institute of nutrition, Hyderabad and various journals. These references are analyzed logically and conclusion is drawn.

Rasa, Veerya, Vipak , Guna, Doshagnata and nutritional values of some pulses is given in table number 1 and 2 respectively.

Table no.1 : Rasa, Veerya, Vipak, Guna and Doshagnata of Pulses

Sr.no.	Pulses	Rasa	Vipak	Veerya	Guna	Doshagnata
1.	Mudga	Madhur Kashaya	katu	Sheeta	Laghu, ruksha	Kaphapittaghna, slightly vatakar[12].
2.	Kulathya	Kashaya	Amla	Ushna	..	Kaphavataagn, Raktapittkar[13]
3.	Chanaka	Madhur kashaya	Madhur	Sheeta	Ruksha	Tridoshashamak with ghrita[14].

International Journal of Research in Indian Medicine

4.	Tila	Katu tikta kashaya, madhur	Madhur	Ushna	Snigdha	Vatahar, pittakar[15].
5.	Masha	Madhur	Madhur	Ushna	Snigha, guru	Vatahar, kaphakar[16].
6.	Aadhaki	Kashaya madhur		Sheet	Ruksha, laghu, grahi.	Kaphapittanashak, Slightly vatakar[17].
7.	Makushth	Madhur	Madhur	Sheeta	Ruksha, grahi	Raktapittashamak [18].
8.	Rajamash	Madhur Kashaya	Madhur		Ruksha, guru, vishada	Kaphahar, vatakar[19].
9.	Masur	Madhur	Madhur	Sheet	Laghu, ruksha, grahi	Vatakar, kaphapittashamak [20].
10.	Nishpav	Madhurkanashaya	Madhur	Sheet	Guru, ruksha, sara, vidahi	Kaphaghna [21].
11.	Kalaya	madhur	Madhur	Sheet		[22]

Table no. 2 : Nutritional values of pulses per 100gms in mg as per NIN, Hyderabad [23]

Sr.no	Pulses	Ca (mg)	P(mg)	Mg (mg)	Iron (mg)	Protein (gm)	Carbs (gm)	Fats (gm)	Energy (kcal)
1.	Mudga	124	326	127	4.4	24	56.7	1.3	324
2.	Kulathya	287	311	156	6.77	22	57.2	0.5	321
3.	Chanak	202	312	119	4.6	17.1	60.9	5.3	360
4.	Tila	1450	629	351	14.55	17.73	23.45	49.67	573
5.	Mash	154	385	130	3.8	24	59.6	1.4	347
6.	Aadhaki	73	304	86	2.7	22.3	57.6	1.7	335
7.	Makushta	202	230	225	9.5	23.6	56.5	1.1	330
8.	Rajamasha	77	414	184	8.6	24.1	54.5	1	323

9.	Masur	69	293	80	7.58	25.1	59.0	0.7	343
10.	Nishapava	77	414	-	8.6	24.1	54	1	323
11.	Kalaya	75	298	100	7.05	19.7	56.5	1.1	315

Discussion

In Ayurveda explains that human body is a congenital homeostasis of dosha-dhatu-mala and they are chiefly responsible for growth of human body [24].

When there is an imbalance or disequilibrium in the functioning of dosha-dhatu-mala then there is manifestation of disease [25]. Seven dhatus are present in the human body. Among them asthi is number fifth dhatu.

Aacharya Vagbhat described about the correlation between Asthi dhatu & Vata dosha that is Aashraya – Aashraye Bhava [26]. Asthi is the main site of vata and vata resides in *Asthi dhatu*. Therefore there is mutual relationship between vata dosha & Asthi dhatu. Both are in inverse relationship with each other. That is the factor which increases *Vata dosha* will decreases *Asthi dhatu* and vice versa [27].

According to modern science 99% of Calcium is present in bones (Asthi dhatu), so the bones are the main site of Calcium [28]. As per modern science, pulses contains maximum amount of Ca, P and proteins, and these are useful for normal bone health. As per Ayurveda, symptoms of *Asthi dhatu kshaya* can be correlates with Calcium deficiency symptoms.

As per Aashraya – Aashraye bhava concept, most of the pulses are *vatashamak* (*mash, kulathya, mudga, chanaka, tila*) and *vatshamak dravyas* (drugs) are beneficial for *Asthi dhatu* i.e. they nourishes *Asthi dhatu*. These *vatashamak* pulses contains comparatively high amount of Calcium and Phosphorous. Hence these are beneficial in *calcium deficiency*. And on other hand pulses those are *vatakar* but they also contains maximum amount of calcium and Phosphorous. Therefore they are also useful for Calcium deficiency.

Balanced diet is necessary for the health. It contains a variety of foods in such quantities and proportions that the need or energy, amino acids, vitamins, minerals, fats, carbohydrates and other nutrients is adequately for maintaining health, vitality. It has become an accepted safeguard a population from nutritional deficiencies. In constructing balanced diet, first and foremost principle is the daily requirement of protein should be met. This amount is 10-15% of daily energy intake [29]. As per balanced diet formulated by an Indian council of Medical research, daily allowance of pulses for children (1-6 year) 35gm, boys and girls (10-12 years) 45gm, adult man with sedentary lifestyle, moderate work, heavy work is 40gm, 50gm, 60gm respectively and for adult

women with sedentary lifestyle, moderate work, heavy work is 40gm, 45gm, 50gm respectively [30]. As per ICMR guidelines the recommended daily allowance of 600mg of calcium has been suggested for adult. The physiological requirements are higher in children, pregnant and nursing mother [31]. Thus if we get these minerals from dietary sources then there will be minimum chances of deficiency disorders. And also pulses in the form of *Yush*, *Krushara* or other forms like dal, loddoo are useful in the management of diseases. *Supa* of *Mudga*, *masur* and *kulathya supa* is prepared with *lawan* (salt) is *Vatavyadhihar*. If this soup is prepared with *Dadim rasa* and *Manuka* then it is specially beneficial for *Vatavyadhi*[32].

Conclusion – Regular consumption of pulses in daily diet shows preventive and curative aspect in calcium deficiency.

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Ayurline: International Journal of Research In Indian Medicine 2017; 1(3) : 40-47