



Medicinal Utility, Nutrition and Importance of Pulses

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Pulses have a great importance among all traditional Indian food items. Pulses are not only a huge source of protein in vegetarian food, but its consumption in adequate quantities is very important for health and immunity as well. All types of pulses play a vital role in permanent food production to meet the goals of food security and nutrition. All pulses fall under the Pea family or Leguminaceae family. They are also called pulses crops. In other words, Legumes or seeded crops whose dried seeds can be used as pulses are called pulses crops. Several types of amino acids, proteins, vitamins, minerals are found in pulses. They are the main source of protein for vegetarian people. About 40% completely vegetarian population of India is dependent on pulses for their protein needs. Main pulses produced and used in India are Arhar (*Cajanus cajan*), Chana (*Cicer arietinum*), Moong (*Vigna radiata*), Urad (*Vigna mungo*), Masoor (*Lens culinaris*) and Lobia (*Vigna unguiculata*). Apart from this, Sem (*Lablab purpureus*) and peas (*Pisum sativum*) also belong to the category of main pulses of India. The present research paper is based on the medicinal utility, nutritional value and importance of pulses.

Key words- Protein source, pulses, vegetarian food, legumes etc.

Introduction

Pulses are the main source of protein for vegetarian protein across the world including India. Several types of pulses contain 22-26% of protein which is impossible to be attained from any other vegetarian food product. An adult needs 50-60 grams of protein everyday. Protein is essential for the growth and development of our body and for the production new cells and repairing of damaged ones in our body. Protein is also important for healthy and balanced body. It is found in all cells, tissues, muscles and body parts of humans. Several types of amino acids crucial units of body building are found in proteins. Various amino acids found in pulses protein determine the usage of proteins in the body. Since amino acids do not break inside the body, a daily protein intake as food is prescribed for a good health.

Pulses are rich of minerals such as potassium, magnesium, phosphorus, folates etc. Fibres are also found in abundance in pulses. Hence, consumption of pulses is considered good for keeping the heart healthy. Folic acid and high quality magnesium found in pulses is very helpful in blood transmission along with maintaining nutrition and oxygen levels in the body. A

number of soluble fibres are found in pulses which are helpful in containing the cholesterol levels in blood. Soluble fibres found in pulses not only reduce constipation and other digestion related problems, they also provide relief in blood sugar or diabetes. The iron present in pulses is helpful in fighting anaemia. The protein of pulses provides immunity to the body. World Health Organization suggests the usage of pulses in fighting a number of ailments such as obesity, diabetes, cancer etc. Some of the recent studies have concluded that 1 gram protein per kilogram body weight is important for a healthy diet.

Agriculture had impacted the development of human civilization since the beginning. Before the industrial revolution, people across the world were in the profession of agriculture or farming. Agriculture was not only the base of economy; it was also the centre of human life and existence. Farming of pulses has an exceptional place in the Indian agriculture.

The quality of Nitrogen fixation is found in pulses or plants belonging to Fabaceae (Leguminaceae) family. Due to this, these plants fix the atmospheric nitrogen in their roots and increase the fertility of the

soil. They can also be grown in wastelands and areas of less rainfall. The skin of pulses is also rich in protein and so it can be used as animal and poultry food. Plants of pulses crop are also used as green manure which are helpful in increasing organic material and nitrogen in the soil. These crops do not need much care and can be grown in small and less fertile lands. Since these crops are of short time period, they are very useful for multi-crop system. Major pulses crops include grams, peas, moong, urad, arahar, rajma, sem etc. The present study is an effort of highlighting the medicinal utility of pulses along with food security in the future.

Major Indian Pulses and their contribution in conservation of health

Arahar or Pigeon Pea (*Cajanus cajan* L.)

Arahar is the most consumed pulses of India which is being grown since 3000 years. India produces 90% of world's Arahar. Arahar contains various amino acids (Proteins), Carbohydrates, Iron, Calcium, Magnesium, Potassium, Vitamin B and fibres. A number of researches have proved that Folic acid (Ba) found in Arahar is essential for containing diseases related to brain, nervous system, spine and problems prevalent in pregnant women. Soluble fibres present in Arahar prevent us from several ailments such as constipation, heart diseases, strokes, cancer, Cardiovascular problems and Type-II diabetes. It also reduces bile disorders and problems related to cough and blood. Iron, calcium and magnesium found in Arahar are very helpful in keeping the heart healthy. Chewing of pulses leaves helps in controlling blood sugar.

Moong or Green grams (*Vigna radiata*)

Moong is one of the most consumed pulses in India. It is also considered as the most nutritious pulses. It is easier to digest as compared to other pulses. Hence, it is the major food component for patients. Moong is used as a whole, with skin, skinless (washed) and as sprout as well. Moong sprout in fact is a seedling of Moong pulses which is very rich in nutrients such as iron, potassium and Vitamin B and C. Moong sprout is also a good source of protein. Scientific researches have proved that after sprouting, some special enzymes are produced in Moong which are helpful in digesting proteins. Since glucose level of Moong is very low, it is an ideal food for diabetes patients. Sprouted moong is also effective in problems such as obesity, heart diseases, diabetes, cancer and problems

related to ageing. Regular consumption of moong not only detoxifies the body, it also reduces the problems related to digestion.

Several nutrients such as Vitamin A, B, C, E, Potassium, Calcium, Magnesium, Phosphorus, Iron are found in Moong. It is rich in antioxidants and phyto nutrients and hence increases immunity to fight several types of ailments.

Consumption of Moong pulses is also helpful in limiting calories because it has very low quantities of Cholesterol and sodium. The fibre present in Moong diminishes the levels of bad cholesterol and helps in keeping our heart healthy.

Moong halwa (a sweet dish made up of moong pulses) is considered very beneficial for eyes and mind. Moong daal Laddus (Another sweet dish) is very nutritious and are advised for patients and pregnant women.

Urad or Black lentils (*Vigna mungo*)

Urad is consumed as whole, skinned, skinless or washed pulses. It is rich in protein, vitamin, calcium, carbohydrate, starch, Iron and Phosphoric acid. Many times more iron is found in Urad as compared to red meat which in result gives energy to the body. Since efficacy of urad is considered to be cold, it is advised to be consumed only after seasoning with hing (Asafoetida). Regular use of urad as food increases blood and bone marrow in the body. Several types of soluble fibers are also present in Urad, and hence it is helpful in reducing the cholesterol levels in the body. Its regular usage also increases the blood flow in the body which in turn helps keeping the heart healthy. Urad also prevents the blockage of arteries. However, the patients of piles, gout, asthma and paralysis are advised to stop the consumption of urad.

Chana or Grams (*Cicer arietinum*)

Grams are considered as the food of highest quality by scientific researches and medicinal systems prevailing across the world. Grams are found as either black / or Kabuli grams. Grams can be eaten or consumed either in boiled, roasted or in pulses form. Whole gram flour is considered as the best fodder. All medicinal systems across the world including Ayurved, Greek (Yunani) and Naturopathy consider grams as the most nutritious food item. It is also very beneficial for reducing obesity, in problems related to indigestion, diabetes and problems related to blood.

Regular use of grams increases the capability of the brain, reduces blood toxicity and cholesterol along with beautifying and brightening the skin. Black grams when consumed in empty stomach after dampening in the night are beneficial in diabetes. Similarly, the chapatis made up of mixed flour of black grams and barley help control diabetes. Consuming roasted grams with warm milk before going to bed is beneficial in asthma and other problems related to cough. Black grams as well as Kabuli ones are very good source of proteins. Both of them also have carbohydrate, moisture, fat, fibres, calcium, magnesium, iron, Vitamins A, C, D, B-6 and B-12. Leaves of grams provide iron to our body and they are also rich in fibre, protein and carbohydrates. Grams leaves also help in containing the blood sugar in our body. They also provide immunity to the body, are anti-constipation and the antioxidants and Vitamin-E found in them are very beneficial for the skin.

Masoor or Red lentils (*Lens esculanta*)

Masoor can be consumed as whole, skinned, skinless or in washed form. It is rich in protein, carbohydrate and vitamin D along with Calcium, Phosphorus, Iron, Sodium, Potassium, Magnesium, Iodine, Aluminium Copper, Zinc etc. Masoor is very beneficial for digestive system. Masoor is consumed with cow's ghee for treating physical weakness and anemia. It also helps in controlling blood sugar. Since it is very low in calories, it is also helpful in reducing obesity. The calcium and magnesium found in Masoor makes the bones stronger. Furthermore, the antioxidants found in it are beneficial for the skin.

Lobia or Cow pea (*Vigna unguiculata*)

Lobia is quite rich in protein as well as in potassium, magnesium, copper and fiber. It also contains Vitamin D, Vitamin B-12 and calcium. The protein and fiber found in Lobia supports digestion. Consumption of Lobia reduces bad cholesterol in the body. The antioxidants found in Lobia are anticancer. Its pulses are helpful in reducing obesity as well as controlling blood sugar in the body.

Rajma or Kidney beans (*Phaseolus vulgaris*)

Rajma is the most liked pulse crop after Kabuli gram which is also used as vegetable in Indian food. Rajma contains high quality iron which not only strengthens the body but also increases oxygen supply in

the body. The magnesium found in Rajma is beneficial in migrain. Migraine patients are advised to consume Rajma at least once in a week. The folates found in Rajma increase the brain capability. Rajma also contains Vitamin K which not only increases the brain capability, but it is also beneficial for nervous system. Apart from these qualities, Vitamin K also prevents the cells from external shocks. The high quality fibers found in Rajma improves the digestion and regulates the levels of blood sugar in the body. Molybdenum found in Rajma detoxifies the body.

Soyabeans or Soy beans (*Glycin max.*)

Soybean is considered as most protein rich and amino acid rich vegetarian food product due to which it is also known as the non-veg food of vegetarians. Though soyabeans and soybean products are largely used in vegetarian food, it is considered as oil seed or pulses as well. Soyabeans contain about 40% high quality protein and 20% oil. The protein found in Soyabeans is rich in amino acids named Lysine. This is also the reason why Soyabeans are considered as oil seeds as well as pulses. According to dieticians, consumption of about 50g soyabeans everyday diminishes cholesterol in blood by about 3 percent. A number of studies have also revealed that soyabeans reduces the cholesterol levels in the very same way the medicines do. The elements found in Soyabeans strengthen the bones and the Antioxidants present in Soyabeans are helpful in preventing several types of cancers. The consumption of Soyabeans also increases the brain capability.

Matar or Pea (*Pisum sativum L.*)

Pea or *Pisum sativum L.* is a plant that belongs to Leguminaceae or Fabaceae family. Green or raw peas are used as vegetable and consumed as pulses after ripening. Frozen peas are also consumed round the year similarly. The amino acids and fiber found in green peas present in green peas are helpful in regulating the blood sugar in the body. Green peas also contain Vitamin A, B, C and Vitamin-K which reduce the risk of diabetes. Apart from these nutrients, folate is also present in adequate quantities in frozen peas.

The quantity of sugar in frozen peas is very less as compared to other frozen food items. It is also rich in fiber due to which it is a very good and beneficial food item. Consuming peas in the long run not only help

regulate obesity, but also provide relief in joint pain. They are also very helpful in regulating cholesterol and blood sugar. On the other hand, they regulate the risk of Alzheimer's disease and increases immunity of the body. Pulses of dry peas contain adequate quantities of Iron, Zinc, Manganese and Copper as well. The antioxidants present in peas increase the immunity of our body.

Bakla or Fava beans (*Vicia faba*)

Fava beans contain a number of nutrients such as fiber, calcium, phosphorus, sodium, folates, vitamins and many more. Consumption of Fava beans is not only beneficial in reducing the cholesterol levels in the body, they are also very beneficial for the eyes. Consumption of Fava beans also increases the hemoglobin level in the blood.

Kulthi or Horse gram (*Macrotyloma uniflorum*)

Horse gram pulses are very rich in fiber due to which they are very beneficial in problems related to digestive system. They comprise of 22% protein and 57.2% carbohydrate. Horse gram is considered a good food for reducing weight. It is full of antioxidants and considered beneficial for the treatment of kidney stones. Horse gram is also also beneficial in treatment of indigestion. Consumption of horse gram also gives relief in flu, fever, ulcers, diarrhea and uncontrolled periods in women. It is also very beneficial in regulating the blood sugar in our body.

Moth or Dew beans (*Vigna aconitifolia*)

Moth are an anti-rickets pulses produced in water deprived areas. Moth is an important ingredient of Daalmot (a typical snack very popular in India). Since it is rich in protein, fiber and calcium, its consumption is very beneficial in regulating blood sugar, cholesterol level and mental tensions. It also strengthens the immune system of our body and the bones as well. It is also helpful in making our muscles flexible and strong.

Conclusion

To prevent several chronic diseases, we should adopt healthy dietary patterns rich in proteins. Pulses can play a vital role in providing adequate proteins and other important nutrients to our body as a part of vegetarian diet. Pulses represent a food crop with a natural trend towards prioritization of nutrient rich and sustainable food. A number of studies have revealed that pulse consumers have higher intake of fiber and key nutrients (e.g., potassium and folate) and

lower fat intake when compared to non-consumers (Mitchell *et al.*, 2021).

First, we must attain clarity regarding health impacts and ideal serving size. This should then be incorporated into concise and consistent messaging in transregional guidelines and policies (Marinangeli *et al.*, 2017). Furthermore, to actually increase intake to levels determined supportive of optimal health, it will be essential to address consumer concerns (e.g., flatulence, anti-nutrients, long cooking times, and lack of knowledge of how to prepare pulses) and motivate the public to regularly eat pulses (Didinger & Thompson, 2020). As we work towards these goals, the evidence to date supports that eating pulses daily can deliver a myriad of positive health benefits.

Pulse varieties with uniform size and rapid expansion during soaking, high water holding capacity during processing and less splitting are required to be developed for canning. The effects of conventional processing methods (soaking, dehulling, boiling, pressure cooking, germination, fermentation etc.) on the levels of anti-nutritional factors (phytate, protein inhibitors, phenolics, tannins, lectins, saponins etc.) have been extensively evaluated, however, novel methods to eliminate these needs to be developed (Patterson *et al.* 2017). Canning of pulses also reported to decrease phenolic content (Parmar *et al.* 2016). Though the pulses are used in number of indigenous products but their functional attributes and potential health benefits have not been fully explored.

Pulses provide circuitous evidence in reducing the risk of disease. This is the reason due to which pulses have been suggested by many chief health organizations (FAO) as a way to decrease the menace of chronic diseases. Though pulses share several health benefits, current utilization levels are fairly low. The main reason for this could be due to the unavailability of information that can be accessed easily through the literature. So, this review can provide hands on information to millennial population, who are much unaware of the traditional and hear-say nutritional recipes. Thus, we envisage growing consumer opportunity to tap wide -based products. This knowledge will also pave way to product innovations with pulses or pulse ingredients.

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