

Potent role of pulses to enhance immunity in days of COVID 19

Shalini Dixit*, PK Katiyar¹ and Ayushi Tripathi²

ICAR-Indian Institute of Pulses Research, Kanpur 208 024

ARTICLE ID: 38

Introduction

Once we are supposed to protect ourselves from the virus from outside, we need to protect ourselves beginning right from our body by strengthening the immune system. The immune system is indeed complex and is to a great extent impacted by the environment around us. Our immune system has a rather complex structure, with two arms – innate immunity and adaptive immunity. The innate immune system comprises many different kinds of cells, each that perform a different role. These are macrophages, neutrophils, eosinophils, basophils, mast cells, natural killer cells and dendritic cells. The adaptive immune system has the B-cells and T-cells. For the coordinated functioning of so many different cells, a regular and balanced supply of nutrients is crucial. A wholesome and varied diet that includes all the food groups is what can enable a good immune function. The microbes living in our gut play an important role in the body's response to infectious pathogens like Corona virus. It is thus important to maintain healthy gut which helps to prevent impaired digestion that can damage the viral organs like lungs causing respiratory failure.

During these days of the COVID-19, maintaining a healthy diet is one of the most effective ways to protect oneself from the virus. Pulses are considered 'House of nutrients' and are a rich source of protein, dietary fibre complex carbohydrates and a number of vitamins and minerals viz., foliate, potassium, selenium and zinc. They are a good source of iron. Also, they are rich in the hard-to-find mineral selenium, which boosts the immune system, prevents inflammation and helps detoxify some cancer-causing compounds in the body. Many diet around the world rely on pulses as a source of protein (18-35%) which 2-3 times higher than that found in cereals. Pulses are source of complex energy giving carbohydrates with upto 60%. They have a low glycaemic index (GI) rating for blood glucose control, are valuable source of dietary fibre (5-37%). Besides, pulses possess bioactive

compounds, which plays a vital role in the preventions of cancers, heart diseases, osteoporosis and other chronic degenerative diseases. Generally pulses are important for a healthy and disease free life style.

Availability of vitamins and minerals in pulses and their role in boosting immunity

A. Vitamins

Vitamin A: It helps in development of the immune system and plays a regulatory role in cellular immune responses and humeral immune processes.

Source: Black gram

Vitamin B: Also known as Folate and plays a vital role in DNA and protein synthesis and hence directly affects immunity functions.

Source: All pulses

Vitamin C: Has highest antioxidants and helps in building the cells needed for immunity function. RDA for vitamin C is 40mg/day.

Source: Black gram

Vitamin D: It helps in impulsive immune responses. It also protects the body from other invading organisms and provides protective immunity.

Vitamin E: It directly works with the immune cell functions and helps in building immunity. On other hand it is important to elderly peoples since it is a potent antioxidant and has the ability to modulate host immune function.

Sources: Peanuts.

B. Minerals

Iron: Iron has an essential role in immune cells proliferation and maturation, especially lymphocytes. It also helps in the specific response to infection.

Source: Whole pulses

Selenium: Selenium reduces oxidative stress and reduces inflammation. It also helps in enhancing immunity.

Source: Pigeonpea and chickpea

Zinc: It helps in keeping the immune system healthy.

Sources: Lentil

Omega 3: Omega 3 fats also play a vital role in building immunity. Dietary fats are typically associated with heart health and obesity, but it's about time we explored their immunity-boosting function. For the vegetarians, the good Omega 3 fat sources are pulses.

Sources:Rajmash, cowpea, soybean and black gram

Dietary Fibers:Dietary fibers is recognized as a healthy food component consisting of a mixture of polymeric non-starch substances.

Source: All pulses

Health benefits of pulses

Pulses	Health benefits	Bioactive constituents with beneficial effect
Common bean	Hypolipidemic properties Anti-carcinogenic chemo-preventive effect on colour cancer	Phytosterols, Dietary fibres and Resistant starch
Dried beans	Reduces low-density lipoprotein cholesterol, reduces risk of ischemic heart disease and diabetes	Resistant starch, polyphenols, dietary fibre etc
Beans and Peas	Reduces risk of cardiovascular diseases Decreases cholesterol level	Dietary fibres and proteins
Beans and lentils	Reduces risk of breast cancer	Polyphenols
Chickpea and kidney bean	Lowers blood sugar level	Dietary fibre and carbohydrates
Kidney bean	Improves blood lipid profile and enhances fat excretion in overweight and obese subjects	Dietary fibres
Pinto bean	Improve lipid profiles associated with cardiovascular disease	Dietary fibre and resistant starch
Beans	Decreases absorption of fat	Dietary fibres, resistant starch
Dry beans, peas, chickpeas, and lentils	Helps in weight management	Dietary fibres, resistant starch, Polyphenols, oligosaccharides etc
Faba beans	Anticancer and antioxidant activities	Polyphenols

Pulses	Health benefits	Bioactive constituents with beneficial effect
Pinto beans Navy beans	Reducing risk for cardiovascular disease Decreases cholesterol level	Dietary fibre, resistant starch

Pulses must be a part of our daily diet

Pulses are everyone's comfort food. They are one of the prime source of protein for vegetarians heaped with the rich nutrient profile.

Mungbean (*Vigna radiata* L. Wilezek) Dal

It is one of the commonly used dal incorporated into the meal from delicious curries to desserts. Whole moong dal or split dal is consumed as protein bound sprout, as it is heaped with dense nutrients including manganese, magnesium, phosphorus, copper, potassium, zinc, folate vitamins and an excellent source of protein and dietary fibre.

- It is one of the easily digestible pulses of all dals that can be included in any therapeutic diet plan.
- It lowers cholesterol levels into blood and reduces the risk of heart attack.
- A healthy protein for diabetes that helps in regulating blood sugar levels
- Loaded with B vitamins, controls. One can also eat moong dal at night, as it is easily digestible.
- Nutritional content: Protein 24.24%, phenol 3.30 mg/g

Uradbean (*Vigna mungo* L. Hepper) Dal

Urad dal is usually used as whole black gram and white when it is deskinning as whole or split. Urad dal is the main ingredient that offers rich and delicious taste to very famous dal makhana. Urad dal items like idly, dosa, tasty bonds and vadas are a staple for breakfast and it is piled up with protein, potassium, calcium, iron and vitamins A and C.

- Abundant in both soluble and insoluble dietary fibre, urad dal promotes digestion.
- Improves and strengthen bones.
- Boosts energy and controls blood sugar levels.

- Maintains the skin and hair health.
- Nutritional content: Protein 26.25%, dietary fibre 2.10%, Fe content 88.30 ppm, Zn content 38.24 ppm

Pigeonpea (*Cajanus cajan* L. Millsp) Dal

Arhar dal or pigeon dal, a common ingredient in the Indian Kitchen. The must-have dish in any South Indian meal sambar, is made with arhar dal. It is filled up with nutrients such as a protein, potassium, iron, folic acid, magnesium and B vitamins.

- An excellent source of folic acid it is highly beneficial for pregnant women to preventing neural tube birth defects.
- A great source of fibre, regular eating of legumes can be a part of healthy diet plan that lowers the risk of heart disease, stroke and diabetes.
- Nutritional content:100 gm of dry pigeon pea seeds impart about 20.90 gram of proteins, dietary fibre 23.72%, phenol content 5.63 mg gallic acid equivalent per 100 g, antioxidant activity ranges 1.4 – 3.82 mmol TROLOX /100g

Lentil (*Lens culinaris*) Dal

Masoor dal is a commonly used in the Indian cooking. An extremely beneficial dal for health, that goes well when added with any vegetable. It is loaded with protein, fibre, magnesium, calcium, B vitamins and folate that boost overall health.

- Rich in essential nutrients masoor dal promotes skin health and prevents acne.
- Good source of dietary fibre regulates blood sugar spike.
- Abundant in protein, mineral and antioxidants masoor dal help to boost immunity.
- Nutritional content:A 100 gm of lentil imparts 26 gm of proteins coupled with 15.69 per cent dietary fibre Fe content 61.65 ppm, Zn content 24.31 ppm

Chickpea (*Cicer arietinum* L.) Dal

Chickpea dal is the split chana dal that comes loaded with nutrients. One can make it into delicious fritters, soups, dal, salads and curries. It is super rich in protein, folate, zinc calcium and dietary fibre.

- Loaded with fibre helps to stabilize blood glucose levels.
- Lowers cholesterol level and reduce the risk of heart disease.
- Promotes bone development and strengthens bone.
- Nutritional content:100 gm of chickpea dal provides about 21.8 per cent of proteins and antioxidant activity ranges 2.25 to 2.89 mmol TROLOX /100g and also a certain amount of iron and phosphorus to the body.

Kidney beans (*Phasolus vulgaris*)

- Also referred to as Rajma and are very popular in the northern part of India. Consuming it ensures good bone health, and also prevent osteoporosis.
- Nutritional content:100 gm of cooked kidney beans gives 19.83 per cent of protein, coupled crude fibre 3.88 to 4.51%.

Pulse protein is low in sulphur containing amino acids, but rich in lysine content. On the contrary, cereal protein is rich in sulphur containing amino acids but low in lysine. Thus a dish with cereals and pulses complements in amino acid composition with adequate amount of amino acids.

“Maintain social distance and hygiene, eat healthy, think positive, be cooperative and stay healthy and safe”