Indian Farmer
Volume 10, Issue 03, 2023, Pp. 52-55
Available online at: www.indianfarmer.net
ISSN: 2394-1227 (Online)

Original paper OPEN ACCESS

Mungbean - A Legume for Human Health

Nishu*[1], Monika Sood[1], Julie D. Bandral[1] and Sheetal[1]

Division of Post Harvest Management
Faculty of Horticulture and Forestry
Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu
Chatha, Jammu and Kashmir-180009
**Corresponding author: nishu43041994@gmail.com*

***Article Received**: 2 March 2023* ***Published:** 07 March* 2023

Introduction

Mungbean (*Vigna radiata* L. Wilczek), popularly known as the green gram, believed to be native crop of India, is a plant species in the legume family. It is a tiny circular shaped bean in green color which is mainly cultivated in East, Southeast and South Asia. It is used as an ingredient in both savoury and sweet dishes. In general, mungbean is a source of high-quality protein (20-24 %) with higher digestibility, which can be consumed as whole grains, dhal, or sprouted form and is an excellent complement to rice in respect to balanced human nutrition. It is an excellent source of flavonoids, phenolics and other antioxidants, besides being rich in dietary fibre, carbohydrates, energy, minerals and vitamins such as iron, magnesium, phosphorous, potassium, vitamin B_6 and copper. It is low in saturated fat and cholesterol, which makes it suitable for therapeutic and novel food formulations. In addition to being the prime source of human food and animal feed, it plays an important role in maintaining the soil fertility by enhancing the soil physical properties and fixing atmospheric nitrogen. Mungbean contains a variety of essential amino acids and is rich in lysine. The intake of mungbean protein may improve the plasma lipid profile by normalizing insulin sensitivity. Mungbean also contains fatty acids such as linoleic acid and linolenic acid that promote the growth and health. Mung beans have a slightly sweet taste and are sold fresh, as sprouts or as dried beans. Mung beans are incredibly versatile and typically eaten in salads, soups and stir-frys (Mubarak, 2005).

Nutritional Composition of Mungbean

Mungbean can be a rich source of protein with higher digestibility and can serve to convalescing babies or malnutrition people. The average moisture content present in the whole mung bean seed is 10.6g/100g of whole green gram with high protein (22.9g/100g), fat (1.2g/100g), total carbohydrate (61.8g/100g), crude fiber (4.4g/100g), and ash (3.5g/100g) per 100g of sample. The presence of antinutritional factors such as tannins (366.6mg/100mg), phytic acid (441.5mg/100g), hemagglutinin, trypsin inhibitors, proteinase inhibitors, and poly-phenols (462.5mg/100g) were reported in mung bean, which affect the digestion and bioavailability of full nutrition (Mubarak 2005). Mungbean exhibits calorific value of 344 Kcal/ 100gm of its edible portion (Dahiya *et al*., 2015).

Mineral Composition of mungbean:

Minerals and trace elements are important for human health, as they play a significant role in the metabolism by acting as cofactor of enzymes. Mungbean contains a relatively high amount of minerals which includes calcium, copper, iron, potassium, magnesium, manganese, sodium, zinc, and other elements of nutritional importance like phosphorus, which is comparable to other pulses. Of these, iron, zinc, and calcium are the most important due to their physiological functions in the human body. Insufficient iron uptake is one of the most important factors for anemia throughout the world (Wang *et al*., 2008).

Calcium – 113.4 mg/100g

Copper – 1.0 mg/100g

Iron – 5.9 mg/100g

Potassium – 956.6 mg/100g

Magnesium - 162.4 mg/100g

Manganese – 1.05 mg/100g

Sodium – 16.7 mg/100g

Phosphorous – 384.4 mg/100g

Health benefits of Mungbean: Mungbean provides a range of potential health benefits that can support our body against a variety of diseases. Some of the health benefits of mungbean are:

- Mungbean is a rich source of high fiber carbohydrates which may help to lower blood glucose levels.
- The ample amounts of dietary fibre and potent antioxidants in green gram dal exhibits hypolipidemic effects and lowers the levels of LDL cholesterol (bad cholesterol), total cholesterol and triglycerides and optimises heart health.
- The soluble fiber and resistant starch present in mung beans promote healthy digestion. Mung bean protein is also easier to digest than the protein in other legumes.
- Some of the nutrients in mung beans, including potassium, magnesium, and fiber, have been linked to a lower risk of high blood pressure.

- Mungbean is overpowered with iron which helps in carrying oxygen and nutrients in the blood to all other vital organs and tissues. It also helps in a steady supply of oxygenated blood to the brain as well as the system.
- The antioxidants present in mungbean help to neutralize free radical activity, which can reduce the risk of disease. Free radical damage has been linked to heart disease, cancer, chronic inflammation, and other diseases.
- It also helps a person with poor memory and concentration to improve the focus and brain functions. Besides this, rich in manganese, mungbean also improve nerve functioning and brain health.
- Due to low glycemic levels of the mungbean, its use in developing new products can help to prevent the risk of diabetes.
- The immune-friendly nutrients in mungbean increase the production of white blood cells which promotes the body's defence mechanism and keeps infections at bay.
- Mungbean is also a great source of calcium which facilitates to fortify the bones and muscles which also lowers the risk of osteoporosis in women.
- Mungbean also contains a copious amount of riboflavin which is vital for pregnant women in reducing birth defects.
- The presence of thiamine in mungbean plays a crucial role in growth and development and other water-soluble vitamins lowers the risk of metabolic problems that may affect the placenta and foetus during pregnancy (Naik *et al*., 2020).

Processed Products of Mungbean:

Mungbean is good source of nutrients, vitamins, minerals, and other functional bioactive ingredients. Due to the presence of these nutrients, mungbean can be used as an important constituent of product in the development of different food formulations. The characteristic nature of mungbean is useful for the development of products like rich in protein, fiber, antioxidant, gluten-free, and low in fat and glycemic index (GI). The functional properties of mungbean flour such as water holding capacity and oil holding capacity considerably contribute to the better quality of the products (Ganesan and Xu, 2018).. There are various value-added foods can be formulated by the incorporation of mungbean flour which are as follows: -

Cookies or Crackers: Cookies or crackers belongs to the category of baked products. Generally, wheat flour, sugar, and fat are used as the main ingredients. These are convenience foods consumed throughout the world in many forms such as cookies; short dough biscuit; hard sweet, snack crackers; soda crackers; and sweet biscuit. Cookies are prepared by the inclusion of a wide variety of dried nuts, chocolate chip, raisins, and dehydrated fruits. Cookies have a longer shelf life because of lower water activity.

Bread: Bread is a staple food prepared by using wheat flour, sugar, yeast, and shortening. Wheat flour containing 11.5-12.50 % protein for bread is well suitable. Bread is made by

mixing all ingredients in the form of dough, which has been baked at 225 °C in the oven. The protein content in the mungbean ranges from 20% to 25% which is well suitable for the preparation of bread.

Noodles: Noodles are the convenience food prepared by either soft or hard wheat and consumed worldwide. Protein-rich instant noodle can be easily prepared by the incorporation of mungbean flour which can provide a shelf life of about 6 months.

Conclusion:

Mungbean is a leguminous crop that serves as an important source of protein, fiber and mineral in vegetarian diet. The consumption of mungbean improve the nutritional status and health potential of individuals which helps to eradicate the malnutrition in the world. The incorporation of mungbean in various forms could improve the nutritional status of the consumer by supplying adequate nutrients, thereby helping to alleviate the nutritional-related health issues. Mungbean is a good source of nutrients, vitamins, minerals, and other functional bioactive ingredients. Due to this, it can be used as an important constituent of product in the development of different food formulations. Postharvest processing and value addition are the major segments in effective utilization of mungbean. Incorporation of mungbean flour with wheat flours offers better quality of bakery products.

References:

Naik, G. M., Abhirami, P. and Venkatachalapathy, N. 2020. Mungbean. *Pulses: Processing and Product Development*, pp. 213-228.

Dahiya, P. K., Linnemann, A. R., Van Boekel, M. A. J. S., Khetarpaul, N., Grewal, R. B. and Nout, M. J. R. 2015. Mung Bean: Technological and Nutritional Potential. *Critical Reviews in Food Science and Nutrition*, **55**(5): 670-688.

Ganesan, K., and Xu, B. 2018. A critical review on phytochemical profile and health promoting effects of mung bean (*Vigna radiata*). *Food Science and Human Wellness*, **7**(11):1-5.

Mubarak, A. E. 2005. Nutritional composition and antinutritional factors of mung bean seeds (*Phaseolus aureus*) as affected by some home traditional processes. *Food Chemistry*, **89**(4): 489-495.

Wang, B., Zhan, S. Y., Xia, Y. Y. and Lee, L. M. (2008). Effect ofsodium iron ethylenediaminetetra-acetate (NaFeEDTA) on haemoglobin and serum ferritin in iron- deficient populations: A systematic review and meta-analysis of randomised and quasi-randomised controlled trials. *Journal of Nutraceutical*,**100:**1169-1178.