Mung Bean \([Vigna radiata (L.) Wilczek]\) as Human Food

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Abstract

There is a growing concern about sustainability and security of food production over the world. Mung bean \([Vigna radiata (L.) Wilczek]\)– a member of \(Fabaceae\) family has an important place for both as human and animal food due to having rich and balanced nutritional value besides a cheap source of high amount of protein and amino acids, high digestion ratio, easy transportation and storage, soil improving characteristics. In addition to the mentioned importance, there are a great number of using areas in health care that is focused on especially the anticancer features. Present paper summarizes several studies about using of mung bean as human food.

Keywords: Healthy nutrition, human health, legume.

Introduction

Legumes are important food sources besides the negative effects of antinutritional factors (tannins, phytates, trypsin inhibitors and hemagglutinin) which are limiting the utilization. Germination is the main way to decrease those factors (Onder & Kahraman, 2009).
Mung bean is an important pulse crop which seed is consumed by human and hay is consumed by animals over the world. Plant is tolerant for drought and has a high adaptation ability for poor characterized soils. Commonly, the plant is grown in summer season due to higher need of temperature (Akdag, 1995) while photoperiod need is differs by depending on varieties (Lawn, 1979). Present paper was prepared to highlight importance of mung bean as human and animal food.

Mung bean has been grown in India since ancient times. Culture forms may be found in the tropic and subtropical regions of Malay, Thailand, Burma, Hindu, China and Indonesia, Filipin, China, tropic Africa, West India and South America (Lawn and Russel, 1978). Mung bean farming is not common in Turkey while it is grown on South-East Anatolian and especially in Gaziantep province (Akdag, 1995).

In the last decades, *Vigna radiata* was also used in many works for many aspects such as gen transfer by *Agrobacterium tumefaciens* by using the explant of cotyledon, hypocotyl-cotyledon node-primer leaf, leaf, cotyledon node etc. biotechnological studies, physiology, physical characteristics, growing techniques and agronomic traits (Yildiz, 2005; Kalyoncu, 2013). Mung bean is also one of fodder crop which are used to satisfy a forage need in summer for having drought tolerance and salinity tolerance depends on variety (Mogotsi, 2006).

Nevertheless, mung bean – a legume crop is still less cultivated and used food source over the world. It is believed that mung bean has as much importance as the other legumes presenting important benefits based on human food, animal food and soil improvement characteristics. Present paper highlights the using areas of mungbean as human food and medicine besides a little advert about animal feeding.

**Using of mung bean in human food and medicine**

Consumption of plant based foods in health care has been increasing at a rate of 5-10% per year because of increase in clinical findings (Tham et al., 1998). Additionally, health
organizations over the world recommending more consumption of plant based foods to healthy life and avoid chronic diseases. People in China has been consumed mung bean (*Vigna radiata*) as a common food for more than 2000 years for its well-known characteristics such as gastrointestinal problems, detoxification activities, skin moisture, decreasing the stroke of heat, refresh mentality, and some other purposes related with summer heat (Min, 2001). Besides China, in the other countries such as India, Bangladesh, South-East Asia and Western countries the seeds and shoots are used as fresh salad vegetable and also as food. It is reported that mung beans are excellent foods owing to balanced minerals, dietary fiber, bioactive phytochemicals, high amount of proteins, amino acids, oligosaccharides, polyphenols which are important sources of lipid metabolism accommodation, antioxidant, antimicrobial, anti-inflammatory, antihypertensive effects, antisepsis effects, antidiabetic effects and especially antitumor activities and lipid regulation metabolism (Kanatt et al., 2011; Lee et al., 2012). A recently made research put forth that germination provides an increase in nutritional and medical quality of mung beans (Tang et al., 2014).

Seed composition of mung bean varies too. Ullah et al. (2014) used three cultivars of *Vigna radiata* to determine composition and specified that the varieties showed different values for nutritional composition, amino acids and antioxidant activities.

*Vigna radiata* and *Vigna mungo* are important pulses that are member of Fabaceae family. They are grown over the world and widely in Asia (Jansen, 2006). Those two legumes are more useful than other legumes due to be main sources of amino acids while they are also in capable of high digestion ratio and less flatulence effect (Fery, 2002) and using in therapeutic purposes. They have been also used as medical or cosmetic material since ancient times due to antidotal activity (Sharma et al., 2009). They also have antihypertensive and antidiabetic effects (Lin et al., 2006; Yang et al., 2008). *Vigna radiata* is known as medical usable features in various ailments such as hepatits, gastritis, heat rash etc. (Leung, 2007) and reported as anticancer food.
while *Vigna mungo* has hypolidimic action (Indira & Kurup, 2003). Consequently, those two pulses were reported as good foods (Blessing and Gregory, 2010) due to be good source of protein, carbohydrate and minerals (Suneja et al., 2011), less expensive (Butt & Batool, 2010). Researches focused on their functional characteristics increases their usage as a food supplement in food industry (Shaheen et al., 2012).

Mung bean havea high nutritional value due to amino acids, ash, crude protein and crude lipid occupy an important place as animal food (Ullah et al., 2014). The plant is rich in terms of essential oil acid, high fiber content, protein, minerals such as phosphorus, calcium and vitamins like other legumes. Moreover, energy value of plant is high than other legumes (Wiryawan et al., 1995).

Digestibility of mung bean and availability by animals is good due to the mentioned features and its forage is palatable (Singh et al., 2013). The seed of plant is used different types like crude, processed form or split seed as well as mung bean brad, straw, hay and silage (Mogotsi, 2006). It can be grown for both purposes of seed and forage (El-Karmany et al., 2006). It was studied related to performance of cattle (Rao et al., 2009), buffaloes (Krishna et al., 2002), sheep (Garg et al., 2004, Khatik et al., 2007), goats (Khatik et al., 2007), swines (Maxwell et al., 1986, Maxwell et al., 1989, Wiryawan et al., 1997), broilers (Creswell, 1981), laying hens (Robinson and Singh, 2001, Vinh et al., 2013), rabbits (Amber, 2000), Asian sea bass - *Latescalcarifer* (Eusebio & Coloso, 2000), Nile tilapia - *Oreochromisniloticus* (de Silva & Gunsekara, 1989) and India prawn - *Penaeusindicus* (Eusebio and Coloso, 1998) which fed with mung bean as forage.

**Conclusion**

Consequently, mung bean is an important owing to have rich and balanced nutritional value, a cheap source of high amount of protein and amino acids, high digestion ratio, easy
transportation and storage, soil improving characteristics while it is a less cultivated legume crop in global term. Besides those, mung bean numerous number of using areas in health care especially as an anticancer food which makes it as a functional food.

It is a valuable legume plant in terms of human health owing to being good protein source, having quality nutritional value such as amino acids, minerals etc. components. It has a significant place on having food stuffs. Due to these features, cultivation of mung bean should be extended in rotation programs.

References


