The PLANTA RBS: Vol.-4 Issue-2 (October) 2023: 1341 – 1345
(Research Book Series Chapter – 148)

*General Article*_____ *Chapter – 2*

FABA BEAN – AN UNEXPLAINED SOURCE OF PROTEIN

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Abstract

Fababean are emerging as sustainable quality plant protein sources, with the potential having to help meet the growing global demand for more nutritious and healthy foods. The fababeans have high protein content and well balanced health enhancing properties. Fababeans after consumption it releases peptides after gastrointestinal digestion they have antioxidant, anti diabetic, anti hypersensitive, cholesterol lowering, and anti inflammatory effects. This paper gives an complete review and complete knowledge on the nutritional and protein qualities of Faba bean.

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Introduction:

Fababean (*vicia faba)* is an excellent source of protein and having agronomic advantages. It is also the source of sustainable and quality dietary protein content.The crop if used as a crop rotation or inter crop it give excellent benefits to the farmers in reducing the requirement of inorganic fertilizers for next crops (Aschi *et al.,* (2017); Arya *et a*l.,(2020). Presently the Faba beans are major crops in many countries including china, Ethiopia and Egypt and these are widely grown for human consumption throughout many regions. China is the major share holder inarea and production with 60% (FAO 2022).World production of faba bean is about 8.45 million tonnes/year (FAO 2022).At present the productivity is about 2.2 t/ha(FAO 2022.)

In India Faba bean is grown in different states in considerable area particularly in the state of Uttar Pradesh, Bihar, Punjab, Haryana, Jammu kashmir, Rajasthan, Karnataka and Madhya Pradesh. In India the Faba bean area of production is about 1.07 million tonnes/year (FAO 2020). The average Productivity is about 2.12 - 5 t/ha. Faba bean (*v. faba* L *)* is cool winter *rabi* season annual legume crop India that can tolerate wide range of climatic diversity, soil type and pH, but prefers well drained fertile loamy soil with one or two irrigations. Faba bean is coarse, upright, hollow, and unbranched stem from the base, and grows between 0.1 and 2 m tall (Bond *et al.,* 1985). The flowers have a typically papilionaceous structure and are grouped in infloresences; they are either pure white in colour.

Faba bean is a potential, versatile leguminous crop which can be grown in various climates. Faba bean also known with many names such as Field bean, Broad bean, Horse bean. In India it is called as Bakla Matar orKaka Matar(Minguez *et al.,* 2021). Faba bean is having well balanced aminoacid profile (Martineau *et al.,* 2022) is a richsource of Protein, Carbohydrates, Minerals and other bioactive phyto chemicals along with some anti nutritional compounds (Mattila *et al., 2018*).

The *V. faba* seeds has many nutritional properties as well as anti- nutritional properties. The protein content comparable to meat and fish (Marcarulla *et al., ;* Vioqne *et al.,* 2012). It is Popularly known as "Poor man's meat". Besides nutritional potential, fababean possesses anti nutritional factors such as saponins, tannins, phytic acid, lectins, Oxalates etc. The Faba bean also involves the involves the presence of vicine and Convicine, Which are associated with favism that cause the main obstacles in faba bean utilisation. Faba beans can be used to feed a variety of livestocksuch as cattle, lamb, Poultry, Fish and Pigeon.

The Faba bean is also a highly nutritive Pulse, is not genetically modified. Though GMOs are safe to eat, but still some consumers does not include in their diets. As per some researches the faba bean is high in its protein content than the other pulses like Peas, Chick peas, lentils and beans.

It is evident that faba bean is nutritional very rich and the phyto chemicals present init could be a good source of biologically active compounds.

Table 1: Chemical Composition of Faba Bean Seeds

Chemical Composition	Type and amount present
Carbohydrates	51 to 68 %
Proteins	20 to 41 %
Lipids	2.30 to 3.91 %
Vitamins	Folic acid, Niacin, Vitamin C
Minerals	Na, K, Ca, P, k, S, Al, B, Cu, Fe, Li, Mn, Zn.

Table 2: Chemical Composition (%) of Faba bean, Soybean and Pea Seed

S. No	Chemical composition	Faba bean	Pea	Soybean
1.	Starch	32.7	46	6.0
2.	Crude protein	25 - 30	23	49
3.	Crude fibre	7.8	5.5	6.1
4.	Dry matter	88.3	88.0	88.3

Figure 1: Faba Bean Protein Quality Is Influenced by Many Factors, Includes Nutrition Qualities, Health Promoting Bioactives and Other Nutritional and Bioactive Constituents

Faba Bean Proteins

The Faba bean is a high protein content pulse and the protein content ranges from 29 - 32% and it is higher than peas and most another pulses. Th, according to their solubilities in different solvents Faba bean proteincontent is highly variable due to their genetic diversity that is present in their species.The faba bean varieties are highly heterogenous in size, colour and colour of the seed depending on their cultivating area and environmental conditions during the crop grown area and season.

The Plant proteins are mainly classified into 4 main families, according to their solubilities in different solvents.

1. Globulins - soluble in low - salt solutions
2. Albumins - soluble in water
3. Prolamins - soluble in 70% alchol
4. Glutelins - soluble in alkaline solution.

Uses of Faba Beans

Faba bean is an excellent source of protein, vitamins, Minerals, Fibers and bioactive compounds. The L-Dopa (an amino acid) is precursor for neurotransmitters such as dopamine, adrenaline (Etemadi *et al.,*2019, Gautam *et al.,* 2012). It is synthesized from L- tyrosine in mammalian body and brain (Randhir and shetty,2004; Miller *et al.,*2009). It is used in treatment of Parkinson's disease as main component and in treating hormonal imbalance.

Important Varieties

Pusa Sumeet, BR-1, BR-2 from Bihar, Jawahar viva 73-81 is a dormant type from Madhya Pradesh.

Some Exotic varieties are Long pod type, Windsor Type.

Recently Developed Varieties In India:

Swarna suraksha and Swarna gaurav are the two varieties released from Bihar.

Conclusion

Faba bean is important both as a pulse and vegetable crop. The dry and fresh seeds or pods are recommended for their benefits to human nutrition as a dietary source of fibre and protein. The numerous chemicals may be used in crucial parts in developments of drugs and health supplements. Faba bean are a potential source of nutraceuticals and functional foods and are consumed often in different parts of the world

To increase and secure in the expanding and competitive worldwide plant based market, further studies has to be required to better understand the health advantages and hazards.

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