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CHICKPEA: A PLANT-BASED NUTRIENT SOURCE

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ABSTRACT

Chickpea is a nutrient-rich pulse crop having 40-60% digestible carbohydrates, 15-22% protein, 4-8% essential fats and a range of minerals and vitamins. One of the best reasons for choosing chickpeas as a staple food is they can be consumed from their early stage of growth, like when they are green (immature chickpea seeds). Green chickpea seeds are used as a vegetable. Value-added food products can be derived from chickpeas as a base ingredient for making another secondary food item.

INTRODUCTION

Chickpea (*Cicer arietinum L.*), commonly known as Bengal gram, is an important pulse crop cultivated since immemorial. Its nutritional use dates back to ancient times; even in Ayurvedic medicine, chickpea is mentioned. It is a good source of carbohydrates (50–58%), protein (15–22%), fat (3.8–10.20%), and micronutrients (<1%; USDA, 2021). It also contains dietary fibres, vitamins, minerals and many potentially beneficial phytochemicals that help us keep healthy. A 100-gram serving of chickpea contains 20 % or more of the daily value (DV) for protein, dietary fibre, folate, and several minerals like iron and phosphorus. High protein content, dietary fibre, antioxidant properties, anti-inflammatory activities, low glycaemic index, and various physiological effects beneficial for human health on a low budget make chickpeas a potential functional food and nutraceutical. (Yust *et al.*, 2012). The nutritional deficiency created a high demand for chickpea in present times.

CHICKPEA AS A SOURCE OF PROTEIN

Being a pulse crop, chickpea is a key source of protein and hence is the most consumed legume in the world. Its crude protein content is reported to range from 12.6 to 30.5 per cent. The protein quality in chickpeas is better than other pulses (Singh,1985). The protein concentration of desi chickpea seed is 16.7%-30.6%, and the protein concentration of Kabuli chickpea seed is 12.6%-29.0%, which is 2 to 3 times higher than other cereal grains. It is also reported that the seeds of chickpea provide a primary source of dietary proteins associated with health-promoting benefits in foremost diseases like diabetes,

cardiovascular diseases and some cancers (Roy *et al.*, 2010). Chickpea proteins are considered plant-based and more sustainable and healthy than those derived from animals. Chickpea protein is rich in essential amino acids such as isoleucine, lysine, total aromatic amino acids and tryptophan (Alajaji & El-Adawy, 2006).

CHICKPEA AS A SOURCE OF VITAMINS AND MINERALS

According to WHO, daily consumption of 100gm chickpea can fulfil the daily requirement of iron and zinc. Chickpea also contains folic acid, tocopherols, and vitamin B complex (B2, B5, and B6) (Jukanti *et al.*, 2012). In addition, the vitamin A precursor Beta-carotene is also a significant source of other carotenoids, including canthaxanthin and xanthophyll (Thavarajah and Thavarajah, 2012).

A Pics of chickpea grown in field and its seed after harvesting

CHICKPEA AS A SOURCE OF ESSENTIAL FATTY ACIDS

The fatty acid composition of the chickpea seed is important because fats govern the texture, shelf-life, flavour, aroma, and nutritional composition of chickpea-based food products. It is a non-oilseed crop with a higher fat content than other pulse crops. Sterols, tocopherols and lipids are components of fat found in chickpea (Jukanti *et al.*, 2012). It contains a very small amount of lipids, mostly made up of unsaturated fats such as linoleic acids and oleic acids. For this reason, it is very effective for heart patients. The lipid concentration of desi chickpea seed is 2.9%-7.4%, and the lipid concentration of Kabuli chickpea seed is 3.4%-8.8% (where a maximum of this lipid is made up of unsaturated fat in both types of chickpeas) (Wood & Grusak, 2007).

CHICKPEA AS A SOURCE OF CARBOHYDRATES

Other macro molecules like carbohydrates are also present in chickpea seeds. The carbohydrate range in the Desi variety of chickpeas is 51-65%, and for the Kabuli variety of chickpeas is 54-71%. The starch content by weight in chickpeas is 30-57%. In the desi variety of chickpea, the amylase content is 20-42%; for the Kabuli variety of chickpeas, the amylase content is 21.0 - 46.5%. Because of the high amount

of amylase, the stored form of carbohydrates in chickpea is hard to digest, and that's why roasted chickpeas are best for starch consumption (Rathore *et al.*, 2021). In addition, due to high amylose content and resistant starch, chickpeas have a low glycaemic index; as a result, their seeds show anti-diabetic activities.

CONCLUSION

Chickpea is a nutrient-rich pulse crop having 40-60% digestible carbohydrates, 15-22% protein, 4-8% essential fats and a range of minerals and vitamins. One of the best reasons for choosing chickpeas as a staple food is they can be consumed from their early stage of growth, like when they are green (immature chickpea seeds). Green chickpea seeds are used as a vegetable. Value-added food products can be derived from chickpeas as a base ingredient for making another secondary food item. (Kaur & Prasad, 2021) Many postmenopausal women have suffered from obesity and insulin resistance due to the decline of estrogen. The use of chickpeas may result in the prevention of type 2 diabetes and obesity. The overall total phenolic contents of chickpeas are higher than soybeans.

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