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Chickpea: A medicinal boon for health

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Abstract

Chickpeas stand out as a remarkable source of proteins and carbohydrates, boasting a protein content ranging from 20% to 24% and carbohydrate content between 52% and 71%. Furthermore, they offer a rich supply of dietary fibre, lipids, essential amino acids and a modest quantity of vitamins. Notably, chickpeas are completely devoid of cholesterol, making them an excellent dietary choice, especially for individuals who cannot afford or prefer not to consume animal protein. In addition to their protein and carbohydrate content, chickpeas also provide a wealth of other essential nutrients. They are a valuable source of dietary fibre, unsaturated fatty acids, and an array of minerals, including calcium, phosphorus, magnesium, zinc and iron. Chickpea seeds are abundant in key minerals such as calcium, potassium, phosphorus, magnesium, iron and zinc, while also containing valuable components like dietary fibre, unsaturated fatty acids and beta-carotene. The potential health benefits associated with chickpeas position them as one of the most nutrient-dense grain legumes for human consumption. For instance, their high fibre content has the capacity to lower cholesterol levels and regulate post-meal blood sugar spikes, making them a nutritious choice for individuals managing diabetes. Furthermore, aside from the raffinose-type oligosaccharides that can lead to flatulence, a simple process like boiling or soaking chickpeas in water can neutralize these compounds, ensuring that chickpeas are free from significant antinutritional components.

Keywords: Antioxidant, anticancer, hummus, kabuli chickpea, polyphenols

Introduction

Chickpea, scientifically known as *Cicer arietinum* L., finds cultivation across a range of climates, spanning tropical, subtropical and temperate regions in numerous countries. It is a historically valued crop rich in essential nutrients. According to data from the Food and Agriculture Organization, chickpea holds the fifth position globally in terms of production and ranks fourth in harvested area among leguminous crops. Notably, chickpeas boast high protein content (ranging from 16.4% to 31.12%) alongside carbohydrates, vitamins and essential minerals like calcium, magnesium, zinc, potassium, iron and phosphorus. Chickpeas exhibit superior protein quality when compared to other legumes such as green gram, black gram (*Vigna mungo*) and pigeon pea (*Cajanus cajan*). Chickpeas are categorized into two main types: macrosperma also known as Kabuli and microsperma or desi. Kabuli chickpeas are characterized by their large size, light coloration, smooth exterior and a somewhat ram-head shape. These are predominantly grown in regions like the Mediterranean Basin, Near East and the Americas. On the other hand, desi chickpeas are smaller, possess angular shapes and vary in colour from yellow to black, with a rough surface texture. Desi chickpeas find their primary cultivation in countries like India, Pakistan and East Africa. Chickpeas have been utilized in various forms over time, including being ground into flour (besan) for bread-making and the preparation of sweetmeats. They have also served as animal feed in many developing nations. Additionally, canned, fermented, boiled or puffed and roasted chickpea products are available, particularly in Latin America and Turkey. Beyond their culinary applications, chickpeas play a vital role in maintaining soil fertility in arid regions.

Health benefits of chickpea

Chickpeas offer a range of health benefits due to their nutrient-rich composition. Some of the key health benefits associated with chickpeas are:

- **Rich Source of Protein:** Chickpeas are an excellent plant-based source of protein, making them a valuable addition to vegetarian and vegan diets. Protein is essential for tissue repair, muscle growth, and overall body function.
- **High in Fiber:** Chickpeas are high in dietary fibre, which aids in digestion, helps maintain healthy bowel movements, and may lower the risk of gastrointestinal disorders.

The fibre in chickpeas also contributes to a feeling of fullness, which can support weight management.

- **Heart Health:** The combination of fibre, potassium, and low sodium content in chickpeas can promote heart health. A diet rich in chickpeas may help lower blood pressure, reduce cholesterol levels, and decrease the risk of cardiovascular disease.
- **Blood Sugar Control:** The complex carbohydrates and fibre in chickpeas help regulate blood sugar levels. They have a low glycemic index, which means they cause a slower, more gradual rise in blood sugar after meals. This can be beneficial for individuals with diabetes or those at risk of developing the condition.
- **Weight Management:** Chickpeas are nutrient-dense and filling, which can help control appetite and reduce overall calorie intake. Including chickpeas in your meals may support weight management and weight loss goals.
- **Digestive Health:** The fibre in chickpeas promotes a healthy gut by supporting the growth of beneficial gut bacteria. This can contribute to improved digestive health and may reduce the risk of certain digestive disorders.
- **Nutrient-Rich:** Chickpeas contain a variety of essential vitamins and minerals, including iron, magnesium, potassium, phosphorus, and B vitamins like folate and vitamin B6. These nutrients play crucial roles in various bodily functions, such as energy metabolism, red blood cell production and bone health.
- **Antioxidant Properties:** Chickpeas contain antioxidants, such as flavonoids and polyphenols, which help protect cells from damage caused by free radicals. Antioxidants have been linked to a reduced risk of chronic diseases and may promote overall health.
- **Bone Health:** Chickpeas are a source of minerals like calcium, magnesium, and phosphorus, which are important for maintaining strong and healthy bones. Including chickpeas in your diet can contribute to better bone density and reduce the risk of osteoporosis.
- **Reduced Risk of Chronic Diseases:** Consuming chickpeas as part of a balanced diet has been associated with a lower risk of chronic diseases, including heart disease, type 2 diabetes, and certain types of cancer.



Fig 1: Kabuli chickpea



Fig 2: Garbanzo beans

Medicinal properties of chickpea

Antioxidant properties

The seeds of *Cicer arietinum*, commonly known as chickpeas, have a wide range of potential health benefits and applications. They are believed to have aphrodisiac qualities, can act as anthelmintics, tonics and are thought to enrich the blood. Chickpea seeds have also been used traditionally to treat skin conditions and inflammation, particularly those related to the ear. Additionally, they have diuretic properties and may help with issues like halitosis, hepatosis, otitis, pharyngosis, pulmonosis and splenosis. In the field of Unani medicine, they are an essential ingredient in the preparation of the anti-hypertensive drug Ajmaloon and are used in making Nakhud. Furthermore, the acid exudation from chickpea seeds is astringent and has been found to be useful in addressing dyspepsia and constipation. Chickpea leaves, on the other hand, have a sour and astringent taste. They are known to improve taste and appetite and have been employed in the treatment of bronchitis, although they may occasionally cause flatulence. Tart chickpea leaves are known to stimulate appetite and are used for conditions related to enterosis.

Antibacterial properties

Traditionally, chickpeas have been employed for their medicinal properties, serving as remedies with antibacterial, antifungal, antipyretic, and antidiarrheal effects. These beneficial qualities are attributed to the hydroalcoholic extract as well as the acetone and methanol fractions derived from the root of *Cicer arietinum*. In particular, chickpea seed extracts (Cse) have exhibited notable antibacterial activity, primarily targeting Gram-negative bacterial strains such as *E. coli*, *P. aeruginosa*, and *K. pneumoniae*. This antibacterial activity was observed within a concentration range of 16–64 µg ml⁻¹. However, it's worth noting that when tested against Gram-positive bacterial strains like *S. aureus*, *B. subtilis*, and *E. faecalis*, the antibacterial effects were less pronounced and required a higher concentration (64 µg ml⁻¹) for efficacy.

Anticancer properties: Chickpeas, like many other legumes, contain various bioactive compounds and nutrients that have been studied for their potential anticancer properties. While chickpeas alone are not a cure for cancer, incorporating them into a balanced diet may contribute to overall health and potentially reduce the risk of certain types of cancer. High-fibre diets have been associated with a reduced risk of colorectal cancer. Fiber can help maintain regular bowel movements and reduce exposure to potential carcinogens in the colon. Chickpeas contain phytochemicals like saponins and phytosterols, which have shown potential anticancer activity in laboratory studies. These compounds may help inhibit the growth of cancer cells. Chickpeas are low in saturated fat, which is associated with a lower risk of certain cancers, especially those affecting the breast, prostate and colon.

Culinary aspect

To reap these health benefits, it's essential to incorporate chickpeas into a well-balanced diet as part of a variety of nutritious foods. Chickpeas can be used in various dishes, such as salads, soups, stews and as a protein source in vegetarian and vegan recipes. Chickpeas serve as the primary ingredient in hummus, a flavourful dip that combines them with tahini, lemon juice and garlic to create a delicious and creamy concoction.



Fig 3: Hummus



Fig 4: Chickpea salad

Conclusion

Keeping the above points in mind, it is hereby concluded that chickpea is most promising herbal or medicinal drug due to its safety and effectiveness and also due to its various health benefits and its capacity to reduce the risk of many infectious diseases.

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