



Bioactive components of Onion (*Allium cepa* L.) and its health effects: a mini review

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ARTICLE INFO

Article History

Received 18 November 2021

Revised 30 December 2021

Accepted 10 January 2022

Available Online 14 January 2022

Keywords:

Allium family,
antioxidants,
allicin,
pungent,
alliinase,
quercetin
and saponins

ABSTRACT

Onion is an important vegetable which plays a vital role in everyday cooking not only in India but also every part of the world. It belongs to the *Allium* family of plants, which also includes chives, garlic and leeks. Usually there are three types of onions, yellow, red and white. Onions are commonly used while cooking other vegetables, which will increase the taste of these vegetables. Onion tastes differently when it is added to different types of food dishes. It's also eaten raw or used as salad with different food dishes. Onions are not only rich in their nutritional values but also have amazing properties to cure or protect from various diseases. Onions are loaded with multiple vitamins minerals and anti-oxidants. Onions have great positive effects on several different aspects of health; moreover onions are very rich in their nutritional value. They are high in vitamins, minerals, and antioxidants while being low in calories. One cup of chopped onion provides calories 14.9 grams (g) of carbohydrate, 0.16 g of fat, 0 g of cholesterol, 2.72 g of fiber, 6.78 g of sugar and 1.76 g of protein Onions also contain small amounts of calcium, iron, folate, magnesium, phosphorus, potassium, the antioxidants, quercetin and sulfur. Onions are powered with vitamin C, B6, Phytonutrients, and a wallop of antioxidants including flavonoids - quercetin and sulphuric compound allicin. Its rich antioxidant profile makes this wonder bulb efficient in protecting cancer. Use of onions regulates the blood sugar, lowers the blood pressure, reduces the aging process, helps to make the skin and hair glowing and healthy, and helps to regulate the sleep disorders etc.

1. INTRODUCTION

Onions are widely used everywhere throughout the world. The onion also known as the bulb onion or common onion is a vegetable that is the most widely cultivated species of the genus *Allium*. Onions belong to the *Allium* family of plants, which also includes chives, garlic, and leeks (Fritsch, 2002). Onions have different varieties and vary in size, shape, color, and flavor. Red, yellow, and white onions are the common types among them. Usually these vegetables have different tastes like sweet and juicy, sharp, spicy, and hot. The taste often depends upon the season in which it is grown and consumed. *Allium* vegetables have been cultivated for centuries (Blancke, 2016). As per the Food and Agriculture

Organization of the United Nations, China is the biggest producer of onions worldwide. Although chopping onions have a tendency to cause watery eyes. However, onions may also provide potential health benefits (Nassarawa and Sulaiman 2019). These may include reducing the risk of several types of cancer, improving mood, and maintaining skin and hair health. Onions are widely cultivated and used in every part of the world. As a food item, they are usually mixed with other vegetables and served cooked, as a vegetable or part of a prepared savory dish. It is also eaten raw or used to make pickles or chutneys (Gurib-Fakim, 2006). They are pungent when chopped and contain certain chemical substances which may irritate the eyes. Onions are commonly chopped and used as an ingredient in various hearty warm dishes, and may also be used as a main ingredient in their own right, for example in French onion soup, creamed onions, and onion chutney. They are versatile and can be baked, boiled, braised, grilled, fried, roasted, sautéed, or eaten raw in salads. Onions have great positive effects on several different aspects of health; moreover onions are very rich in their nutritional value. They are high in vitamins, minerals, and antioxidants while being low in

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DOI:10.46890/SL.2022.v03i01.004

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calories (Willcox, 2009).

Botanical Source

The common onion is a biennial garden plant, having a scape, which appears the second year, 2 to 4 feet high, being naked, smooth, straight, stout, swollen at the base, and fistulous, bearing at the top a round umbel of greenish-white flowers. The leaves are round and fistulous, of a shining green color, acute, and shorter than the stem. The part employed is the bulb.

Description

The onion is a tunicated bulb, compressed or round, or oblong in figure, invested with a shining, thin, dry membrane, of a reddish or white color. It is less pungent to the taste than garlic, with some degree of sweetness, and a peculiar, well-known odor. Onion bulbs are of various shapes and sizes, usually globular, the layers being juicy (Mohammed et al., 2020).

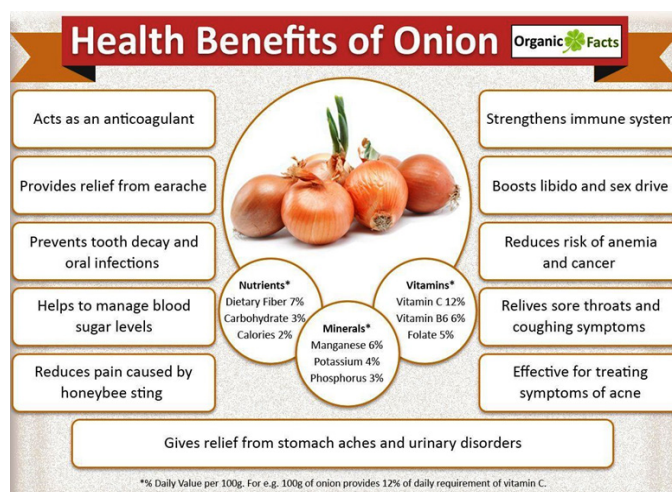
Scientific classification

Kingdom: Plantae
Division: Magnoliophyta
Class: Liliopsida
Order: Asparagales
Family: Alliaceae
Genus: *Allium*
Species: *A. cepa*

Health Benefits of Onion

One cup of chopped onion provides calories 14.9 grams (g) of carbohydrate, 0.16 g of fat, 0 g of cholesterol, 2.72 g of fiber, 6.78 g of sugar and 1.76 g of protein. Onions also contain small amounts of calcium, iron, folate, magnesium, phosphorus, potassium, the antioxidants, quercetin and sulfur. Onions are powered with vitamin C, B₆, Phytonutrients, and a wallop of antioxidants including flavonoids - quercetin and Sulphur compound allicin. Onions have its numerous health benefits and nutritional importance; at the same time onions also pose few risks to the people who eat them, as some people may have an allergy or intolerance to onions. Anyone who experiences a reaction after eating them should be sure to seek medical attention. It should be made a part of our daily diet for a wide spectrum of health benefits including weight loss, lowering the risk of cancer, maintaining healthy and glowing skin etc. Let us have a detailed view of the proven medical benefits of onions (Cardarelli, 2018; Cardarelli, 2018).

Its rich antioxidant profile makes this wonder bulb efficient in protecting cancer. As per the research published in the Journal of American Clinical Nutrition, there is a strong link between the increased usage of this veggie and lowering risk of several cancers (Mann, 2011; Borlinghaus et al., 2014). Onions activate pathways that promote the cancer cell to undergo apoptosis (cell death) (Zhao et al., 2017; Yang et al., 2013; Lan et al., 2019). Onions are super-rich in anti-inflammatory, antioxidant flavonoids - quercetin that guards the bone against free radical damage (Samanta et al., 2016).



Source: Organic facts

It also prevents the bone from breaking down (osteoclast). The presence of Sulphur compounds allicin in onions works to strengthen the collagen in the bone. Women who included more onions in their routine had better bone density and reduced risk of hip fracture. Onions contain plenty of inulin - a fiber which functions as a prebiotic, that nourishes the gut microbes and promotes the growth of good bacteria and improve the gut health. Inulin in onions also works well in preventing constipation, regulating the blood sugar, enhancing the nutrient absorption, and improving the density of bones. The presence of alliinase compound in onions helps in lowering cholesterol and decrease the risk of heart diseases. Alliinase is released when onions are sliced and this makes us cry when we are cutting the vegetable. Moreover, the richness of plant sterols quercetin and saponins in onions work to lower the cholesterol and improve the heart health. The heaving nutrients in onions that include vitamin C, B₆, and allicin the Sulphur compound works as an incredible element in enhancing skin health and beauty. It is a powerful antiseptic that shields the skin and treats acne (Daniluk, 2014; Hart, 2014).

The sudden spikes in blood sugar in cases of pre diabetes and diabetes will be controlled effectively due to the wonderful myriad Sulphur compounds which are found in onions. Moreover, onions contain immense reserves of dietary fiber which help in unimpeded digestion of food, helping to satiate appetite, curb untimely cravings and follow a healthy meal plan to lighten diabetes symptoms. The antioxidants in onions influence the normal operations of the pancreas, regulating insulin synthesis and keeping blood glucose levels in check. A valuable antioxidant known as quercetin, present abundantly in onion, displays fantastic merits for improving heart functions. If we eat a small portion of onions daily as part of a salad, dal or sambar supplies tremendous anti-inflammatory properties to ensure the smooth passage of food particles via blood vessels, preventing their clogging with fatty substances and cholesterol. The instance of atherosclerosis is thus averted and high blood pressure or hypertension is resolved. Onions portray superb wellness incentives in mending sleep disorders of insomnia and promoting uninterrupted rest at night. This strong-smelling root vegetable that is ubiquitous in kitchens and cuisines across the world comprises ample amounts of L-tryptophan, an amino acid that holds powerful sedative traits, which induce deep sleep. Additionally, onions

exhibit useful calming qualities, which help to instantly relieve stress, tension from the mind and promote healthy sleeping patterns. Food harmony is the way which benefits eating two specific foods together that offsets the perks of eating each food separately. This works well with onions and tomatoes, researchers believe the Sulphur compounds in onions promotes the absorption of lycopene, a potent antioxidant in tomatoes that protects against cancer, heart disease, brain, bone and eye health. Luckily both make a delightful combination of salads, curries, omelets, and soups (Dias, 2012; Pratt and Matthews, 2006).

Onion has remarkable effects on human health when it is consumed in the form of juice. The hot and pungent tasting juice is full with strong antioxidant and anti-inflammatory properties. Besides this, it is also abundant in vitamins B₁, B₆, C, folic acid and magnesium and phosphorus. The potent antimicrobial and antifungal properties of onion juice help to clear the acne scars and lower inflammation and redness. Onion juice is also beneficial in treating fungal and bacterial infections. Apply onion juices to the face and allow it to stay for 10-15 minutes to get rid of acne scars. The goodness of powerful flavonoids and antioxidants in onion juice combats free radical damage of skin cells, reduce wrinkles and slow down signs of ageing. The Sulphur compounds alum boosts the synthesis of collagen and battle premature ageing. The immense amount of antioxidant quercetin in onion juice is valuable in treating allergies and lowers the risk of chronic inflammatory conditions. Quercetin works by scavenging free radical damage and helps to get rid of histamine in the body (Xiang et al., 2019; Obi, 2011; Barve and Dighe 2016; Mercola, 2021).

CONCLUSION

Onions have wonderful positive effects on human health, as they are extremely rich in their nutritional properties and amazing qualities to cure various diseases. Onions must be added to our daily regular diet in order to enhance the strength to improve the ability to resist to the different diseases and also to make our immune system strong. It is seen that onions are not only great to eat with other vegetables but also increase the taste of other food dishes. Hence it is an amazing vegetable which has numerous vitamins, minerals and antioxidants that help to regulate many health issues and reduce the risk of cancer as well.

CONFLICT OF INTEREST

Authors declared no conflict of Interest.

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