



Walnut: A Highly Nutritious Food with Several Health Benefits

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Summary

Food is indispensable for the survival of all living creatures in the universe. Two types of food are available, one comes from plants, and other originates from animals [1]. Food contains carbohydrate, fat, protein, minerals, vitamins, and water that are required to keep the body healthy [1]. Among the foods of plant origin, nuts have good nutritional qualities with several health benefits [2]. A number of nuts, such as almonds, peanuts, pecans, cashews, pistachios, walnuts, pine nuts, Brazil nuts, chestnuts, and Hazelnuts are available in the world [3,1]. Nuts are low in carbohydrates but high in other nutrients like vitamins, minerals, omega fatty acids, and fiber that confer several health benefits. Presently, people have become very health conscious, and therefore, nuts are used in many food recipes around the world [1]. The potential of nuts in the prevention of cancer is described by [4]. Epidemiologic studies have suggested that consumption of nuts in moderate quantity has shown several health benefits. In this context, [5] mentioned that nuts should be included as part of a healthy cardiovascular diet. There are evidences to believe that nuts also have beneficial effects on hypertension, cancer, and inflammation [3]. Sometimes, allergy is noticed in children after ingestion of nuts [3].

Walnut [*Juglans regia*] is a single seed food of plant origin, which is a rich source of omega-3 fats, and contains higher amounts of antioxidants. There are many different varieties of walnuts, of which only three traditional varieties, namely Black walnut [*Juglans nigra*], and English or Persian walnut [*Juglans regia*], and White or butternut walnut [*Juglans cinerea*] are grown for commercial purposes in many countries of the world [1]. After plantation, the tree takes about four years to produce the first crop. Walnut is nearly circular in shape, about the size of a small lemon, weighing about 10-15 g, and enclosing single edible kernel inside. Walnuts can be purchased in shelled and unshelled from the markets. When purchasing from the shops, it is imperative to see that walnuts are bright brown in color, compact, free from cracks, spots, mould, and rancid smell. Shelled kernels should be put in airtight container, and kept in the refrigerator to avoid rancidity. However, unshelled walnuts can be placed in a cool, dry place for many months [6,1]. It is estimated that 3.8 million walnuts were produced in 2017 in the world. China is the largest producer of walnut followed by USA, Chile, European Union, Ukraine, Turkey, and India. The main walnuts producing States in India are Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, and Uttarakhand [7]. Walnuts are packed with several minerals [copper, manganese, calcium, phosphorus, zinc, magnesium, sodium, potassium, selenium, iron, iodine, molybdenum, and vitamins [vitamin A, vitamin E, vitamin K, vitamin B1, vitamin B2, vitamin B6, vitamin B9, vitamin B12] and omega 3 essential fatty acids [3,7]. In addition, it is a good dietary source of antioxidants, such as catechin, ellagic acid, ellagitannins, and melatonin. Antioxidants are recognized to be helpful in defending the body against diseases [8]. and co-investigators reported that walnuts contain antioxidative polyphenols. Walnuts are available both raw or roasted, and salted or unsalted in many countries of the world. They can either be eaten as a snack or can be added to breakfast cereals, salads, soups, pastas, and baked goods. Walnut can also be used to prepare butter. In addition, oil extracted from the walnut kernels can be employed in cooking, and as a base or carrier oil in medicine, and in aromatherapy [1].

Several workers have described the health benefits of walnut consumption [9,10,11,7,1]. Walnuts can help to reduce inflammation, which is a main cause in many chronic diseases. It can prevent risk of cardiovascular diseases. Walnuts may decrease risk of certain cancers, such as breast, prostate and colorectal cancers. However, additional studies are required to confirm the role of walnuts in cancers. In addition, walnuts may improve blood pressure, bone health, brain health, gut health, reduce bad cholesterol and triglyceride levels, manage diabetes, support sperm health and male fertility, prevent constipation, decrease depression, maintain healthy weight and prevent obesity. The regular use of walnuts can diminish the risk of dementia and Alzheimer disease [9,10,7,1]. It is concluded that walnuts are highly nutrient rich foods with several health benefits, and hence should be included in a healthy diet pattern. However, persons having hypersensitivity reaction to nuts must avoid the consumption of walnuts. If the person develops a rash or hives or difficulty breathing after consuming walnuts, immediate medical help should be sought to get relief in symptoms. Since high consumption of walnuts has been linked to diarrhea, it is advised

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to consume them in moderation. Further research seems imperative to elucidate the beneficial role of walnuts in other health problems.

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