

Medicinal Value of Walnut (*Juglans regia*) in Khost Province, Afghanistan

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ABSTRACT

Afghanistan's environment is favourable for agricultural, and so the majority of its inhabitants are engaged in agriculture. They farm a variety of crops, including walnut. Walnut is a kind of fruit that is high in nutrients and essential for a balanced diet. Thus, ingesting a little number of walnuts everyday may offer us with proteins, lipids, antioxidants, and a variety of vitamins and minerals that we need on a daily basis. Additionally, walnuts contain Omega3, which is beneficial to our overall health. Taking all of this into consideration, we can conclude that walnuts are a rich source of beneficial compounds.

Keywords- Botanical characteristics, vitamin, walnut, carbohydrate,

I. INTRODUCTION

Walnuts have a high concentration of mono saturated fatty acids. Walnuts are high in omega 3, which is an important fatty acid, as well as arachidonic acid. People have been aware of this fruit from the beginning of time. Because its botanical structure is similar to that of the human brain, it is thought to be very nourishing for the brain. Phyto-chemical components found in walnuts include melatonin, ellagic acid, vitamin E, carotenoid and polyphenols. Melatonin is an antioxidant, while ellagic acid, vitamin E, carotenoid and polyphenols are also found in walnuts. It has been suggested that these chemicals may be utilised to treat illnesses such as ageing, cancer, inflammation, and neurologic disorders [14-15]. Afghanistan is a semi-arid, agricultural nation with a temperate climate. Its climate is conducive to agricultural production. As a result, farmers account for the majority of the population. Walnut is one of the most often grown plants in Afghanistan, and it can be found in the northern, eastern, and southern regions of the country, particularly in the province of Khost, where cultivation is very simple and affordable. Walnut is utilised in the treatment of a variety of disorders in the Khost area, including Triglycerides, rheumatism, and others. In addition to its medicinal characteristics, walnut is one of the most important sources of money for Afghans, since it is sold in various regions of the country and exported to other nations.

II. WALNUT

2.1 Botanical characteristics of walnut

Walnuts are harvested between March and April. It is an oval-shaped dry fruit with a hard shell that may grow up to 4-5 cm long. As a monoecious plant, the staminate and pistillate flowers appear on separate branches of the same tree in the same year. Walnut trees are planted between 1500 and 2200 metres above sea level. The human genome has 32 chromosomes, which are categorised as follows [14].

Classification of walnut:

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Fagales

Family: Juglandaceae

Genus: *Juglans*

Species: *J. Regia*

2.2 Walnut is a source of vitamin

Walnuts are an excellent source of vitamin E. Walnut oil contains vitamin E in two forms: tocopherol and gamma-tocopherol. Tocopherol is the most abundant form, while gamma-tocopherol is the least abundant. The vitamin E content of walnuts is estimated to be 21 mg of gamma-tocopherol per 100 grammes, which may provide the human body with 140 percent of the daily need. Since vitamin E possesses powerful fatty acid-solving characteristics, it is also utilised to preserve mucus and the skin's cell membrane, therefore mitigating or preventing the damaging effects of free radicals [14].

Walnut contains vitamin B-complexes that are essential for health. There are many vitamins and minerals in it, including riboflavin, niacin, thiamine, vitamin B6, pantothenic acid, and folate B9. As a result of its ability to minimise the consequences of inflammation, walnut may help to reduce the risk of high blood pressure. Furthermore, it is capable of avoiding arterial illnesses, which may result in heart and brain stroke, chest diseases, colon and prostate cancer, and other serious health problems [1-8].

2.3 Walnut contains protein, fat, and carbohydrate

Walnuts include mono- and polyunsaturated fatty acids that have detrimental effects on heart rate. Walnut fats account for about 75% of total calories. We already know that calories are provided by three kinds of dietary nutrients: protein, lipids, and carbs. Protein and

carbs together provide 4 calories per gramme of protein and carbohydrates. A single gramme of fat, on the other hand, contains 9 calories. As a result, we must be careful not to overindulge ourselves while eating these hard-shell fruits. [4-15-16].

2.4 Consumption of walnut

Walnuts may be eaten raw, roasted, salted, or seasoned before eating. The interior of the walnut is delicious. That's why it's so versatile. This ingredient may boost the flavour of yoghurt, pizza, cake, salad, dessert, and walnut ice cream. Second, walnuts are in many sweets. It is used to make cakes, cookies, and chocolate. Walnuts may also be made into a paste. Those sensitive to peanuts depend heavily on this paste. Finally, in the Middle East, walnut is blended with almond, date, and grape to make Mamoul, a traditional Ramadan cake [15].

2.5 Some other properties of walnut

Generally, hard-shell fruit and seed are the best food source. Walnut has various kinds of healthy material both in organic and raw forms. It feeds and supports the nervous system perfectly. Walnut is believed as food medicine which is able to offset the harmful effects caused by other types of food such as vegetable [15].

Many illnesses may be avoided if walnuts are ingested on a regular basis. Walnut dessert has been utilised since ancient times because to its flavour and medicinal benefits. Nowadays, we are attempting to understand about its advantages scientifically. In many respects, walnut mimics the brain. The brain resembles a walnut. Its strong shell is similar to the skull that protects the brain. Its two inner portions are also identical to those of the brain.

People from the past share their experiences and knowledge regarding walnut. A little quantity of walnut contains both saturated and unsaturated lipid acids. In 100 grammes of walnut, there are 50 grammes (47.14) of multi-saturated fat, 40 grammes (38.8) of which are Omega 6 (linoleic acid) and 10 grammes (9.08g) are Omega 3. (linolenic acid). When compared to other hard-shell nuts, walnut has an extremely low Omega 6 to Omega 3 ratio [13-14]. This is a good characteristic. The nutritional content of walnuts is higher than that of pistachio, almond, hazelnut, pine nut, and peanut [18]. Despite having double the antioxidant and nutrient content of any other hard-shell nut, consumers prefer other hard-shell nuts over walnuts. As a result, it is critical that walnuts be included in nutrition regimens.

2.6 Walnut keeps our hearts healthy

According to some studies, eating walnuts on a regular basis may help protect our bodies against heart disease, some forms of cancer, type 2 diabetes, and other health issues. Recent research has shown that walnuts reduce the risk of heart attacks. It also improves blood flow in the vein. Furthermore, walnut fruit has a heart-shaped form [6-7-2-13].

2.7 Walnut contains antioxidants

It is possible to consume walnuts in a number of ways: they may be ingested fresh and uncooked, or they can be roasted, salted, or otherwise seasoned before being swallowed. A very tasty part of the walnut is the inside region. Hence, its vast variety of applications may be explained by this fact. To begin with, this item has the potential to boost the flavour of yoghurt, pizza, cake, salad, dessert, and walnut ice cream, among other things. Second, walnuts may be found in a number of confectionery items, such as cookies and cakes. In the manufacturing of baked products, such as cakes, biscuits, and chocolate, it is utilised as an ingredient. Walnuts may also be ground into a paste, which is an alternative usage for them. Particularly those who are allergic to peanuts depend heavily on this kind of paste to a large degree. Final note: In certain Middle Eastern countries, walnut is mixed with other ingredients such as almond, date, and grape to create a cake known as Mamoul, which is typically offered during Ramadan.

2.8 Walnut consumption is a good diet

Some people think that eating nuts with hard shells leads them to gain weight. Indeed, walnuts have a considerable amount of calories, but they also contain healthy fats. As a result, consuming a handful of walnuts not only helps you maintain your weight but also helps you lose weight. The calories provided by walnuts may be sufficient to keep our bodies running until our next meal. Furthermore, the antioxidants included in walnuts help us to maintain our health. [16-17-12].

III. CONCLUSION

Walnuts are high in vitamins, minerals, protein, and fats, making them a nutritious snack. It is recommended that you consume 30 grammes of walnuts per day to improve your heart and brain health. It is recommended that proper nutrition regimens include walnut since it has the potential to improve long-term human health. Afghanistan utilises walnuts to cure conditions such as excessive cholesterol and triglycerides, among other things.

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Table 1. The chemical structure of walnut

Energy / Constituents	Nutritional value per 100 grams
Energy	2,738 kJ (654 kcal)
Carbohydrates	13.71
Starch	0.06
Sugars	2.61
Lactose	0
Dietary fiber	6.7
Total Fat	65.21
Saturated fat	6.126
Monounsaturated fat	8.933
Polyunsaturated fat	47.174
Protein	15.23
Vitamins	Amount (%)
Vitamin A equiv.	1 µg (0%)
Beta-carotene	12 µg (0%)
lutein zeaxanthin	9 µg (0%)
Vitamin A	20 IU
Thiamine (B1)	0.341 mg (30%)
Riboflavin (B2)	0.15 mg (13%)
Niacin (B3)	1.125 mg (8%)
Pantothenic acid (B5)	0.570 mg (11%)
Vitamin B6	0.537 mg (41%)
Folate (B9)	98 µg (25%)
Vitamin B12	0 µg (0%)
Vitamin C	1.3 mg (2%)
Vitamin D	0 µg (0%)
Vitamin D	0 IU (0%)
Vitamin E	0.7 mg (5%)
Vitamin K	2.7 µg (3%)

Trace metals	Amount (%)
Calcium	98 mg (10%)
Iron	2.91 mg (22%)
Magnesium	158 mg (45%)
Manganese	3.414 mg (163%)
Phosphorus	346 mg (49%)
Potassium	441 mg (9%)
Sodium	2 mg (0%)
Zinc	3.09 mg (33%)
Other constituents	Amount (%)
Water	4.07
Alcohol (ethanol)	0
Caffeine	0

Legend: μg = micrograms; mg = milligrams; IU = International units
Percentages are roughly approximated using US recommendations for adults (Source: USDA Nutrient Database).

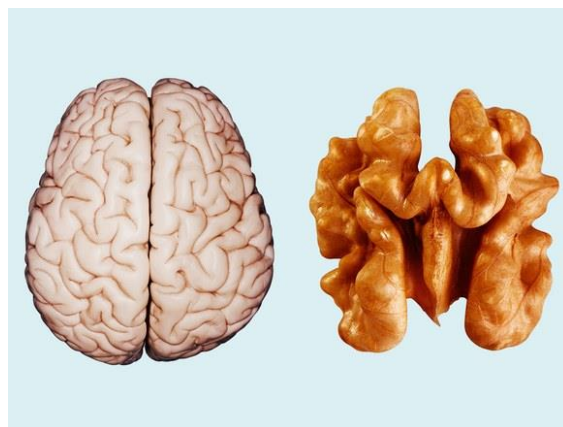


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