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IMPORTANCE AND ROLE OF COMMON HAZEL (*Corylus avellana* L.) IN FOLK MEDICINE AND INDUSTRY IN AZERBAIJAN

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ЗНАЧЕНИЕ И РОЛЬ ЛЕЩИНЫ ЛЕСНОЙ (*Corylus avellana* L.) В НАРОДНОЙ МЕДИЦИНЕ И ПРОМЫШЛЕННОСТИ В АЗЕРБАЙДЖАНЕ

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Abstract. Corylus avellana L. is a very common valuable shrub that usually regenerates naturally in mixed forests. Hazelnut cultivation in Azerbaijan has a very ancient history. Since ancient times, people have cultivated wild types of hazelnuts and cultivated high-quality hazelnut plants. The composition of hazelnut fruit is protein, fat (about 60-70%), carbohydrates (15-17%), 45% water, phosphorus, calcium, magnesium, manganese, zinc, iron, etc. It is rich in minerals, vitamins A and E, B_1, B_5, B_6, B_9, B group vitamins. The root, stem, leaves and fruits of hazelnut are widely used in industry and medicine.

Аннотация. Corylus avellana L. — очень распространенный ценный кустарник, который обычно естественным образом восстанавливается в смешанных лесах. Выращивание фундука в Азербайджане имеет очень древнюю историю. С давних времен люди выращивали дикорастущие виды фундука и выращивали высококачественные растения фундука. В состав плодов фундука входят белки, жиры (около 60–70%), углеводы (15–17%), 45% вода, фосфор, кальций, магний, марганец, цинк, железо и др. Он богат минеральными веществами, витаминами. А и Е, B_1, B_5, B_6, B_9, витамины группы В. Корень, стебель, листья и плоды фундука широко используются в промышленности и медицине.

Keywords: Corylus avellana, forests, shrubs, trace elements, vitamins, organic acids.

Ключевые слова: фундук, леса, кустарники, микроэлементы, витамины, органические кислоты.

Introduction

Corylus avellana L. (common hazelnut or forest hazelnut) is a monoecious and wind-pollinated broadleaf plant. It is a very common valuable shrub that usually regenerates naturally in mixed forests. Europe spreads from Norway to the Iberian Peninsula and east to the Urals. It is cultivated on Earth, especially such as Turkey, Italy, Spain in European countries, USA, Canada and further afield. Hazelnuts are widely distributed in natural stands in Europe. It extends from Scandinavia to the south of the continent. It is also present on some islands of the Mediterranean Sea (Cyprus, Malta, Balearic Islands) and on the northern and southeastern continents, North Africa and Asia Minor. Not just in Iceland. It was brought to North America in the mid-1850s. Currently, the hybrid between *Corylus avellana* L. and *Corylus americana* represents the main option for new crops [3].

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In ancient times, people used hazelnut fruits for food. Hazelnut culture first appeared on the Black Sea coast of the Caucasus. The Circassians had grown it as early as in the III-IV centuries B.C. [3].

Hazelnut occupies one of the leading positions in the industry and economy of the Republic of Turkey. Suffice it to say that 12-15% of all incoming foreign exchange is the result of hazelnut exports. It should also be noted that the first varieties of hazelnuts selected from local wild plantations were created in Turkey [7].

It is mainly found in high mountain belts of the forests of the Greater Caucasus and Lesser Caucasus in the form of trees and shrubs. The cultivated varieties of hazelnut in our republic are cultivated in the regions Balaken, Zagatala, Guba, Gakh, Gusar, Gabala, etc. [1].

Currently, it is considered one of the most economically important and effective tree species in the world. Hazelnuts are rich in protein, contain vitamin E, thiamin, magnesium and other important substances. In 2012, producing and exporting countries of hazelnut were Turkey, Italy, USA, Azerbaijan and Georgia. In 2012, Turkey produced 660,000 tons of hazelnuts (more than 75%) in world production [2, 4].

Due to its high-quality nutritional properties, the fruit of the hazelnut occupies a unique place among crusted plants. The composition of hazelnut fruit is protein, fat (about 60-70%), carbohydrates (15-17%), 45% water, phosphorus, calcium, magnesium, manganese, zinc, iron, etc. minerals. It is also rich in vitamins A and E, B_1, B_5, B_6, B_9, B group vitamins.

Due to its high nutritional value, people have used this plant as food since ancient times. The nutritional quality of the plant (i. e. the fruit) is related to the unsaturated fatty acid (oleic acid) and other vitamin, mineral, protein, carbohydrate and phenol compounds contained in it.

The stock of this plant plays an important role in our country, and it is the most profitable agricultural product both as food and economically. The most important type of hazelnut is *Corylus avellana* L.

In recent years, the support of hazelnut production by state programs has significantly increased in Azerbaijan. The importance of the hazelnut plant is that its wood, fruit, bark and leaves are useful for various uses.

Hazelnut oil has a pleasant taste and is easily absorbed by the human body. It is eaten and also used in the production of paint and varnish. After pressing the oil, halva is made from the remaining part. The use of nuts in fresh or roasted form is widespread. Very tasty roasted hazelnuts are usually burned in ovens at a temperature of about 110 °C, as a result of which the hazelnuts get a unique flavor. Hazelnut kernels are a chain raw material for the food industry. They are used together with walnuts and almonds in the production of chocolate, sweets, cakes, pastries and other confectionery.

High-quality linoleums, activated carbon, etc. are made from the bark in the industry such items are taken. The decoction of the bark and the juice of the leaves have therapeutic value as capillary bleeding and vasoconstriction. The essence of the young branches of the hazelnut prevents the expansion of blood vessels, has a good effect on leg wounds and inflammation.

In scientific and folk medicine, a mixture of roasted and ground hazelnuts with honey is used in rheumatism, anemia, general body weakness, and hazel leaves are used as an infusion for dizziness. Essential oil is obtained from the hazelnut and this oil is distinguished by its aroma.

Material and methodology

Hazelnut is a fruit rich in lipids and very energetic. The fruit is extremely rich in monounsaturated fatty acids (45.7/100 = 72.5% lipids) consisting of oleic acid (C18: 1). Omega 9 and is the main component of olive oil. Hazelnut seeds are rich in omega-9 oil and the lipid content is close to that of olive oil. On the other hand, polyunsaturated fatty acids are only 7.92/100 g, five

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times less than walnuts (43.6 g/100 g). These polyunsaturated nuts are mostly omega-6 linoleic acid but contain little or no omega-3 α-linolenic acid [6].

The average nutritional value of 100 g of dried forest hazelnut fruit is shown in Table 1 below.

Table 1

THE AVERAGE NUTRITIONAL VALUE

Energy consumption	*Main components*	*Food fibers*	*Fatty*	*Protein*
Joul 2810 kJ (calories) (680 kcal)	Carbohydrates 6.99 g - starch 0.48 g - sugar 4.34 g	9.7g	60.75g	14.95g

Nuts are a food rich in trace elements (vitamins and minerals). The mineral content of hazelnuts can be very different (Table 2, 3).

Table 2

CONTENT OF VITAMIN

Vitamins	*Quantity*	*Percent*
Vitamin A equivalent.	11 mcg	—
beta-carotene	11 mcg	—
lutein - zeaxanthin	92 mcg	—
Thiamine (B_1)	0,643 mg	56
Riboflavin (B_2)	0,113 mg	9
Niacin (B_3)	1,8 mg	12
Pantothenic acid (B_5)	0,918 mg	18
Vitamin B_6	0,563 mg	43
Folic acid (B_9)	113 mcg	28
Vitamin C	6,3 mg	8
Vitamin E	15,03 mg	100
Vitamin K	14,2 mcg	14

Table 3

CONTENT OF MINERALS

Minerals	*Quantity*	*Percent*
Calcium	114 mg	11
Iron	4,7 mg	36
Magnesium	163 mg	46
Manganese	6,175 mg	294
Phosphorus	290 mg	41
Potassium	680 mg	14
Selenium	2,4 mcg	3
Sodium	0 mg	—
Zinc	2,45 mg	26

Hazelnuts are also a good source of vitamin B_9 (folic acid), with an average of 113 mcg, which is 28% of 100 g of hazelnuts. Potassium K is the predominant mineral. It is rich in phosphorus, calcium and magnesium. The presence of Fe (iron), Zn (zinc) and Cu (copper) in hazelnuts, as well as the high K/Na ratio, make hazelnuts an interesting food in terms of nutrition, especially in terms of electrolyte balance.

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Effective use: Hazelnuts contain vitamin E (against cell aging), fiber (against colon cancer), copper (against rheumatism and infectious diseases), iron (against anemia), magnesium (against stress), phosphorus (against mental fatigue) and B which is very rich in vitamins.

In the cold season, hazelnuts are a food supply for deer, woodpeckers, squirrels and birds. Before eating a nut, the squirrel cracks open the shell with its incisors, first cutting off the pointy end, then splitting it in half to split it in two [5, 6].

During the season, the leaves are a food source for invertebrates, including several animals. Hazelnuts are used to prepare a very valuable anti-cancer drug in the world. Infusion of hazelnut leaves removes the disturbed blood circulation and coldness in the hands and feet. It is more effective when you pour 1 tablespoon of honey into the infusion.

In the food industry, hazelnuts are used in the form of powder, crushed, chopped, in various forms of bread and confectionery. Various types of creams, cookies and cakes are prepared. Hazelnuts are used in ice cream, nougat, pralines and chocolates.

The best-selling industrial spread (Nutella) contains 13% hazelnuts, 7% chocolate and 57.9% sugar. Hazelnuts are used as a dessert in mixes with other dried fruits. Also, the hazelnut oil is very valuable. But when it is already eaten, it causes itching in humans.

Nuts are important for the body at any age. That's why it should be the main component of the nutrition of children, young people and the elderly.

Conclusion

About 90% of the world's hazelnuts are consumed by the food industry. Shelled hazelnuts are usually sold after roasting (half an hour at 140 °C). When exposed to heat, the bark comes off on its own and emits a pleasant aroma. Considering all the important indicators of the plant, it is necessary to cultivate it in large areas in the Ganja-Gazakh region. It is also used in planting gardens and forests, greening bare slopes.

Nutrient content of forest hazelnuts varies depending on the place of growth, environmental conditions, geographical location and humus of the soil. Various studies in the world's largest producer, Turkey, Italy, Spain, and the United States, sometimes show below-average results. This indicates that the composition of forest hazelnuts is richer in nutrients and has a longer shelf life than cultivated hazelnuts.

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