Sea buckthorn (lat. Hippóphaë)

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Abstract. The article discusses the main properties of sea buckthorn and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of berries are indicated, the use of sea buckthorn in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of sea buckthorn on the human body under certain medical conditions and diseases are analyzed separately. The scientific foundations of diets with its application are considered.

Keywords: sea buckthorn, benefits, harm, beneficial properties, contraindications

Beneficial features

Table 1. Chemical composition of sea buckthorn (according to Food+).

Main substances (g / 100 g):	**Fresh Sea Buckthorn contains [1]**
Water	83
Carbohydrates	5.7
Alimentary fiber	2
Squirrels	1.2
Fats	5.4
Calories (kcal)	82
Minerals (mg/100 g):	
Potassium	193
Magnesium	thirty
Calcium	22
Phosphorus	9
Sodium	four
Vitamins (mg/100 g):	
Vitamin C	200
Vitamin E	5
Vitamin B 3	0.4

Vitamin B 2	0.05
Vitamin B1	0.03

The vitamin and mineral composition of sea buckthorn depends very much on its variety, place of growth, and even harvest time. So, during the fall, more minerals accumulate in the berries and leaves of the plant than in the August harvest. But this rule is not universal. Potassium, magnesium iron in autumn in sea buckthorn fruits, on average, more than in summer, and, for example, sodium, calcium and phosphorus - less.

Of the fifteen sea buckthorn minerals among the macronutrients, the content of potassium and calcium is most significant in the berry, and among the microelements - iron. Sea buckthorn leaves collected at the end of summer can serve as a good source of zinc. By the way, the bark is considered one of the best plant sources of serotonin.

Depending on the varieties and conditions, the vitamin composition varies markedly. But, on average, 100 grams of sea buckthorn berries “fit” about 2-3 norms of the daily requirement of the body for vitamin C, half the norm of vitamin B6, a third of the daily norm of vitamin E and beta-carotene, a precursor of vitamin A. There are also vitamin P in berries , as well as phenolic compounds with P-vitamin activity. Together with vitamin C, they provide a synergistic effect in the prevention of atherosclerosis. Thus, sea buckthorn can indeed be called a "vitamin treasury" without much exaggeration.

100 grams of berries per day "closes" and 100% of a person's need for organic acids (malic, tartaric, citric, oxalic, etc.), which are involved in many biochemical reactions. Sea buckthorn is one of the few plant foods in which all the omega fatty acids known today have been found, including the relatively recently discovered Omega-7.

Sea buckthorn oil also preserves active substances. Ripe seeds contain 8-20% oil, the pulp - about 20-25%, and the remains of the fruit after squeezing the juice - about 15-20%. These oils have high concentrations of lipophilic components, most often unsaturated fatty acids, phytosterols and vitamins A and E. That is, they include components that have a multifunctional effect on human health: antioxidant, anti-inflammatory and antidepressant properties. At the same time, fatty acids play an important role in changing cerebrovascular and cardiovascular diseases.

Medicinal properties

Numerous studies of sea buckthorn have shown that both its fruits and plant parts, depending on the conditions, systemically exhibit antioxidant, anti-inflammatory, antitumor, anti-stress, anti-thrombotic, adaptogenic, neuroprotective, antibacterial, cytoprotective, immunostimulating properties.

This means that plant extracts can potentially be successfully used in the treatment of various tissue injuries and pathologies, diseases of the gastrointestinal tract, liver and kidneys, blood vessels and heart, and joints. They can be used relatively safely to expand the physical capabilities of the body and improve cognitive functions.

- Heart and blood vessels

The use of sea buckthorn fruits increases the adaptive capacity of the cardiovascular system and reduces cardiovascular risk.

Thus, the beneficial effect of sea buckthorn flavonol-aglycones on risk factors for heart disease has been established in human studies. Sea buckthorn flavonoids are thought to scavenge free radicals,

reduce blood viscosity, and improve heart function. Although the degree of severity of the effect may be different. [one]

Experiments with rats have shown that sea buckthorn flavonoids are also able to lower the "upper" blood pressure indicators no worse than the drugs enalapril and hydrochlorothiazide. [2] Sea buckthorn seeds can also reduce “upper” pressure. The antihypertensive effect appears to be due to improved insulin sensitivity and angiotensin blocking by the flavones of the plant seeds. [3]

Created by Indian researchers, sea buckthorn wine in animal experiments showed high activity in capturing free radicals, which made it possible to observe a pronounced protective effect against oxidative stress. In addition, high-cholesterol mice given sea buckthorn wine experienced a 197% increase in "good" cholesterol relative to "bad" low-density lipoprotein. [four]

The extracted seed oil has been tested in the treatment of coronary disease in experiments on rabbits. Feeding animals with this oil for 18 days caused a significant reduction in "bad" cholesterol. In addition, the vasodilating activity of the aorta was significantly increased, which allowed scientists to consider the oil extract as a drug with high cardioprotective activity. [5] Sea buckthorn pulp oil also protects against myocardial ischemia-reperfusion. [6]

- Liver and kidneys

With hepatitis, which in the experiment of Russian scientists was provoked in animals by the introduction of paracetamol, the complex use of dry leafy extracts of sea buckthorn was able to reduce the process of lipid oxidation, which helped to normalize blood biochemical parameters and the structure of liver tissues. [7]

Dry sea buckthorn leaves can protect the kidneys from the effects of some of the toxins that molds produce. By affecting the parenchyma and glomerular apparatus, they can cause disturbances in the functioning of the kidneys, but the addition of 2% leaf powder to the feed of quail chicks under laboratory conditions provided partial protection of birds from nephropathy. [eight]

In addition, sea buckthorn extracts can mitigate the negative effects of certain drugs. One of the side results of antitumor treatment, for example, methotrexate, can be an inflammatory lesion of the mucous membranes of the gastrointestinal tract, pharynx, mouth, etc. (mucositis). The concomitant use of sea buckthorn extracts prevents such a reaction. [9] Such extracts also prevent the damaging effect of arsenic salts on the internal organs of mice, although sea buckthorn salts themselves do not remove them from the body. [10] At the same time, it was found that sea buckthorn preparations in therapeutic doses (up to 250 mg/kg of body weight/day) are non-toxic and in laboratory experiments (where 100 mg of sea buckthorn were given to rodents per kg of body weight for 3 months) showed no side effects. [eleven]

Both seed oil and sea buckthorn fruits prevent liposaccharides from damaging liver tissue cells, and also stop the development of fatty hepatosis in rats fed a high lipid diet. [12]

- Physical ability

Fruits (including the juice squeezed out of them) and sea buckthorn leaves can positively influence the metabolic parameters of laboratory animals and improve their physical abilities. Experiments with rats showed that the intake of aqueous extracts of dried leaves increased the endurance of animals during exhausting physical exertion and prevented oxidative processes. [13]

In another experiment, sea buckthorn juice demonstrated the ability to increase aerobic endurance. Thanks to the supplements in animals, levels of hemoglobin and testosterone increased, and the amount of antioxidant enzymes in skeletal muscles significantly increased. [fourteen] In the future, these properties of sea buckthorn components can be used to increase human strength and endurance.

A special effect of the use of sea buckthorn is observed in high mountains. Here, eating berries and especially their extracts helps the body adapt to extreme conditions. The intake of extracts leads to a change in the metabolism of anaerobic type to aerobic, weakening the symptoms of altitude sickness (altitude hypoxia). The mechanism is explained by the fact that extracts of sea buckthorn leaves interfere with the passage of plasma from the blood vessels of the lungs into the tissues of the internal environment (parenchyma), which also reduces the severity of altitude sickness. [fifteen]

In addition, sea buckthorn helps maintain a healthy state of many other systems and organs:

- Several studies have been devoted to the effect of sea buckthorn on eye health. In particular, seed preparations helped prevent light-induced aging of the retina, fruit oil helped with dry eye syndrome, leaf extracts prevented the development of cataracts.
- With functional disorders in children, berries restored appetite and restored digestive functions. [16]
- Applications of sea buckthorn oil in combination with ozone therapy help treat periodontitis in smokers. [17]
- Leafy extracts of the plant reduce the degree of inflammation in diseases of the joints. [eighteen]
- Sea buckthorn oil has shown therapeutic properties for ulcers and erosions of the stomach. [19] .
- Both oil and leaves are able to reduce radiation damage and prevent the manifestation of behavioral pathologies in animals under the influence of radiation gamma radiation. [twenty]
- The use of sea buckthorn berries in food, although it did not reduce the duration of infectious diseases, nevertheless, reduced the concentration of C-reactive protein in the blood of patients. [21]
- The results of numerous studies indicate the effectiveness of sea buckthorn extracts in the healing of wounds of various nature.

Thanks to the active component isorhamnetin, sea buckthorn extracts help to cope with the effects of toxins leading to a systemic inflammatory response. [22] This isorhamnetin has been shown to inhibit tumor growth in lung cancer [23] and colon cancer through different mechanisms. [24]

The antitumor properties of sea buckthorn seeds are also manifested due to procyanides, which have an inhibitory effect on human breast cancer cells by suppressing fatty acid synthases. [25] These enzymes are overexpressed in many human cancers. Therefore, the ability to inhibit their expression makes sea buckthorn seeds a very promising raw material in the creation of drugs for other oncological diseases. It is only necessary to recall that it is impossible to transfer the results obtained in vitro and animals without additional studies to humans.

Use in medicine

In pharmacology and modern medical practice, concentrates from the fruits and leaves of the plant are used.

A dry extract is made from the leaves of sea buckthorn, which becomes an active substance in medicines with an action aimed at suppressing the activity of certain viruses. An example of such drugs can be Hyporamine.

It belongs to the group of antiviral drugs and is available in five dosage forms (tablets, ointments, suppositories, etc.). As indications, the manufacturer indicated SARS with rhinitis and tonsillitis that developed against the background of infection, influenza types A and B, chicken pox, herpes, shingles.

Sea buckthorn oil, both alone and as part of preparations, is used to heal wounds, restore tissues during frostbite, burns, eczema, and get rid of skin diseases. The oil is also widely used to relieve inflammation of the vaginal mucosa, cervix, and its erosion. Among the most common preparations based on sea buckthorn oil are the following:

- **Olazol.** Produced in the form of an aerosol. When applied to the skin, it forms a yellowish foam. The remedy is often included in lists of the best burn remedies. And the manufacturer himself refers "Olazol" to drugs of a combined type, which have an anesthetic, antibacterial, anti-inflammatory effect. The tool is used to heal infected wounds, trophic ulcers, restore skin tissues. In proctology, it is recommended to eliminate anal fissures and treat chronic proctitis, and in gynecology - to help treat cervical erosion and bacterial vaginosis.
- **"Hyposol".** It is also an aerosol preparation of the same action as Olazol. Among the indications, in addition to burns of 2-3 degrees, as well as gynecological and proctological pathologies, erosive and ulcerative lesions of the oral mucosa and periodontium are indicated.
- **"Oblekop".** The tool is used for the rapid regeneration of the skin as an activator of metabolism and a stimulator of tissue repair.

At the same time, despite the massive use of sea buckthorn remedies in the fight against the effects of burns, not all experts are ready to recommend preparations based on popular sea buckthorn and calendula to provide effective assistance.

In folk medicine

Traditional medicine considers multivitamin sea buckthorn a universal remedy that:

- copes with peptic ulcers and stomach pains,
- reduces the symptoms of rheumatism and gout,
- treats cough, pulmonary tuberculosis and pneumonia,
- has a therapeutic effect in diseases of the cardiovascular system,
- stops bleeding
- heals the skin after burns and removes post-burn pigmentation,
- helps in restoring vision,
- raises male potency and saves women from gynecological problems.

Not all traditional medicine recipes can be blindly taken on faith. In particular, during exacerbation of peptic ulcers, organic acids of sea buckthorn berries can cause increased secretion of gastric juice and aggravate the patient's condition. But most of the folk practices associated with the use of sea buckthorn have nevertheless stood the test of time.

Particularly often, sea buckthorn parts are used for wound healing: stopping bleeding, restoring tissues, eliminating post-burn pigmentation. Sometimes, as a preventive measure, to prevent skin problems, children are bathed in a decoction of the leaves. A decoction of the fruit is even drunk to treat skin diseases. But more often, a decoction of the fruit is used for therapeutic purposes for gastrointestinal problems.

It's easy to prepare. 3 tablespoons of berries are poured with boiling water (0.5 liters) and left on low heat for 10 minutes. Sometimes after that they do not filter immediately, but let the broth brew for

another half an hour. Recommended amounts of sea buckthorn broth in different sources vary, ranging from 2-3 tablespoons before meals to 2-3 glasses per day.

Sea buckthorn oil is used to improve visual function and to get rid of the "dry eye" syndrome. However, contrary to popular advice, it should not be instilled into the eyes, because this way the oil can block the lacrimal canal and disrupt tearing. And this will not only not help, but may even provoke the development of dry eye syndrome. Therefore, modern folk healers believe that sea buckthorn oil is best taken orally in gelatin capsules for health benefits.

Oil is also often treated for laryngitis and pharyngitis - usually in a course of 10 procedures. To do this, they are impregnated with a cotton swab, which is then lubricated with the mucous membrane. Oil inhalations are also popular, lasting 10-15 minutes.

Serotonin, which is very rich in the bark of the plant, is called an antidepressant and "hormone of excellent mood." Therefore, decoctions of the bark are often recommended to restore the activity of the nervous system. But even in home treatment it is taken to inhibit the growth of tumors (carcinomas, sarcomas, etc.), normalize pressure, and radiation protection. Usually, for such a decoction, the bark of branches is collected at the end of spring, dried and ground into powder, which is then boiled with boiling water.

With rheumatism and gout, leaves slightly softened in boiling water are applied to diseased joints. For the same purposes, they drink tea brewed on the leaves of the plant. A decoction of the seeds of the plant is used as a laxative.

in oriental medicine

Sea buckthorn ingredients were widely used in ancient Chinese and ancient Mongolian medicine. In Tibetan medical treatises, plant constituents have been mentioned since the 8th century. In particular, it is indicated that sea buckthorn is useful for metabolic disorders and diseases of the stomach, which the Tibetans consider the main place for the production of "fiery" heat. Along with other medicinal plants, sea buckthorn should increase heat and eliminate the cold of mucus.

Modern followers of the traditions of Tibetan medicine usually understand the “coldness of mucus” as a decrease in trophotropic processes in the body that need to be activated with the help of certain products. The trophotropic function determines the stability of the internal environment of the body by controlling peristalsis, the degree of expansion of peripheral vessels, sweating and secretion of the salivary glands, and sinus rhythm disturbances. Thus, sea buckthorn, according to Tibetan medicine, has a complex effect on the body, which gave reason to use it also in the treatment of blood and heart diseases, intoxication and purulent inflammation of the pleura.

In Mongolian healing practices, sea buckthorn was also actively used to treat diseases of the lungs and respiratory tract. She was treated for tuberculosis, acute forms of pneumonia and just a cough. It was believed that it also helps with violations of the biliary tract.

In Chinese medicine, sea buckthorn (there it is called Sha Ji) is described as a warm, sour product that affects the meridians of the kidneys and liver. Using berries, Chinese healers treat cough with phlegm, relieve patients of pain and discomfort in the upper abdomen, correct digestive disorders in the stomach and pathologies that occur due to food retention there. In addition, sea buckthorn activates the movement of blood. Therefore, one of the indications for the appointment of sea buckthorn is a long-term absence of menstruation (for women with a previously normal cycle - with a delay of six months, and for girls - in the absence of menstruation up to 16 years).

In scientific research

The content and volume of the section "Healing properties" shows that sea buckthorn is studied very actively all over the world. There is a wealth of data on the antioxidant function of extracts. A whole layer of research is devoted to the wound healing abilities and antibacterial properties of sea buckthorn concentrates. A number of works consider the potential of sea buckthorn in protecting the cells of the brain and nervous system under various damaging effects. Experiments demonstrate how this protective action preserves mental adaptability, the ability to navigate in space, memory, and other cognitive functions.

But as an example of scientific research, we will cite the work of scientists devoted to the restoration of visual function with the help of sea buckthorn preparations.

Sea buckthorn oil, when taken orally, reduces symptoms in people with dry eye syndrome. [26]

100 people who participated in the experiment (their age ranged from 20 to 75 years) were divided into groups, representatives of one of which consumed 2 grams of sea buckthorn oil daily during 3 autumn months. After completing the experiment and processing the data, the scientists concluded that sea buckthorn oil stopped the increase in the osmolarity of the tear film during the cold season and had a positive effect on the symptoms of dry eye. At the same time, the burning sensation of the eyes was especially significantly reduced.

Protective effect of sea buckthorn flavones against visible light-induced retinal degeneration. [27]

The protective effect of sea buckthorn flavones against retinal degeneration caused by visible light was tested on laboratory rabbits.

Animals were treated with sea buckthorn preparations at doses of 250 and 500 mg/kg for 2 weeks before light exposure procedures and another week after. Retinal function was quantified by performing electroretinography 1 day before and 1, 3 and 7 days after light exposure. In addition, the thickness of the outer nuclear layer of the retina was measured, enzyme immunoassay and other analyzes were performed.

As a result, it was found that the sea buckthorn preparation reduced retinal oxidative stress, inflammation and cell death caused by intense light.

Evaluation of the therapeutic role of an aqueous extract of sea buckthorn leaves in cataracts. [28]

In this project, experiments were carried out "in vitro" on the lenses of experimental goats. Anti-cataract activity was assessed using the extract in the concentration range of 100, 200, 500 and 1000 μg/ml by evaluating the performance of a number of biochemical markers. The degree of influence of the extract on the performance varied from 63% to 300%. But, in general, an aqueous extract of sea buckthorn leaves has been shown to delay the onset and/or progression of cataracts, at least under in vitro conditions.

Weight regulation

There are many legends about the benefits of sea buckthorn for weight loss. The effectiveness of fruits and brewed sea buckthorn leaves is due mainly to the action of two mechanisms:

- the first is based on the fact that eating fruits suppresses appetite, and it is easier for a person to limit the number of calories at each meal;

- thanks to the second, the absorption of fat is reduced and its deposition in the abdominal cavity around the organs slows down.

Indeed, the results of several laboratory studies on animals at once suggest that:

- sea buckthorn foliar extracts reduce obesity, hepatic steatosis, insulin resistance, and inflammation in obesity [29] .
- seed extract reduces obesity caused by a high-fat diet, hypertriglyceridemia, and accumulation of triglycerides in the liver, [30]
- sea buckthorn ethanol extract prevents obesity caused by a "fatty" diet by suppressing the expression of adipogenic and lipogenic genes. [31]

Another study [32] examined the role of powdered sea buckthorn leaf tea in obese mice induced by a high-fat diet. Mice were given two different doses (1% and 5%) for six weeks. Tea suppressed weight gain in a dose-dependent manner and significantly reduced visceral fat, plasma levels of leptin, triglyceride and total cholesterol, and activity in supplemented mice. In addition, sea buckthorn tea reduced the concentration of triglycerides and cholesterol in the liver, reduced the accumulation of lipids and increased their excretion in the feces.

There is evidence that dried sea buckthorn fruits in the experiment helped patients control weight gain due to the same mechanisms of reducing appetite and absorbing fats from high-calorie foods.

In weight loss programs, either the berries of the plant are most often used (usually they talk about 100 g per day), or tea brewed from the leaves and / or dried fruits. This drink is recommended to drink a quarter of an hour before the main meal.

In cooking

Back in the middle of the last century, recipes with sea buckthorn in cookbooks described mainly the processes of making preserves and jams from this berry. If some cooks showed the author's initiative and "introduced" sea buckthorn in various forms into the composition of popular dishes, then such finds did not reach the general public. In addition, the abundance of pectin seemed to push the use of sea buckthorn, first of all, in the gelling of various products, in the preparation of jams and jams.

Recently, with the opportunity to popularize any recipe, sea buckthorn began to be used much more widely. People realized that the sour taste of these berries sets off the sweetness of desserts, and serves as a sauce in serving meat dishes. At the same time, yellow berries are able to “share” with other products a pleasant pineapple (sometimes rowan) aroma, leaving a long aftertaste. And red berries of rare red-fruited varieties add grape shades of smell and taste to the dish.

With the need to constantly surprise the public in bars and restaurants, the popularity of sea buckthorn cocktails with dairy products has grown. One of the easiest recipes with milk involves the use of:

- plant fruits - 200 g,
- homemade baked milk - 300 ml (it can be replaced with 250 g of thick fermented baked milk),
- honey with a tart pronounced aroma - 2 tbsp. l.

In this recipe, sea buckthorn is simply ground in a blender and filtered through a sieve, and honey is added to the cocktail poured in layers. In an alternative version, milk is first whipped with a mixer, and then sea buckthorn juice with honey is already added to it.

Sea buckthorn oil is also often used in cooking. Nothing is usually fried on it, but it is added to pastries, mixed with olive oil in a ratio of about ¼ and made dressings for vegetable and / or fruit salads. It is believed that sea buckthorn oil harmonizes especially well with orange.

Traditionally, in some regions, home-made “teas” made from sea buckthorn leaves are common. Currant leaves and/or mint are usually added to the tea "composition" to improve the palatability. However, the Swedish University of Agricultural Sciences suggests considering sea buckthorn leafy raw materials for fermentation on an industrial scale in order to then sell the packaged product in the same way as classic tea. It is also proposed to make natural food preservatives from this raw material, which increase the benefits, for example, of processed meat products.

In cosmetology

The protective properties of sea buckthorn are used both in home and professional cosmetology. According to the results of studies by Indian scientists, sea buckthorn emulsion, when applied to the skin of healthy people for a long time, improves its barrier function. In one experiment, cosmetologists measured biometric indicators of skin hydration and transepidermal water loss once a week for 84 days. As a result, it was found that a 5% emulsion mixture of oil and water applied to the skin of the face significantly improved the barrier properties of the skin. [33]

Another experiment (though already laboratory) showed that UV-induced skin aging (wrinkles, flabbiness, pigmentation) is effectively prevented even by oral intake of sea buckthorn fruit mixture for 6 weeks. [34]

Hyperpigmentation and UV damage to the skin are also effectively treated with sea buckthorn whitening emulsions. At least this is legal for people with "Asian" skin. Scientists, studying the density of pigmentation of patients, found a significant decrease in the level of melanin in all participants in the experiment who applied the plant extract to the skin. [35]

All these properties of sea buckthorn are also used in home cosmetology, where recipes for masks, lotions for washing and creams for skin and hair are common. Due to the abundance of vitamin C, sea buckthorn oil promotes hair and nail growth.

A lot of cosmetics manufacturers have also included sea buckthorn concentrates in anti-wrinkle and skin laxity products, as well as in medicinal preparations as an antimicrobial, anti-inflammatory and antiseptic component.

Dangerous properties of sea buckthorn and contraindications

If a person does not have chronic diseases and he does not have an individual intolerance or an allergic reaction to sea buckthorn, then this product can be freely consumed without fear for one's health.

With caution, you should practice the use of sea buckthorn concentrates, oil and a large number of berries for people with suspected inflammation of the gallbladder, pancreas, duodenum, liver. In the presence and even more exacerbation of these diseases, berries and sea buckthorn juice are contraindicated. You should not use them for gastrointestinal disorders.

Due to the large amount of organic acids that increase the secretion of gastric juice, sea buckthorn can be harmful for stomach ulcers, duodenal ulcers, and inflammation of the gastric mucosa (hyperacid gastritis). Although sea buckthorn oil can be used as an aid in the healing of ulcers.

Despite the fact that the infusion of leaves and fruits in folk medicine removes excess oxalic and uric acids from the body, alleviating the patient's condition with gout, fresh fruits and juice squeezed from them are not recommended for urolithiasis, since this is associated with an increase in urine acidity.

Selection and storage

Fresh sea buckthorn berries begin to arrive at markets and shops from the second half of August and remain there until the beginning of winter. You should choose ripe fruits of bright yellow color, which at the same time retained their density and elasticity. Among them, there should not be crumpled or sticky (glued) berries. There should be no uncharacteristic foreign smell.

On the market, you can also buy a cut branch with sea buckthorn clusters on it. If you put it in a cool place, then hanging berries will retain their freshness even longer than plucked ones. But then you have to shoot them yourself, which, due to the technical complexity of the process, not everyone likes to do.

It is better to store sea buckthorn berries in the refrigerator, using a small basket made of natural materials (from rod or birch bark) for this. The advantage of such containers is that if the berry is damaged, the juice flows through the cracks into the pan, from where it can be easily removed, preventing fermentation. However, fruits can be stored with the same success in plastic bags with technological holes made. It is also popular to store sea buckthorn in a glass jar, but in this case it is advisable to check the contents of the vessel from time to time so that the damaged berries do not flow and the sea buckthorn does not float in its own juice.

For a long period, until the next harvest, sea buckthorn is placed in a freezer for storage. In the frozen state, it does not lose its valuable properties. Some manufacturers immediately pack frozen berries in bags. However, a transparent window is not always provided in such containers, so you can judge the quality of the contents after purchase. The cost of 1 kg of such a berry is about 3-10 dollars (in national equivalent).

Despite such an unexpected use of sea buckthorn, its main function, of course, remains therapeutic. For the sake of goodness, some people who previously disliked sea buckthorn because of its taste and aroma have learned to cook the berry in new ways. Therefore, it is possible that in the near future we will have not only scientific, but also culinary "sea buckthorn" discoveries.

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Sea buckthorn - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of sea buckthorn and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of berries are indicated, the use of sea buckthorn in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of sea buckthorn on the human body under certain medical conditions and diseases are analyzed separately. The scientific foundations of diets with its application are considered.