

the pipes it enters the filters, which are located on land. It is essentially the same as reverse osmosis system: salty water is pressed through semi-permeable membranes, the salts are separated and discharged back into the sea or ocean, thereby becoming desalinated. The only difference of this installation is that no energy resources are used to create this very pressure. Finnish engineers have calculated that manufacturing and installing one platform will cost \$3.5-7 million, depending on its location. If you compare it with existing desalination plants, the benefits are clear. For example, the water pipeline in Päijänne, Finland, which provides water to Hal and its suburbs, spent 200 million euros. Desalination plants are very much in demand in countries with access to the sea or the ocean, but which have scarce freshwater reserves due to its geographical location [4].

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CHOCOLATE AS A PRODUCT FOR FUNCTIONAL NUTRITION

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The problem of food production with functional properties has become increasingly important in recent years. This is due to the deterioration of the general environmental situation, reduced quality of life, the emergence of chronic and widespread diseases.

More and more doctors and nutritionists are of the opinion that nutrition itself can prevent many types of diseases. Actually functional foods are able to perform the function of prevention of a significant number of diseases: diabetes, cardiovascular changes, oncology, atherosclerosis and more.

Chocolate is a class of food, mainly confectionery, made using cocoa beans.

Chocolate mass is prepared from grated cocoa, powdered sugar, cocoa butter, with the addition of flavorings. Many types of chocolate mass include other substances that improve the organoleptic properties, composition and nutritional value of chocolate: roasted and crushed nuts, milk and cream powder, condensed milk, raisins, phospholipids, sesame seeds, glucose, crushed waffles, cognac, liqueur, etc.

The main raw materials for the production of chocolate and chocolate products are cocoa beans. Cocoa beans are the seeds of the tropical cocoa tree *Theobroma cacao* L. from the Greek *theos* - god, *broma* - food, *cacao* - a distorted Mexican name for the seeds of this plant. The main amount of cocoa beans is produced in West Africa, South and Central America, less - in Asia and Oceania.

According to international standards, cocoa beans must be mature, full, round and healthy; the proportion of impurities in the batch of cocoa beans should not exceed 5%, moisture - no more than

8%. The best cocoa beans should contain at least 51-54% cocoa butter, cocoa beans - no more than 11-13%, and under fermented and damaged beans - 5-10%. The average weight of 100 beans should be in the range from 100 to 160g.

At present, chocolate remains one of the most popular foods not only among children but also among adults. However, the prevalence of diabetes is increasing in the world, which is characterized by numerous side effects, such as vascular diseases, disability, resulting in fatal consequences. With this in mind, many nutritionists advise people with high blood sugar or to prevent diabetes from their diet to prevent diabetes. As a source of carbohydrates in the diet it can be offered specialized foods with a modified carbohydrate profile.

At the same time, a number of modern studies prove positive properties of chocolate. Oxidative stress is caused by many factors (radiation, smoky air, food pollution, smoking, poor nutrition, use of certain drugs that are inseparable from the life of modern man in the metropolis. The body's resistance to oxidative stress can be increased by a constant supply of antioxidants. The search for foods with high antioxidant potential is always conducted by both domestic and foreign scientists.

Among them of great interest are works on the analysis of chocolate and cocoa bean products.

We found that Spanish scientists have studied several types of dark, milk chocolate and cocoa paste. The content of condensed tannins, antiradical, was investigated for these samples of activity by two methods and restorative power. Dark chocolate was more important than milk chocolate, while cocoa paste was the leader in all indicators.

Malaysian scientists presented the results of studies of the total content of phenols, flavonoids, antioxidant activity (FRAP method), antiradical action (ABTS method), the content of catechin, epicatechin, theobromine in different fractions obtained by column chromatography from cocoa powder. Fractions have different levels of performance, and the original extract has average values relative to different fractions.

Bosnian scientists studied cocoa powder (100% cocoa), chocolate powder (55% cocoa), chocolate (43% cocoa), milk chocolate (29% cocoa), chocolate filling (35% cocoa) for the presence of total phenols and antioxidant activity to reduce molybdate ions. Cocoa powder has the highest content of phenols, but chocolate (43% cocoa) has a high antioxidant activity.

Indonesian scientists have found that the level of total phenols and anti-radical activity by the DPPH method is influenced not only by the recipe of chocolate, but also the technological conditions of processing cocoa beans (alkali concentration 1-15 g / kg and temperature 40-80°C).

In recent years, there has been a so-called group of "super fruits", which includes a number of fruits with high levels of antioxidant activity. American scientists based on their data on the study of antioxidant activity by ORAC method for powders of popular "super fruits" - acai, blueberry, cranberry, pomegranate - and cocoa conclude about the great potential of cocoa powder, because it has higher values of antioxidant activity compared to "super fruits".

Of interest to scientists are not only the cocoa beans themselves as a raw material for chocolate production, but also waste from their processing. The total content of phenols, antioxidant activity, technological properties (content of proteins, fats, and carbohydrates), fat and water absorption was determined in the husk, cocoa beans. Cocoa bean husks have the most significant indicators of antioxidant activity.

In recent years, the press began to publish about the harmful effects of chocolate on human health. Chocolate consumption is associated with diseases such as diabetes, dental caries, childhood hyperactivity, obesity, acne, migraines, allergies, etc.

Animal and human studies have convincingly demonstrated the positive effects of chocolate components on human health. It is the flavonols of chocolate that help prevent diseases of the nervous system, and flavonoids have anti-inflammatory, neuroprotective, anticancer effects. Chocolate has been proposed as an atherosclerotic agent based on studies in humans, mice and human plasma.

Currently, the number of chocolate items is actively increasing. In addition to the traditional black, milk, classic chocolate with various additives of spices, aromatic raw materials, etc. Comparative studies of classic chocolate, as well as chocolate with red pepper and rosemary in terms of total phenols, the ability to capture free radicals showed an increase in total the content of phenols

in the samples of the studied chocolate with the addition of red pepper and rosemary. The anti-radical activity of these types of chocolate is also slightly higher than the classic.

Thus, there is an obvious interest in questions about the beneficial properties of chocolate as experts in dietetics, nutrition physiology, food chemistry, and ordinary buyers.

A comparative analysis of the results obtained from the study of chemical composition and antioxidant activity for chocolate with data for other plant systems (fruits, honey, bakery products, and juices) allows us to state that chocolate has a leading position and can be recommended as a source of flavonoids.

However, the high price of some types of chocolate, beautiful packaging do not give them advantages as products with antioxidant properties over more "modest" samples of chocolate. Undoubtedly, not only in terms of taste diversity, but also in terms of functionality are the new names of chocolate with the addition of plant extracts.

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POSSIBLE REASON INCREASE OF JELLYFISH POPULATION IN THE SEA OF AZOV

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The Sea of Azov is the shallowest sea in the world, its depth is only 14 meters, its volume compared to other seas is not so great and perhaps that is why this sea is very well researched. For example, the deepest point of the Black Sea reaches 2212 meters. The Sea of Azov washes the shores of the two countries and it is the center of the fishing industry of Ukraine, and the popular place for