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STUDY OF PHYSICOCHEMICAL COMPOSITION OF HOT PEPPER CULTIVATED IN UZBEKISTAN

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Abstract: The article discusses the results of a study on the development of a recipe and technology for obtaining a biologically active supplement (BAS) with adaptogenic antioxidant activity from plant materials as sources of natural biologically active substances (BAS).

Keywords: BAS, raw materials, capsaicin, dihydrocapsaicin, hot pepper mini.

The use of a natural antioxidant to maintain the body's immunity is necessary to first study the content of BAS in raw materials, which is of great importance will give an experimental expansion of the range of domestic dietary supplements with natural components and import substitution.

Pepper annual Capsicum annuum, belongs to the nightshade family. The homeland of red hot pepper is considered to be India and America. There are many articles and studies about pepper in the works of ancient Indian scientists were published and developed about 3000 years ago, that it has pronounced medicinal and culinary properties [1].

Pepper varieties are divided into two groups:

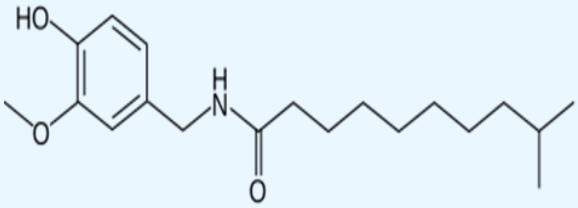
- vegetable;

- spicy.

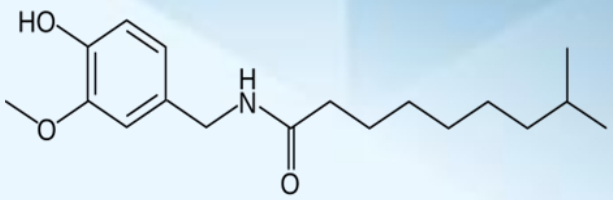
Vegetable pepper, also called sweet or Bulgarian. Spicy hot pepper has two more names: red and pod, the second is absolutely from a botanical point of view, the fruits of capsicum are berries. They are swollen, with a fleshy leathery wall.

Capsaicin belongs to a group of natural antioxidants that are able to capture free radicals, attach to proteins and participate in the signaling system of the human body (Padayatty et al., 2003). It is known that different species and varieties of peppers vary greatly in morphological characteristics and biochemical composition, determined by genotype, as well as environmental characteristics (Wahyuni et al., 2011; Hornero-Mendez et al., 2002; Topuz, Ozdemir, 2007). Capsaicin and

dihydrocapsaicin account for about 77-98% of the total capsaicinoids in peppers. Other minor capsaicinoids found in chili peppers are nordihydrocapsaicin and homocapsaicin (Duelund and Mouritsen 2017, Sarpras et al. 2016). (Capsaicin was discovered by P. A. Buchholz in 1816).



a) capsaicin



b) dihydrocapsaicin

The spiciness of chillis is due to the presence of compounds called capsicinoids. The two compounds called compounds above are the main capsaicioids in chilli peppers. They cause a burning sensation when they come into contact with mucous memberans, due to their interaction with pain and heat sensing neuronis. Capsaicin is also used in some brands of pepper spray and studies have shown it may be capable of killing prostate and lung cancer ceills, it is toxic in large quantities.

Capsaicin can also help with pain such as arthritis, diabetic neuropathy, psoriasis and other nerve pain, as well as muscle soreness. In addition, capsaicin helps with pain not associated with these conditions, such as muscle soreness. However, you should not apply chopped peppers to the skin, as this can cause more pain. It is better to use products containing capsaicin as an ingredient to relieve pain.

This form of fruit, resembling a case with seeds, in Latin capsa, gave the name to the genus Capsicum. Annual pepper contains the hot alkaloid capsaicin. Its main amount is concentrated in the internal partitions of the fruit and in the seeds, in the fleshy shells it is much less. The hotness of the pepper depends on the capsaicin content.

The main value of pepper is that it contains many vitamins, essential minerals, and saturated fatty acids. Capsaicin is found in pepper; it is a remedy and has a bactericidal effect. According to scientific evidence, capsaicin lowers blood sugar

levels because chili peppers help control insulin levels. This plant compound binds to receptors in the brain, causing a feeling of heat and spice.

Capsaicin is found in the seeds of chili peppers, so many people remove them to reduce the heat of a dish. From jalapeños to habaneros, each chili pepper has its own level of heat, which is determined by the Scoville scale. Bell peppers are rated zero on this scale, while the Carolina Reaper contains a whopping 2.3 million Scoville Heat Units (SHU). This means that chili peppers are serious spices that can add personality and spiciness to a dish. Consumption of hot peppers is contraindicated in case of gastric ulcer and duodenal ulcer, gastritis with high acidity and ulcerative colitis. The effect is irritating to the skin, so when working with peppers, you should not touch your eyes, mouth or nose.

Capsicum frutescens (bush pepper) - this species is sometimes classified as Capsicum chinence, and sometimes is distinguished as an independent species. It contains perennial, annual and short-lived varieties. One of them is the most famous - Tabasco.

That is, the species Capsicum frutescens includes the following varieties:

a) Tabasco

b) Malagueta pepper

c) Piri-piri

d) Kambuzi, etc.

Red capsicum is used in the production of food products such as bakery products, crackers or sauces. Pepper preparation included visual inspection of the pods, cleaning from foreign and mineral impurities, washing, drying and subsequent grinding to a particle size of 0.04 mm to 0.17 mm. It should be noted that the internal partitions and seeds were not removed from the pepper to enhance its pungency.

Standard research methods were used in the work. Based on literary data and the results of the studies, promising raw materials containing biologically active substances were selected, safety and potential properties were assessed. A sample of the biologically active substance was experimentally determined. Five recipes with different combinations of natural components in the composition were scientifically substantiated. The physicochemical and technological properties of a mixture of dry

extracts were studied, determining the choice of technology and the quality of the finished product. The description of the technology consists in the use of natural components approved for use and special processing methods that maximally preserve biologically active substances. The study was conducted using an Angelent 1100 liquid chromatograph, thermostatic columns, and a diode array detector (Angelent Technologies, USA). The chromatogram was recorded using a personal computer software package.

The plant compounds found in chili peppers fight free radicals and inflammation. Capsaicin is found in hot peppers, but also important are carotenoids such as lutein, capsanthin, and zeaxanthin, as well as various flavonoids such as quercetin and luteolin. These compounds are antioxidants, meaning they are effective in preventing and reducing inflammation in the body, as well as protecting against harmful bacteria and free radicals.

Chili peppers help maintain a healthy immune system. They contain vitamin A, which is an antioxidant that boosts immunity and is well known for its eye-protecting properties. Vitamin C also has antioxidant properties, boosts immunity, and gives your skin a glow.

Hot chili peppers help support and improve your gut microbiome. Capsaicin promotes optimal digestion and has a positive effect on the gut microbiome, which affects all systems in the body. In addition, studies show that capsaicin can suppress acid production, increase alkaline secretion, and increase mucus secretion, helping to prevent and treat stomach ulcers. Additionally, capsaicin works in several ways to treat and prevent many types of gastrointestinal disorders.

Chili peppers have the ability to clear out your sinuses. Often, these spicy foods are associated with a runny nose, but this may still be beneficial to your health. Research reviews have shown that intranasal use of capsaicin is effective in relieving nonallergic rhinitis, characterized by nasal congestion and discharge. Chili peppers have a beneficial effect on metabolism, promoting healthy functioning. This is achieved through the heat-producing capsaicin, which speeds up metabolism, as well as the renewing effect on brown fat cells, increasing their metabolic rate. Capsaicin

also helps increase insulin sensitivity, which is important for the prevention of diabetes and metabolic syndrome.

Capsaicin, found in chili peppers, has anti-cancer properties that have been proven by research.

Research shows that capsaicin may be effective against cancer cells. A review published in the journal Anticancer Research confirms that this component affects multiple cancer pathways, prevents the growth and survival of cancer cells, and activates tumor-suppressing genes. Capsaicin also activates TRPV1, which is a capsaicin receptor.

A review published in the journal Frontiers in Oncology found that TRPV1 activation has beneficial effects on immune and inflammatory responses that may be useful in cancer treatment. Other studies have shown that capsaicin can even suppress the growth of some prostate cancer cells.

Chili peppers may prevent cardiovascular disease. Capsaicin is a nutrient that activates the TRPV1 channel and helps protect the function of heart-related organs. A recent study confirmed that eating chili peppers is associated with a lower risk of dying from heart disease and cancer. In addition, the TRPV1 channel helps regulate blood pressure, which is an important factor in preventing heart disease.

Capsaicin, found in chili peppers, may help protect and promote brain health. Capsaicin may also be useful in addressing brain-related health issues. A review in the journal Molecules found that capsaicin may slow the impairment and neurodegeneration associated with Alzheimer's and Parkinson's disease, and may help treat dysphagia (swallowing problems) after a stroke. In addition, capsaicin spray may help relieve headaches and migraines.

Conclusion. From the above, it can be concluded that the consumption of hot chili peppers has been associated with longevity. Hot chili peppers can help not only with various health problems, but also with the desire to live a longer and healthier life. Research shows that regular consumption of spicy foods containing chili peppers can reduce the risk of all-cause mortality. Meta-analyses have shown a 25% reduction in mortality with regular consumption of chili peppers.

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