



EFFECTS OF CERTAIN ALKALOIDS FOUND IN THE *HYPERICUM PERFORATUM L* PLANT ON HUMAN HEALTH

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Annotation

This article provides detailed information on the morpho-physiological characteristics, chemical composition, especially the amount of alkaloids and their function in the body and their role in human health, as one of the medicinal plants *Hypericum Perforatum L.*

At the beginning of the article we will discuss in detail the role and distribution of the plant *Hypericum Perforatum L.* in modern taxonomy. The structure, properties and biochemical functions of the alkaloid galantamine, one of the most common alkaloids in this plant, are described in the article.

Keywords: *Hypericum Perforatum L.* galantamine alkaloid, chemical composition, drugs, colitis, healing properties.

Introduction

Presidential decision PQ-4670 of the President of the Republic of Uzbekistan dated April 10, 2020 "On measures for the protection, cultivation, processing and rational use of available resources of wild-growing medicinal plants" In recent years, the country has been carrying out consistent reforms in the field of protection of medicinal plants, rational use of natural resources, the establishment and processing of plantations for the cultivation of medicinal plants.

Of the more than 4,300 plants belonging to our local flora, 750 species are medicinal, of which 112 species are registered for use in scientific medicine, of which 70 species are actively used in the pharmaceutical industry. Plants such as *Hypericum Perforatum L.* have a special place in the list of such plants. (Paragraph 42 of the appendix table of decision No. PQ-4670) [1].

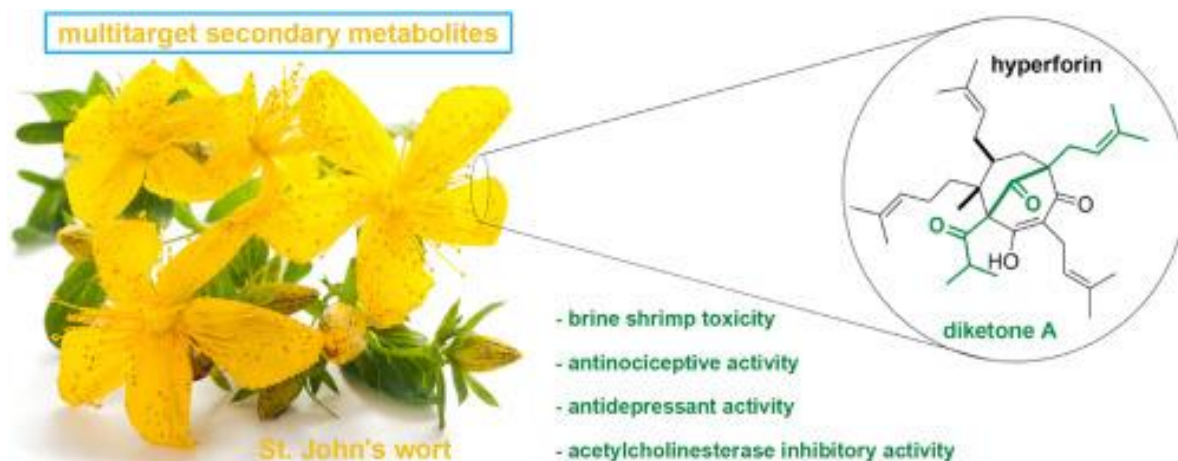
Main part

Hypericum Perforatum L. perennial herbaceous plant up to 30-100 cm tall. The leaves are simple. Long ovate, flat-edged. The flowers are golden-yellow, clustered in a thyroid gland. Dalachoy mainly. Ukraine, Belarus, Moldova, the Baltic states.





Occurs in the forested, forest-desert zone of the European part of Russia and Western Siberia, in the Caucasus and Central Asia [4].



Picture 1. *Hypericum Perforatum* L.

According to the chemical composition, 10-12.8% of additives, 0.1-0.4% of atratsen products (hypericin, pseudohypericin, etc.), flavonoids (hyperoside, rutin, quercetrin, isocversitrin, quercetin, myricetin, etc.) 0.1 -0.33% essential oil, 55 mg mg% carotene, 1151.8 mg% vitamin C, 34 mg% choline, very small amount of alkaloids and up to 10% resin [3]. Although very small, the alkaloid galantamine is widely used in medicine.

Before thinking about galantamine, it is worthwhile to talk about alkaloids. Alkaloids are toxic organic compounds that are readily available in plant tissues, have nitrogen-fixing, basic (alkaline) properties, and strong physiological effects. The alkaloid consists of the Arabic words "alkali - alkali" and the Greek word "eidos - similar", which means alkaline. This indicates that the alkaloids have basic properties. Plants can contain very small amounts, from 10 to 15, sometimes up to 25% alkaloids. Plants often contain alkaloids close to each other. The number of alkaloids sometimes exceeds 50 per plant. (*Vinca erecta*, more than 60).

Most alkaloids are colorless, optically active, odorless, bitter, volatile, crystalline, or amorphous. There are also colored (berberine), liquid, fragrant and volatile (anabasine, nicotine) alkaloids [3].

Alkaloids play an active role in plant ontogeny. When growth is strong (before flowering), the highest amount of alkaloids is found in the leaves and stems, while during flowering, their amount in these organs decreases and increases in the flowers. During fruiting, the alkaloids in the flowers decrease and increase in the fruits [2].



Alkaloids are nitrogenous organic compounds that are found in plants, rarely in animals, and have basic properties. Among them, morphine was first isolated (1806) by the German pharmacist Serturner from opium. Scientists then concluded that plants contain not only chemical compounds that have neutral and acidic properties, but also substances that have basic properties.

In the 19th century, strychnine, quinine, caffeine, atropine, ephedrine, and others were isolated. In the 1960s, more than 1,000 naturally and artificially derived alkaloids were known. Alkaloids are active substances that regulate plant life. Most alkaloids are colorless crystalline substances that are chemically heterocyclic compounds with nitrogen atoms in the ring. Simple alkaloids contain about 10, while complex ones contain more than 50 carbon atoms. Alkaloids form crystalline salts with sulfuric, chloride, salicylate, oxalate, and other acids; this process is used to clean and remove them. The element that gives alkaloids an alkaline property is nitrogen. In the field of alkaloids, academicians from Uzbekistan. The work of S. Y. Yunusov and O. S. Sodiqov with their students in this area is significant. According to the law discovered by S. Y. Yunusov, alkaloids accumulate in early spring in the above-ground parts of plants, in autumn in the seeds of annuals, and in perennials onions, roots and seeds in large quantities [5].

In Mesoamerica, a variety of alkaloids have been used in traditional Mayan medicine since ancient times. Psychotropic substances, both alkaloids and alcohol, have been used for medical purposes and rituals for more than two thousand years.

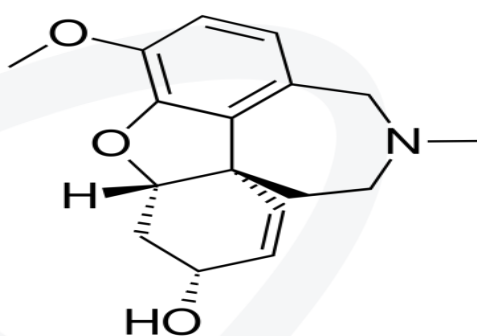


Figure 1. Galantamine

Galantamine is a cholinesterase inhibitor used in Alzheimer's disease. It was first isolated in 1951 by Soviet scientists M. D. Mashkovsky and R. P. Kruglikova-Lvova from the Voronov snowdrop (*Galanthus woronowii* Losinskolit) from the Amorillidaceae family. In 1956 it was obtained from the snow-white throat (*Galanthus nivalis* var. *Gracilis*) by Bulgarian scientists D. Paskov and L. Ivanova. It is also found in other types of snowdrops and related plants. In 1958, it was produced in Bulgaria under the name Nivalin.



Galantamine is available as hydrobromidum. Galantamine alkaloids are used in medicine for various purposes. For example: Helps conduct excitation at nerve-muscle synapses. Entering the blood-brain barrier, in appropriate doses facilitates the conduction of impulses at the cholinergic synapses of the central nervous system and enhances excitation processes, increases the smooth tone of muscles and the secretion of the stomach and sweat glands. Used in the treatment of polymyelitis in children.

It is used in the treatment of gastrointestinal diseases (colitis, diarrhea), diseases of the oral cavity (gingivitis and stomatitis) and burns of 2-3 degrees, as well as for rinsing the mouth.

Colitis (Greek colon - colon), colitis - inflammation of the colon. It is most often caused by infectious diseases (dysentery, paratyphoid), as well as food poisoning, when the nervous system of the intestine is disturbed, and sometimes by vomiting. Colitis is caused by industrial toxins (mercury, arsenic, sulema, organic matter) and toxins (intoxicating colitis) that form in some diseases. According to the course of the disease:

- Acute Colitis - attacks occur suddenly and due to obvious external factors;
- Chronic Colitis - hereditary predisposition is a factor in the development, characterized by sluggishness;
- Recurrent Colitis is a chronic disease that develops into an acute form under the influence of external adverse factors, and returns to a chronic form if the causative agent is eliminated.

The most difficult form of colon ulcer to treat is chronic or recurrent colitis, as in such cases the inflammation affects large parts of the intestinal mucosa. Recovery after general inflammation of the intestine takes longer than treatment of local inflammatory processes.

In the infectious form of colitis, the patient becomes helpless, his mouth becomes dry, he feels nauseous, and his temperature rises to 39-40 °. Acute colitis can develop into chronic colitis if not treated promptly. In chronic colitis, the disease progresses and decreases. Exacerbation of the disease is caused by the consumption of foods that affect the colon (salts, bitter and sour things), physical and mental fatigue, agitation, exposure to the sun, fever, and other diseases of the digestive tract. In this case, diarrhea is replaced by constipation, and a large amount of mucus is excreted in the feces. The patient loses appetite, becomes weak and tired, loses weight, has vitamin deficiencies and other conditions. Changes in the colon, from superficial-catarrhal inflammation to wound inflammation. In the prevention





of the disease, it is important to eliminate intestinal infections, eat a balanced diet, and treat intestinal diseases in a timely manner.

In conclusion, these alkaloids are the most important biologically and chemically active substances found in medicinal plants. Alkaloids are not only involved in the physiological processes in plants, but they are also important for all living organisms. The galantamine alkaloid in the plant *Hypericum Perforatum L.* is especially important in the treatment of gastrointestinal diseases, especially colitis. The main goal of conservative therapy is to alleviate the symptoms of the disease and bring the patient into a state of remission for a long time.

Wound colitis can only be completely cured by surgery, but surgical intervention also does not guarantee complete recovery. In ulcerative colitis, frequent and small amounts of food, drinking enough water, taking vitamin complexes, and the galantamine alkaloid are very important.

Therefore, it is important today to establish plantations rich in alkaloids and to find ways to extract pure and large amounts of alkaloids from them.

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