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CERTAIN FLAVONOIDS IN THE PLANT *HYPERICUM PERFORATUM L.* AND THEIR EFFECTS ON HUMAN HEALTH

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Annotation

This article provides detailed information on the morpho-physiological characteristics, chemical composition, especially the amount of flavonoids 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 article describes the properties of rutin flavonoid, one of the most common flavonoids in this plant, and its biochemical functions in plants and humans.

Keywords: *Hypericum Perforatum L.*, rutin flavonoid, chemical composition, medicinal properties, vitamin P, healing properties.

Introduction

The chemical composition of plants is complex and varied. In addition to carbohydrates, proteins and fats, they contain biologically active substances such as vitamins, enzymes, organic acids, phenols and their derivatives, essential oils, various glycosides, alkaloids, flavonoids, additives, minerals, which are useful and important for the human body. there is. These substances are involved in very important processes in our life activities.

Biologically active substances are formed as a result of continuous biochemical changes in plant cells. They change over time. As a result, they turn into other compounds, participate in the synthesis of complex molecular substances, or break down into simpler compounds, releasing energy from themselves.

Main part: *Hypericum Perforatum L.* is a 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. *Hypericum Perforatum L.*mainly. Ukraine, Belarus, Moldova, the Baltic states. Occurs in the European part of Russia and in the forest-forest-desert zone of Western Siberia, the Caucasus and Central Asia. The modern systematics of Hypericum Perforatum L. can be found in Table 1 below.

The taxonomy of *Hypericum Perforatum L.* is shown in Table 1.

Table 1

Section	*Magnoliophyta*
Classis	*Magnolipsida*
Ordo	*Dilleniidae*
Family	*Hypericaceae*
Category	*Hypericum L.*
Typus	*Hypericum Perforatum L.*

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According to the chemical composition of the plant *Hypericum Perforatum L.* 10-12.8% of additives, 0.1-0.4% of atratsen products (hypericin, pseudohypericin, etc.), flavonoids (hyperoside, rutin, quercetrin, isocversitrin, quercetin , myrcetine) contains 0.1-0.33% of essential oil, 55mg% of carotene, 1151.8mg% of vitamin C, 34 mg% of choline, very small amounts of alkaloids and up to 10% of resin. Despite its small content, rutin flavonoids are widely used in medicine.

Before thinking about routine, it is worthwhile to talk about flavonoids. Flavonoids are a large group of organic compounds that are chemically close to each other and have a common carbon skeleton. Some of them have the effect of vitamin P, which reduces the permeability and fragility of blood vessels. The flavonoids of some plants have herbal and diuretic properties. Because the first flavonoids isolated from plants were yellow, this group of compounds was called flavonoids (from the Latin word flavum - yellow).

Pure flavonoids (glycosides and aglycones) isolated from plants are colorless or orange and yellow crystalline substances. Glycosides of flavonoids are soluble in alcohol, poorly soluble in cold water, insoluble in ether, chlorophyll and other organic solvents, and aglycones are highly soluble in alcohol, ether and acetone and precipitate again after cooling.

Anthocyanins and their aglycones - The color of anthocyanins depends on the pH of the solution (or cell sap). Typically, this group of compounds is red, pink, orange in acidic conditions, and purple, blue, and blue in alkaline conditions. Flavonoids are brown and dark brown (rutin, and other flavonoids), dark red (taxifolin), yellow (quercetin, aurons, and most flavonoids), green-yellow (aureusidine, and other auroins) when exposed to UV light), dark green and orange (xanthones) and other colors. Most flavonoids are optically active, turning the plane of polarized light to the right or left.

The role of flavonoids in plant life is poorly understood. Recently, scientific research in this area is being conducted. So far, the following points have been made:

- Flavonoids are involved in the formation of the color of flowers and fruits of plants. This attracts insects and allows the flower to be pollinated.
- Regulates the growth of plants.
- Plays a role in plant resistance to disease. For example, when the leaf of the pea plant (Pisum sativum L) is infested with fungi, the leaf synthesizes the flavonoid physetin, which inhibits the growth of the fungus. Healthy pea leaves do not contain physetin.
- It is believed that plants are actively involved in the process of oxidation and reduction in tissues. If we consider all the groups of flavonoids and the process of their transition from one to another, we can say that the above statement is true. This is because flavonoids are oxidized (meaning they can be reductive) or reversible (meaning they can act as oxidants) during the transition from one to another.

Flavonoids are common in nature and are found in almost all higher plants. In particular, legumes *(Fabaceae),* astragalus - *Asteraceae* (complex flowers - *Compositae),* celery - *Apiaceae* (umbrella - *Umbelliferac),* bears (*Ranuncubaceac*), perennials (*Rosgonaceae*), Roses (*Polygonaceae),* ragon and representatives of other families are rich in flavonoids. Animals do not synthesize flavonoids. This

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group of compounds is dissolved in the cell sap of all plant organs, and in some cases (underground organs and stems) in small amounts, up to 44% in the flowers and leaves of plants (in *Saphora Japonica* flowers). planadi. Flavonoids are mainly accumulated during the flowering period and then decrease.
Plants that grow in the southern hemisphere, as well as in open, sunny areas, usually synthesize more flavonoids than species that grow elsewhere. In nature, flavonol products are more abundant (40% of flavonoids), and flavones, rings, and aurons are less common.
The importance of flavonoids in medicine. Flavonoids mainly have the effect of vitamin P, which reduces the permeability and fragility of blood vessels. Some plant flavonoids also have diuretic properties.
Pure flavonoids and herbal preparations containing flavonoids are used to treat vitamin D deficiency and other diseases caused by impaired vascular permeability, as well as to lower blood pressure, sedatives, heart (cardiotonic) and some. used as a cancer treatment, herb and diuretic.
Rutin and quartzetin are widely used in medicine today. Rutin was first obtained in 1842 by the German scientist Weiss Ruta from the graveolens plant, and the drug is named after this plant. Currently, rutin is obtained from the surface of the plant and from the buds of the Japanese saffron (*Saphora Japonica*). In 1927, the routine was defined by A. Perkin. It was discovered in 1942 that rutin had a vitamin R effect. In 1962, Russian scientist N.A. Preobrazhensky and his colleagues developed a method for obtaining rutin by synthesis. Routine is a chemical structure of flavanolglycosides, consisting of disaccharidrutinose with quartzetin-aglycone and D-glucose and l-ramnose.
Routine is a pure yellowish-green, fine crystalline powder, insoluble in alcohol, soluble in dilute alkalis, insoluble in water, ether, chloroform and benzene.
The red cyanine chloride formation reaction is used to determine the authenticity of the routine. In this case, a red color appears when the alcohol solution of the drug is exposed to zinc or magnesium shavings in the presence of concentrated hydrochloric acid. This is included in the State Pharmacopoeia as the main reaction to determine the authenticity of the routine, and is called the cyanine reaction.
Use of rutin in medicine Rutin and its preparations are used in the treatment and prevention of diseases caused by impaired vascular permeability, hemorrhagic diathesis, intraocular hemorrhage, hypertension, measles, boils, sweating, radiation and other diseases (0.05 -0.1-0.15g) is applied. Routine is often used in combination with ascorbic acid.
The routine is stored in tightly closed glass jars in the dark. Nowadays, quercetin, which is the basis of rutin, which is part of its aglycon, is widely used in liquid medicine to treat various diseases. Quercetin is extracted from the bark of the Quereus tinstoria plant using water. The extract contains quercetin (ramnozidocversetin), a glucoside-binding quercetin. It is then broken down by boiling with mineral acids, including hydrochloric acid, to obtain pure quartzite.
In short, biopolymers (proteins and peptides, nucleic acids and nucleotides, lipids, polysaccharides) and bioregulators (enzymes, vitamins, hormones) as well as alkaloids and flavonoids are important biologically and chemically active substances found in medicinal plants. Flavonoids are not only involved in physiological processes in plants, but they are also important for all living organisms. In particular, the rutin flavonoid in the plant *Hypericum Perforatum L.* is used in medicine in the

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treatment and prevention of diseases caused by impaired vascular permeability, hemorrhagic diathesis, retinal hemorrhage, hypertension, measles, mumps, sweating and other diseases. is used.
Therefore, it is important today to establish plantations rich in flavonoids and to find ways to extract pure and large amounts of flavonoids from them.

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