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BIOLOGY OF RUBIA TINCTORUM (RUBIA TINCTORUM L) DISTRIBUTED IN SURKHANDARYA REGION AND ITS USE IN MEDICINE

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A B S T R A C T	**K E Y W O R D S**
In this article, the biology of the plant Rubia tinctorum L, the mineral substances contained in the root, and the information about its use in medicine are highlighted.	Rubia tinctorum L, anthracene, alizarin, ruberythric acid, galiosin, purpurin,xanthopurpurin, pseudopurpurin, rubiadin- glucoside, ibericin, urinary tract stone, kidney stone, gout.

INTRODUCTION

There are 10-12 thousand species of medicinal plants on earth . Chemical, pharmacological and medicinal properties of more than 1000 plant species have been investigated. There are 577 species of medicinal plants in Uzbekistan. Of these, 250 species are currently used in scientific medicine. The effect of medicinal plants on the body depends on the amount of compounds in their composition. These compounds accumulate in different amounts in different parts of the plant. The necessary parts of the plant for the preparation of medicine are collected at different times. For example, bark , buds are harvested in early spring, leaves are harvested before flowering or when the plant is in bloom, flowers are fully open, fruits and seeds are ripe, and underground organs (roots, rhizomes, and bulbs) are harvested in early spring or late fall. Today, scientific research is being carried out at a high level in the direction of developing the creation of effective drugs based on local raw materials on a global scale , comprehensive measures are being implemented to provide the national pharmaceutical market with high-quality, affordable drugs. A number of important practical results are being achieved in terms of organizing the development of competitive medicinal preparations and natural dyes based on plant raw materials in the local and world markets. It is important to study the biology of the species of the dyed roan (Rubia tinctorum L) and to separate natural dyes and medicinal preparations from local raw materials, to prepare cheap and high-quality products that replace imports, and to create primary raw material bases. have Such products can be isolated from the medicinal plant Rubia tinctorum L and used in medical practice and in the national economy.

LITERATURE ANALYSIS

Rubia tinctorum L. belongs to Rubiaceae family. Royan plant Mediterranean countries. It is found in Ukraine, Moldova, the southeast of the European part of Russia, the Caucasus, Azerbaijan, Georgia, Armenia, Dogistan and Central Asia. In Uzbekistan, in Tashkent, Fergana, Samarkand, Andijan and Surkhandarya regions, it grows as a weed mainly on the banks of streams, among bushes, along canals, in fields and gardens [1-4]. There are 6 types of sedum in Central Asia. Rubia tinctorum L is a perennial plant with a height of 30-150, sometimes up to 200 cm. The rhizome is long, creeping , branched, cylindrical, thick, jointed, with many heads. The stem is covered with several, four -sided, jointed, coarse and looped hairs. The leaf is oval-ovate, the tips are pointed and shiny, the veins on the lower side are covered with rough hairs with loops, and they are arranged in bundles of 4-6 on the stem with a very short band. The flowers are small, greenish-yellow in color, gathered in a semi-umbrella growing from the axils of the leaves, forming a flower cluster . The calyx is not clearly known, the petals are 5, united, funnel - shaped, wheel- shaped, the paternity is 5, the maternal node is 2-digit, located below. The fruit is a 1-2-seeded, spherical, first red, later turning black berry. It blooms in June-August, the fruit ripens in August-September. The underground part of Rubia tinctorum plant Fig. 1. [1-4]

Figure 1. Rubia tinctorum rhizomes and powder.

of Rubia tinctorum plant consists of rhizome and root pieces. The thickness of rhizome pieces is 2-18 mm, the upper side is painted in reddish-brown color. When it is cut crosswise, the bark layer is red-brown, and the wood part is red. The rhizome has a characteristic faint odor, sweeter at first, and then a slightly astringent and bitter taste. The rhizome turns the water brown-red, the moisture content of the harvested product of Rubia tinctorum plant is 13%, total ash is 10%, other parts of the plant (stem, leaf, etc.) are 1.5%, organic impurities 1% , mineral impurities more than 1%, the amount of anthraglycosides (combined as glycosides) in the product should not be less than 3%. [1-4] The rhizome of Rubia tinctorum contains 5-6% of anthracene compounds (alizarin, ruberythric acid, haliozin, purpurin, xanthopurpurin, pseudopurpurin, rubiadin-glucoside, munistin, lucidin, ibericin, etc.). In addition to anthracene products, organic acids in plant roots contain up to 15% of sugars, proteins, pectin substances, ascorbic acid, and citric, malic, and tartaric acids.

The root of Rubia tinctorum contains carbohydrates, phenolic acids and their derivatives, coumarin, anthraquinone, triterpenoids, flavonoids (quercetin, kaempferol, apigenin). The herb Rubia tinctorum is medicinally antispasmodic and diuretic, and softens kidney stones (phosphates). Therefore, medicinal preparations are used for ureteral stones, kidney stones, gallstones and gout.[1-4] Natural

dyes are environmentally friendly products. Fabrics dyed with them do not lose their quality for a long time. Currently, the need and demand for natural dyes is high. Especially in the textile and silk industries of our republic, the value of fabrics dyed with natural dyes is increasing, and people's interest in it is growing. Natural dyes have long been highly valued because they are of high quality and retain their original color for a long time. In addition to the medicinal use of the Rubia tinctorum plant , dyeing silkworms and cotton grown in our Republic with natural chemicals extracted from the royan plant as a natural dye for dyeing carpets, fabrics, and materials. will lead to an increase in jobs. Fig. 2.

2. Threads dyed with natural chemicals extracted from Rubia tinctorum plant. In the following years , the concept that mineral elements are necessary for plants began to appear . One of the founders of this concept is agronomist A. T. Bolotov (1770). He proposed the idea that mineral particles in soil and water are the main nutrients for plants. A. T. Bapotov also developed methods of applying fertilizers to the soil and showed that there are 53 types of fertilizers necessary for agriculture. Yu. Libix proposed the law of the minimum and the law of reversion. According to these laws , if the mineral elements necessary for plants in the soil do not reach the minimum, they will not be useful. In the law of return, it is explained that as much as the plants get mineral substances with their harvest, it is necessary to return as much instead. Otherwise, soil fertility and productivity will decrease year by year. Libix's points are generally correct . Productivity can be increased as a result of proper agrotechnical activities and timely supply of soil with mineral elements. Experiments conducted by I. Knop and Yu. Sachs in 1859 also disproved the "humus theory". According to them , plants can grow in water if only 7 elements are present: nitrogen, phosphorus, sulfur, potassium, calcium, magnesium and iron . Thus, they proved that plants can be grown by vegetative methods (soil, water, sand) and confirmed the theory of mineral nutrition. The idea of root nutrition of plants was further developed by PAKostichev, BBDokuchaev, KKGedroys, DNPryanishnikov and other scientists. [4-9]. Plants have the ability to absorb all the elements shown in the periodic table in small or large amounts from the natural environment. However, it has been determined that only 19 of these elements are important for plants and cannot be replaced by other elements. These are carbon, hydrogen, oxygen, nitrogen, phosphorus, sulfur, potassium, calcium, magnesium, iron, manganese, copper, zinc, molybdenum, boron, chlorine, sodium, silicon and cobalt. 16 of them belong to the group of mineral elements. Because carbon, hydrogen and oxygen are absorbed into the plant in the form of CO2, O2 and N2O. Plants receive water and all mineral elements from the soil through the roots. Mineral substances are found in soil

solution, humus, organic and inorganic compounds, and adsorbed to soil colloids. The absorption of ions does not depend only on plants, but also on the concentration of this ion in the soil, its movement in the soil and soil reactions. Four elements make up 95% of the elements in the body of plants: carbon, hydrogen, oxygen and nitrogen. These elements are also called organogens. Because they form the basis of organic substances (proteins, fats , carbohydrates) in the plant body. Mineral elements are divided into three groups based on their amount in the body of plants: 1) macroelements ; 2) microelements; 3) ultramicroelements. 1) Macroelements include all elements (N, P, K, Ca, Na, Mg) whose quantity in plants is more than 10-2 percent . 2) Microelements include elements (Mn, B, Cu, Zn, Mo, etc.) whose amount in plants is 10-3 - 10-5 percent . 3) Ultramicroelements include very few (10-6 percent or less) and undefined (Ce, Se, Ca, Ng, Ag, Au, etc.) elements in the plant [9]. The lack of any microelement in plants causes it to be damaged by various bacterial, rotting and other diseases, that is, microelements increase the resistance of agricultural crops to various diseases. In particular, microelements increase the ability of plants to resist adverse effects of the external environment (cold, high temperature, soil salinity and drought). Therefore, it is necessary to know the importance of certain microelements in the normal nutrition of plants, their forms in the soil, and what types of plants absorb most of them in what phases of development. [49]. The amount of mineral elements contained in the root of Rubia tinctorum L. is measured by "X-ray fluorescent spectrometer Spectro Xepos 111, technical indicator: 120/230V, power 150W. It was discovered by the young researchers of the Institute of Bioorganic Chemistry named after Academician OSSodikov of the Russian Federation Aziza Saydullayevna Ishmuratova, Akmal Khushvakovych Islamov, Ibragimovich Ibodullokhon Abdimalikov. 56 elements and 9 of its compounds were determined in the root of Rubia tinctorum L., the root contained Aluminum oxide Al2O3 (2.174 %), Aluminum Al (6.714 %), Silicon oxide SiO2 (3.553 %), Silicon Si (15.58 %)), Calcium oxide CaO (11.22 %), Calcium Ca (89.56 %), Potassium K (13.52 %), Phosphorus oxide P2O5 (7.284 %), Scandium Sc (64.01), Sulfur S (1.329 %) and its elements It was determined that the amount of compounds is more than others.

RESULTS AND DISCUSSION

The plant Rubia tinctorum L. was studied in Termiz district, Sherabad, Boysun districts of Surkhandarya region, and in the plants of the mountainous regions, the roots, stems, and leaves of the cultivated soil gardens, fields, and ditches were found. It was found that the plants in the higher temperature areas are better developed, flowering and fruit ripening is delayed by 14-20 days due to the lower air temperature. It was found that Rubia tinctorum L. when planted in the experimental fields has a high degree of compatibility, and the process of flowering and fruiting is delayed by 3-4 weeks from naturally growing plants.

CONCLUSION

cultivation of dye plants, study of their biology, agrotechnics, establishment of use of green biomass for feeding livestock, development of technology of extraction of dyes from rhizomes, establishment of production of ecologically clean products In the field of pharmaceuticals, the production of new forms of medicinal drugs also gives effective results.

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