

# DEVELOPMENT OF MEDICAL LITERACY AMONG STUDENTS BY TEACHING THE USE OF MEDICINAL PLANTS IN FOLK MEDICINE

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## Abstract

The article explores the development of medical literacy among students by teaching the use of medicinal plants in folk medicine. It emphasizes the geographical distribution, species diversity, growth characteristics, and chemical composition of plants used in both folk and official medicine. The paper highlights the importance of medicinal plants in maintaining public health, preventing diseases, and fostering a healthy young generation. Particular attention is given to onion (*Allium cepa* L.), garlic (*Allium sativum* L.), and St. John's wort (*Hypericum perforatum* L.), describing their botanical properties, chemical compounds, and medicinal applications. The study underlines the growing demand for medicinal raw materials due to the rapid development of the pharmaceutical industry in Uzbekistan and worldwide, and the significance of integrating traditional knowledge with modern medical science.

**Keywords:** Medicinal plants, folk medicine, medical literacy, pharmaceutical industry, onion (*Allium cepa*), garlic (*Allium sativum*), St. John's wort (*Hypericum perforatum*), public health.

## Introduction

Medicinal plants have historically been one of the primary sources of treatment for human diseases, serving as a foundation for both folk medicine and the development of modern pharmaceuticals. Across different civilizations—including those of China, India, the Arab world, and Central Asia—knowledge of medicinal plants was passed from generation to generation, forming the basis of traditional healthcare practices. In Uzbekistan, as in many other countries, folk medicine continues to play a significant role in maintaining public health and preventing diseases, especially in rural communities where access to modern healthcare facilities can be limited.

The importance of studying medicinal plants has grown substantially in recent decades due to the rapid expansion of the pharmaceutical industry worldwide. The demand for natural raw materials has sharply increased, as many synthetic drugs are either derived from or inspired by compounds first discovered in plants. This has led to the development of a specialized field within botany—resource science—dedicated to identifying, classifying, and evaluating the medicinal potential of plant species. In addition to their pharmacological significance, medicinal plants contribute to the preservation of cultural traditions and local knowledge systems, which are vital for sustainable development.

Teaching students about the medicinal value of plants used in folk medicine provides not only scientific knowledge but also practical skills that foster critical medical literacy. By examining the

geographical distribution, morphological features, chemical composition, and therapeutic uses of plants such as onion (*Allium cepa* L.), garlic (*Allium sativum* L.), and St. John's wort (*Hypericum perforatum* L.), students can connect traditional knowledge with modern medical science. This educational approach supports the preparation of highly skilled professionals who are capable of addressing both local and global healthcare challenges through innovative and sustainable solutions.

## MAIN PART

Geographical areas of medicinal plants used in folk medicine and official medicine, their types, their growing characteristics and chemical composition are calculated. The study of medicinal plants of folk medicine and official medicine is of great importance in the local medicinal plant science of our republic. In particular, the role of medicinal plants and medicinal preparations prepared from them is incomparable in maintaining public health, preventing diseases, raising and forming the young generation healthy. In recent years, the rapid development of the pharmaceutical industry has been observed in many countries, including the Republic of Uzbekistan, which is the reason for the sharp increase in the demand of pharmaceutical enterprises for raw materials of medicinal plants. Botanists - systematists and geobotanists studied medicinal plants and determined their beneficial properties. Gradually, the study of medicinal or useful plants developed, and an independent department of botany - Resource Science was formed.

Growing interest in medicinal plants used in folk medicine and studying them only in traditional medicine. In countries where many medicinal plants are used (India, China, Vietnam, Burma, Philippines, Arab countries, other South-East Asian countries, African countries), many drugs are not made from henna, but by chemical synthesis. The chemical pharmaceutical industry that can be obtained is also observed in well-developed countries

**Onion - *Allium cepa* L. belongs** to Liliaceae family. It is a perennial herb reaching 60- 100 cm in height. There will be a large bulb under the ground. The stem is thick, hollow inside, swollen below the middle part, and has 4-9 sheathed leaves at the base. The leaf is long - cylindrical, straight, with a sharp tip, hollow inside, shorter than the stem. The flowers are collected in a spherical simple umbrella surrounded by a single petal. The flower is simple, white, consists of 6 petals, the paternal node is 6, the maternal node is three-digit, located above. The fruit is a spherical, multi-seeded pod. The seed is black, three-sided, wrinkled. It blooms in June-August. The fruit ripens in August-September. The fruit ripens in August-September. Geographic distribution. Native to Southwest Asia. Onions are grown in abundance everywhere. Appearance of the product. The finished product consists of an oblong or flat spherical bulb, covered with a yellow-brown, reddish, sometimes white or purple skin. Onion has a unique smell, sharp, bitter taste, volatile substances in it irritate the mucous membranes of the eyes and nose. Chemical



composition. Onions contain 0.01- 0.05% essential oil, 10-11% sugar, 10 mg % vitamin C, 60 mg % vitamin V1, carotene, flavonoids (quercetin and its glycosides). Onion leaves contain 20 mg % vitamin C, 50 mg % vitamin B2, 4 mg % carotene, essential oil, citric and malic acids. Onion essential oil contains sulfur compounds (mainly, disulfide, etc.). Usage Medicinal preparations of the onion plant are used for the treatment of intestinal atony, colitis, arteriosclerosis, sclerotic form of hypertension and avitaminosis. These drugs are applied to the mucous membranes of the nose in case of rhinitis and are also used in the treatment of trichomonad colpitis in gynecology. Preparations of the onion plant have bactericidal properties. Crushed onion head is also used to treat hard-to-heal and festering wounds. In folk medicine, onion is used as a diuretic and cures scurvy. Medicinal preparations. Allilchep (vinegar).

### MEDICINAL PREPARATIONS. ALLILCHEP (VINEGAR)

Garlic onion (stinky onion) — *Allium sativum* L. Garlic - *Allium sativum* L. belongs to the Liliaceae family. Perennial bulbous herb, 20-70 (sometimes 100) cm tall. The stem is upright, cylindrical, and about half of it is surrounded by a leaf sheath. The leaf is linear, flat or serrate, with a sharp tip. Some varieties of garlic onions have bulbs in the leaf axils. The flowers are gathered in a simple canopy. The umbrella is enclosed in a sheath with a single leaf that falls. Between the flower bands are small bulbs. The flower is simple, consisting of 6 white petals. The paternal node is 6, the maternal node is three-digit, located above. The fruit is a pod with many seeds. The fruit is a pod with many seeds. Often it does not bear fruit. Geographic distribution. Homeland South Asia. Garlic onions are grown in abundance in all districts. Appearance of the product. The finished product consists of an egg-shaped onion covered with a loose skin. A bulb consists of 7-30 individual cloves surrounded by a pink or purple skin. Onions have a unique pungent smell and bitter taste. Volatile substances in onions irritate the mucous membranes of the eyes and nose. Chemical composition. The product contains 0.3% alliin, 0.4-2% essential oil, 10 mg % vitamin C, phytoncides, phytosterols, 0.06% fat, a small amount of iodine and other substances. The essential oil is composed of a mixture of 6% allylpropylsulfide, 60% diallyldisulfide, 20% diallyltrisulfide and about 20% other polysulfides. Alliin is a crystalline compound that is broken down into allicin, pyruvic acid and ammonia under the action of the enzyme allinase. Allicin is a colorless, oily liquid with a garlicky odor. It dissolves poorly in water, dissolves well in organic solvents, decomposes under the influence of alkalis. Allicin has strong bactericidal properties (allicin diluted up to 1:125000 stops bacteria from growing). Usage. Medicinal preparations of the garlic plant are used in arteriosclerosis, hypertension, colitis, pulmonary tuberculosis; in gynecology, it is used in trichomonad colpitis and enema is used to kill ostriches. Preparations of the product and crushed onion are also used in the treatment of purulent wounds.

Garlic bulb has bactericidal, fungicidal, prostistocidal properties and repels worms. Medicinal preparations. Nastoyka. Before, other medicinal preparations were prepared from garlic and used in medicine. Of these, the onion pill has not been released since 1970, Alliglycer - since 1978, and Allilsat drug since 1979, and they are not used in medicine today.



**HYPERICUM PERFORATUM**

*Hypericum perforatum* L. and spotted (four-sided) *hypericum Maculatum* Crantz. (*Hypericum quadrangulum* L.); Hypericaceae belongs to the family Hypericaceae. Dalachoi species are perennial herbaceous plants reaching 30-100 cm in height. Rhizome and taproot. The stem is several, upright, smooth, hairless, pointed, and the upper part is oppositely branched. The leaf is simple, oblong-ovate, with a straight edge, and is opposite on the stem. The flowers are golden yellow, clustered in a shield-shaped raceme. The fruit is a three-celled, multi-seeded capsule that opens when ripe. The seed is small, oblong and pitted and painted in brown color. It blooms in June-August. Geographic distribution. Field species grow on roadsides, stream banks, meadows, meadows, forests, forest edges, and among bushes. It is mainly found in Ukraine, Belarus, Moldova, the Baltic countries, the European part of Russia and the forest, forest-desert zone of Western Siberia, the Caucasus and Central Asia. Appearance of the product. The finished product consists of a mixture of leaves, flowers, unripe fruits and partially leafless stems. The stem is cylindrical, the upper part is branched, double-edged and hairless. The leaf is oblong-ovate, flat-edged, hairless, 0.7-3.5 cm long, 1.4 cm wide, with dotted spots. The flower is straight, the calyx is deeply cut into five parts, the corolla is 5, golden in color, oblong-ellipse, the upper part is curved and tooth-shaped, the paternity is numerous, the maternal node is located at the top. The product has a fragrant smell, a bitter, slightly astringent taste. According to the XI DF, the product moisture content is 13%, total ash is 8%, ash insoluble in 10% hydrochloric acid is 1%, organic impurities are 1%, mineral impurities are 1%, the fine fraction passing through a sieve with a hole diameter of 2 mm is 10 %, stems and side branches should not exceed 50%. For the sheared product, the particles larger than 7 mm should not exceed 10%, and the small part passing through a sieve with a hole diameter of 0.315 mm should not exceed 10%. The extractives (solvent 40% alcohol) should not be less than 25%.

The total amount of flavonoids in the product should not be less than 1.5% according to XI DF, calculated according to rutin. Chemical composition. The product contains 10-12.8% additives, 0.1-0.4% atracene products (hypericin, pseudohypericin and 115 others), flavonoids (hyperoside, rutin, quercitrin, isoquercitrin, quercetin, myricetin, etc.), 0.1 - 0.33% essential oil, 55 mg % carotene, 1151.8 mg % vitamin C, 34 mg % choline, very small amounts of alkaloids and up to 10% tar. Usage. Medicinal preparations of the product have astringent, antiseptic and wound healing effects. In medicine, it is used in the treatment of gastrointestinal (colitis, diarrhea), oral cavity (gingivitis and stomatitis) and II and III degree burns, as well as for rinsing the mouth. The above-ground part of the plant has a bactericidal effect. Medicinal preparations. Tincture, nastoyka, liquid extract, bactericidal drug novoimanin, peflavit (a collection of catechins is produced in Bulgaria in tablet form, has the effect of vitamin R). Novoimanin is a dark brown powder (powder), which is a 0.5-1% solution in water, water-alcohol, water-glycerin, and powder (powder) and ointment for simple purulent wounds, It is used



to treat burns, scabies and other purulent processes. Oily extract of dalchoi plant (dalachoi oil) is used in the treatment of gastrointestinal ulcer diseases. The type of field-chovy that grows in Central Asia, the Caucasus and Altai is rough field-choy (*Hupericum scabrum* L.) from the foothills of the mountains in the mountainous districts of Tashkent, Fergana, Samarkand, Kashkadarya and Surkhandarya regions of Uzbekistan. It is common in open, flat and other places with soft stone and gravel mountain slopes up to the middle part. This type of dalchoi is shorter than the open dalchoi (20-50 cm), the lower part of the stem is reddish-purple and usually several, the leaves are small (10-15 mm long), shortened from the leaf axils. (1-4 cm) is distinguished by the growth of branches and the yellow flowers collected in a shield-shaped tubercle. Dagal dalachoe blooms in May-July, and fruits ripen in June-August. The chemical composition of the surface of the dagal dalachoe, its pharmacological effects, and the properties of treating diseases in clinical conditions have been thoroughly studied. As a result, there are chemical compounds (flavonoids, vitamin C, carotene, organic acids, anthocyanins, tar, carbohydrates, etc.), gastrointestinal (diarrhea, colitis, enterocolitis), the treatment of oral cavity (gingivitis, stomatitis) and wounds and burns was found to be the same. Therefore, the General Department of the Ministry of Health of the Republic of Uzbekistan DVTTSNQ (Quality Control of Medicinal Products and Medical Equipment) approved the VFM prepared for the surface of the rough field and its medicinal preparations in medical practice along with the above-mentioned hole field preparations it was allowed to be used as an astringent and antiseptic for the treatment of diseases. Product moisture should not exceed 9%, total ash 7%, ash insoluble in 10% hydrochloric acid 1%, stems 45%, organic impurities 1% and mineral impurities 1%. For crushed (shredded) products, 10% of particles larger than 7 mm, and 10% of small particles passed through a sieve with a hole diameter of 0.310 mm should not exceed 10%. According to the requirements of the Pharmacopoeia, the amount of additives in the product should not be less than 5%, and the total amount of flavonoids (compared to rutin) should not be less than 1.5%.

## CONCLUSION

The study confirms that medicinal plants remain one of the most valuable natural resources for human health, bridging the knowledge of folk traditions with the advancements of modern medical science. By integrating the study of medicinal plants into educational practice, students not only acquire essential scientific understanding but also develop medical literacy, which enables them to critically evaluate, apply, and promote natural remedies in combination with evidence-based medicine.

Examples such as onion (*Allium cepa* L.), garlic (*Allium sativum* L.), and St. John's wort (*Hypericum perforatum* L.) demonstrate the diverse pharmacological properties of plants, including antibacterial, antiseptic, and wound-healing effects. Their widespread use in folk medicine, combined with scientific validation of their chemical composition, underlines the necessity of preserving and advancing traditional knowledge in harmony with pharmaceutical innovations.

Furthermore, the growing global demand for plant-based medicinal raw materials highlights the importance of sustainable cultivation and resource management. For Uzbekistan, this creates opportunities not only for improving public health but also for strengthening the pharmaceutical industry and promoting economic development through the rational use of local plant resources.



In conclusion, the education of students in the field of medicinal plants contributes to the formation of a healthier society, fosters environmental and cultural awareness, and ensures the continuity of valuable medical traditions. The integration of folk medicine into modern educational frameworks provides a balanced pathway toward innovation, sustainability, and the advancement of national healthcare.

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