

USE OF DIDACTIC GAME TECHNOLOGIES IN A CLASS ON THE TOPIC “MEDICINAL PLANTS: WORMWOOD (ARTEMISIA LEUCODES SCHRENK)”

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Abstract. *This article reveals the features of the use of gaming didactic technologies in teaching the subject “Pharmacognosy” on the topic: “Medicinal plants: wormwood (*Artemisia leucodes schrenk*)” for students of medical and pharmaceutical institutions. The article describes the method of “scientific conference”, the role of the teacher in conducting this lesson, and the methodology for conducting the lesson. Materials are provided for use in the classroom.*

Keywords: *whitish wormwood, scientific conference, didactic games, pharmacognosy, presentation, herbal remedies, biologically active substances, syrup, tincture.*

Introduction. Currently, in our country, to provide the pharmaceutical industry and pharmacies with plant raw materials, about 42 species of medicinal plants are grown in specialized farms, forests and other forms of ownership.

It should be noted that about 38-40% of medicines used in medicine in Uzbekistan are produced from medicinal plants. Some important drugs (cardiac glycosides, a number of alkaloids, terpenes, saponins, steroidal and phenolic compounds and other biologically active substances) used in the treatment of some serious diseases still cannot be obtained by synthesis. Currently, the only source of their supply is plants [1].

The reason for the future increase in demand for medicinal plants and drugs based on them in medicine is that long-term continuous use of each chemical drug obtained through synthesis leads to various unpleasant changes in the body of humans and animals. For this reason, the world's demand for medicinal herbal preparations – herbal medicines and medicinal plants – is growing. This, in turn, leads to an increase in the importance of the subject of pharmacognosy [2,3].

The main goal of the subject of pharmacognosy can be expressed as follows:

- study of medicinal plants as a source of biologically active substances and types of medicines necessary for the creation of herbal medicines. To do this, their chemical composition is checked, the organs and the time of accumulation of the main biologically active substances are determined.

- development and implementation of measures for their conservation and cultivation on plantations in order to protect important medicinal plants that are under threat of extinction and reduction in natural conditions.

- for the purpose of rational use of medicinal plants growing in the wild on the territory of the Republic of Uzbekistan, find and map numerous places where they grow, determine their stock, plan the volume of annual collection, and also develop measures for the collection, drying, storage and transportation of medicines .

- drawing up regulatory and technical documentation for medicines. To do this, improve, revise or create new methods for determining the authenticity, quality and biologically active substances of medicines.

- search for new medicinal plants and the creation of new effective herbal medicines in order to replenish the treasury of herbal medicines and medicinal plants.

For this purpose, it is necessary to organize the study of medicinal plants used in folk and traditional medicine, as well as other types of medicinal plants used in medicine. The science of pharmacognosy is closely related to all subjects taught at the pharmaceutical faculties of pharmaceutical and medical universities. Botany, chemistry and other sciences taught in junior courses form the basis of pharmacognosy and good knowledge of them is of great importance for a thorough knowledge of pharmacognosy.

Target. The use of game lessons when teaching students pharmacognosy and biology in secondary schools on the topic “Medicinal plant: wormwood (*Artemisia leucodes schrenk*)” increases students’ interest in learning and prepares the ground for enhancing cognitive activity.

The successful introduction of games into the educational process depends on the high level of scientific and methodological level and pedagogical skill of the teacher, his knowledge of the subject, the development of skills in activating and managing the cognitive activity of students.

Materials and methods. Game method “Scientific Conference” Conference classes are important for enhancing the cognitive activity of students: expanding their scientific horizons, familiarizing themselves with additional and local materials, acquiring skills and qualifications in independent work with scientific and popular science literature, conscious preparation for independent life [4].

It is recommended to conduct a scientific conference session as follows:

I. Introductory speech by the teacher. The teacher introduces the topic, goals and objectives of the lesson, and the “Scientists”-students perform the corresponding roles.

II. Listening to scientific lectures. Student “scientists” present prepared lectures based on visual aids.

III. Discussion of the lecture. At the same time, a discussion on the topic is held between “scientific” students.

IV. End of the scientific conference. In conclusion, the teacher highlights the most important concepts and ideas related to the topic.

V. Student assessment. Students who actively participate in class are rewarded and appreciated.

VI. Homework.

VII. General conclusion of the lesson.

During the scientific conference classes, the educational activities of all students are covered. Below we fully cover the contents of the conference on the topic “Medicinal plant. White wormwood (*Artemisia leucodes schrenk*)” [5,6].

Results and its discussion. The teacher distributes topics for the lesson to students in advance. For example, if one student is preparing a “lecture” on information about the chemical composition of wormwood, the second will have to prepare a report on medicinal products based on it, and the third will prepare a report on the pharmacological properties of wormwood independently, using scientific literature.

Conducting a lesson in this form gives students the opportunity to learn about the procedure for holding scientific conferences, the purposes of holding them, preparing scientific lectures, the procedure for conducting lectures, preparing scientific stands and presentations, have complete information, develop skills for participating in scientific conferences, and arouse interest in scientific research.

Introductory speech by the teacher. The teacher will begin the conference lesson with an introduction and tell you that the scientific conference is dedicated to the chemical composition, pharmacological properties of the medicinal plant - wormwood, common in Uzbekistan, as well as medicines made on its basis. At the end of the introduction, it says: "...famous scientists, leading experts working in the field of pharmacognosy, are invited here to answer your questions at this scientific conference. Please feel free to apply by asking questions that interest you..." he says.

Listening to scientific lectures. It is known that biologists study the properties of plants and their growing conditions. Therefore, the conditional profession of the first participant is a researcher-scientist in the field of biology. He will take part in a scientific conference with a report on the topic "General information about the medicinal plant wormwood (*Artemisia leucodes schrenk*)":

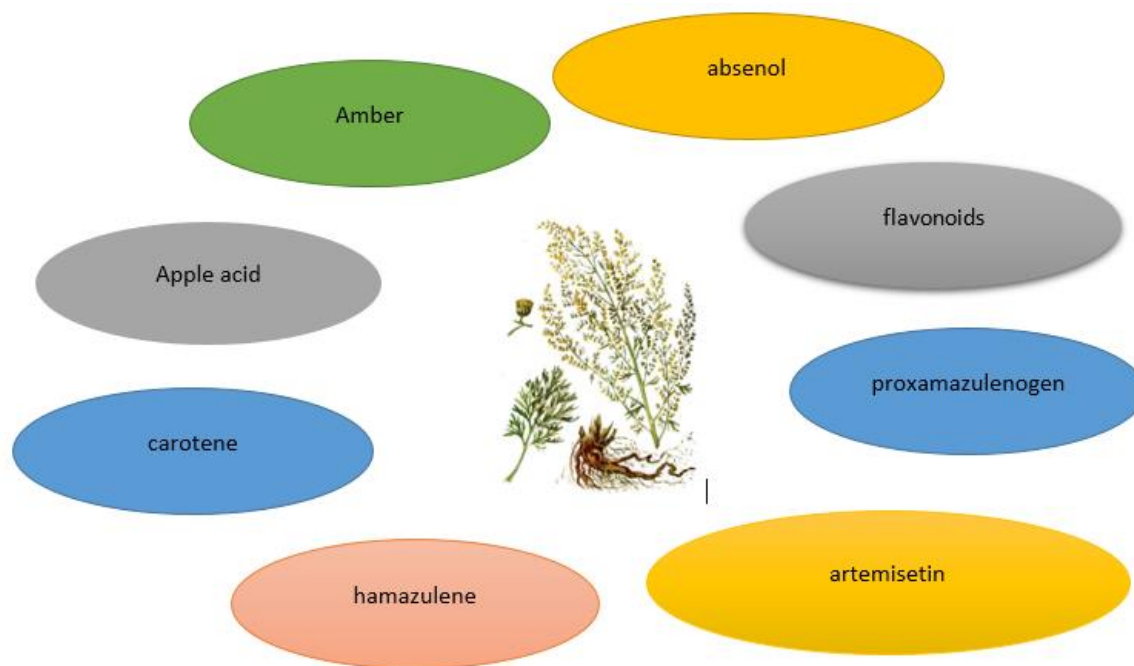
Medicinal plants are the natural wealth of the country. The adaptation of plants differently depending on the external environment is called life form. Flowering plants are divided according to their life forms into trees, shrubs, subshrubs, annuals, biennials and perennials.

White wormwood (*Artemisia leucodes schrenk*) is a perennial herbaceous plant reaching 50-100 cm in height. The rhizome is short and branched, from which grow rooted leaves, several long flowering stems and deciduous short stems. Stems are erect, slightly angular, branched in the upper part. The leaves of the rhizome are elongated, triangular-rounded, separated by two or three petals. The short-striped leaves on the stem come in different shapes. The stems and leaves appear silvery due to the abundance of feathers. The flowers are small, collected, spherical, facing down, collected in a basket with a diameter of 3 mm. Bunches of baskets form a bouquet of pink flowers. All flowers in the basket are yellow, tubular, paternal 5, the maternal node is single-chambered, located at the top. The fruit is a pointed oblong brown pistachio. Blooms in July-August. It grows as a weed in populated areas, roadsides, meadows, forest edges, watercourses and on agricultural crops. It is especially common in the European part of Russia (except for the northern regions), the republics of Moldova, Ukraine, Belarus, the Caucasus, Western Siberia, Kazakhstan and Central Asia. The stems are greenish-gray, the leaves at the top are grayish-green, the underside is silvery-gray, the flowers are yellow, with a strong characteristic pleasant smell and aromatic bitterness.

The leaves are elongated, triangular-rounded, bi-triple sessile or lanceolate-trilobed and sessile. The leaf segments are oblong-oblong, bluntly pointed, with straight edges, up to 10 cm long, feathered on both sides. The upper side of the leaves is gray-green, the lower side is silver-gray, with a strong characteristic aromatic odor and bitter taste. The report of the second student is devoted to the chemical composition of wormwood, so this speaker is announced as a conventional chemist-scientist who will give a lecture on the topic "Chemical composition and biologically active substances of wormwood." His lecture was prepared in the form of a short presentation:

Chemical composition of wormwood whitish. The surface of wormwood contains 0.5-2% essential oil (absinthe), bitter glycosides (0.09-0.525% absinthe, 0.03% anabsinthine),

gamazulene, proxamazulenogen, artabsin, amber, malic and ascorbic acids, carotene, arabsin and other lactones, artemisetin flavonoids and additives. In the flower set (baskets) of the plant, wormwood accumulates in large quantities (151.0-292.0 mg%), especially before flowering (292.0 mg%), and in the stem - in the smallest quantity (1-3 mg%). Young leaves at the top of the stem (175.0 mg%) contain 2 times more gamazulene than leaves at the bottom of the stem (90.0 mg%). Essential oils are a dark green toxic liquid containing 24.1-35.2% esters of thuy alcohol, ketone-thujone, pinene, cadinene, phellandrene, caryophyllene, bisabolene, gamazulenogen and thuy alcohol with acetic, isovaleric and palmitic acids [6,7]. (picture 1).



Picture 1. Chemical composition of wormwood (*Artemisia leucodes schrenk*)

The lecture of the third participant is devoted to the pharmacological properties and technology of growing medicinal plants.

Pharmacological properties of wormwood. Infusions, tinctures and thick extracts are prepared from the plant. The plant is included in supplements that increase appetite and medicinal herbs - teas, tablets used for stomach diseases. The leaves and flowers of the plant contain bitter glycosides anabenthin and absinthin, essential oils, organic acids, vitamins - A, B1, B2, B3, B6, B9, B12, C, D, E, K, PP; flavonoids, antioxidants, phytoncides, tannins and resins.

In addition, the leaves and flowers of wormwood contain microelements necessary for the human body, such as zinc, bromine, potassium, iodine, selenium, germanium, calcium, magnesium, molybdenum.





Due to irritation of the endings of the taste nerves in the oral cavity, the active ingredients of wormwood enhance the function of the glands of the gastrointestinal tract (increasing the secretion of bile and pancreatic juice). The effect of essential oil on the central nervous system is similar to camphor. Chamazulene (one of the azulenes) activates the reticuloendothelial system and phagocytic functions, which determines the anti-inflammatory and laxative effect of the plant.

Technology for growing wormwood. Wormwood is found naturally in all regions of Uzbekistan. It is practically not planted on irrigated lands. Photophilous, thermophilic, resistant to drought and moderately saline soils. It is advisable to plant on irrigated light and typical gray soils,

widespread in the country. The wormwood crops are plowed to a depth of 22-25 cm, fed in the fall with rotten manure and phosphate fertilizers. Before sowing, the arable land is plowed in the fall to loosen the soil, soften the soil and improve air circulation in the arable layer. To prepare and care for wormwood seeds for sowing and full germination, the mulch is pressed again to create a soft surface layer of soil. Wormwood can also be planted in the fall. After sowing, the seeds are worked around the field until the grass sprouts. Wormwood seeds germinate 20-22 days after sowing. The row spacing is loosened between the weeds. During the growing season, planted lands are cleared of weeds, and the topsoil density is maintained at 1.30–1.35 g/cm, allowing roots to develop moderately. Since the grass of the plant is very thin, it will be necessary to soften the folds formed as a result of spring rains. In the first year, the plant has glomeruli and 1-5 stems above the root, and in subsequent years 25-30 stems appear, the plant blooms and bears fruit. When agrotechnical measures are carried out at a high level, it will be possible to obtain 8-10 centners of high-quality raw materials and up to 2 centners of seeds per hectare from wormwood. [6,7,8]. Since the fourth participant's report is related to the production and sale of medicinal preparations from the leaves, stems and seeds of *Artemisia* wormwood, this speaker will be preliminary and will provide the following information: [8,9,10]. (Table 1).

Table 1.

Preparations of wormwood (Artemisia leucodes schrenk) are approved for use as medicines

№	Name of medicine	type of medicine	Pharmacological properties
1	Grass Wormwood		used in the treatment of asthma, hepatitis, pancreatitis, cholecystitis, liver cirrhosis, skin diseases, diseases of the cardiovascular system
	<i>Artemisin</i>		an effective herbal medicine that has an antiparasitic effect and improves the functional state of the gastrointestinal tract.
	<i>Liquid extract of Artemisia annua</i>		widely used in tropical countries to combat tropical malaria and other terrible viral diseases.
	<i>Antipollin</i>		hyposensitization of the patient's body to the etiological "culprit" allergen; immunostimulation of secondary immunodeficiency.

After the lectures are discussed and the scientific conference is completed, all participating students are evaluated. This takes into account the students' level of knowledge of the topic, their ability to explain it, as well as their answers to the questions asked. Student “scientists” will hold a discussion on this topic. At the end of the lesson, the teacher sums up the results of the scientific conference, explains the most important concepts encountered on the topic, and answers questions. As homework, you can give a similar analysis of medicinal plants growing in Uzbekistan and similar to wormwood.

General conclusion of the lesson. At the end of the lesson, the teacher can explain the above topic by referring to the profession. For example, biologists, chemists, pharmacists and doctors took part in the scientific conference. The teacher should introduce the work of these specialists and explain where they can work.

Conclusions. In conclusion, it is extremely important to get students interested in science. The use of didactic game methods when teaching complex, somewhat difficult to understand scientific topics helps the teacher achieve positive results, increases students' interest in the lesson, and serves as motivation to ensure interest in science. The activity of students in the lesson is ensured and their communicative competence is formed. Students develop such positive qualities as speed and accuracy in finding solutions to existing problems.

The competition that arises in didactic gaming activities develops enthusiasm and enterprise in them. The positive qualities developed in a student will help him find his place in later life.

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