

TRAINING PHARMACOLOGY STUDENTS IN BOTANICAL KNOWLEDGE

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Abstract: The article outlines the pedagogical conditions that contribute to solving the problem of changes in the education system. The authors present their perspective on organizing and preparing students with botanical knowledge within the "Pharmacy" specialty, which is part of the cycle of general professional disciplines. The article discusses the best methods for teaching students to master pharmacognosy, develop interest in the subject, broaden their horizons, and cultivate independent work skills.

Keywords: Medicinal plant, basic knowledge, pharmacognosy, collaborative activity, pharmaceuticals.

Introduction

Currently, the process of university education is undergoing continuous reforms aimed at modernizing and standardizing the entire education system in the Republic of Uzbekistan. We observe the modernization of regulatory frameworks and educational approaches, the development of innovative teaching methods and technologies, and the improvement of the material and technical infrastructure of educational institutions. Education is viewed as a phenomenon that changes under the influence of external and internal factors of the surrounding social environment.

In this regard, the existing higher education system must meet contemporary demands, requiring it to be flexible and adaptive to the continuously evolving trends of the global community. These trends lead to a reduction in training duration and changes in educational programs, increasing the total number of subjects while maintaining high standards for final educational outcomes and graduates' competence levels.

As a result, the current educational paradigm requires students to utilize all their psychophysiological resources to achieve their academic goals, often pushing them to work without rest, which negatively affects the quality of learning.

Therefore, educators must develop effective teaching methods to enhance students' learning potential, foster independent study skills, and ensure an efficient and high-quality learning process.

Botany as a Fundamental Subject in Pharmacognosy

One of the effective teaching methods involves the use of various tests and assignments when studying botany. Botany is considered the foundation of pharmacognosy, a pharmaceutical science that studies medicinal plants and plant-based medicinal raw materials.

Currently, Uzbekistan extensively uses plant-based medicinal products due to their high biological activity, complex effects on the human body, and safety in treating chronic diseases and for preventive purposes.

Importance of Studying Botany

For a pharmacist, knowledge of medicinal plants and the ability to collect, store, and prepare medicines from them is essential. A medicinal plant is a plant that contains biologically active substances (BAS) that affect the human and animal body. These substances include:

Alkaloids – Organic nitrogen-containing compounds, mostly of plant origin.

Glycosides – Organic compounds found in plants with various pharmacological effects.

Tannins (tannic substances) – Give an astringent taste and have medicinal properties.

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Phytoncides – Volatile organic substances with strong antimicrobial properties.

Essential oils – Complex esters of glycerol and fatty acids used in medicine.

In medicine, phytoncides from garlic, onions, eucalyptus, radish, horseradish, sage, and cherry are widely used. Glycosides are extracted from rhubarb and buckthorn. The oak bark has been used for leather tanning since ancient times. It is also known that pectins help reduce blood sugar levels in diabetes patients. Pectins are abundant in cranberries, black currants, apples, hawthorn, and chokeberry.

Botany as a Core Discipline for Pharmacists

Botany is a crucial subject for training pharmaceutical specialists and is part of the general professional discipline cycle. As a result of studying botany, students should:

Understand plant morphology, anatomy, and systematics.

Learn the Latin names of studied plants and their representatives.

Be able to create morphological descriptions of plants using herbariums.

Identify plants using atlases and know their medicinal properties.

Develop a professional interest in pharmacy and a respectful attitude toward nature.

Teaching Methods in Botany

To enhance learning effectiveness, various test formats and assignments can be used, such as:

A. Open-ended Tests (Fill in the Missing Word or Concept)

1. The order Fabales includes three families: ...,

2. The gynoecium of plants from the Fabaceae family always consists of ... carpels and forms the fruit ... when mature.

3. The flowers of legumes are zygomorphic and have a papilionaceous corolla, where the upper petal is called ..., two petals form wings, and two fused petals create

4. The most practically significant and well-known species of the Valerianaceae family is ..., used for making medicines.

5. Legumes are called "green fertilizers" because their roots contain

6. Sambucus nigra belongs to the order

7. Pharmacopoeial plants from the Araliaceae family:

8. Pharmacopoeial plants from the Fabaceae family:

9. Pharmacopoeial plants from the Caprifoliaceae family:

B. Key Terms and Concepts

1. Emergences – ...

2. Hypanthium – ...

3. Apomixis – ...

C. Self-Assessment Tests

1. Leaves of Rosaceae family plants:

a) Simple without stipules

b) Simple with stipules

c) Compound with stipules

d) Simple or compound with stipules

e) Simple or compound without stipules

2. Life forms of Rosaceae family plants:

- Shrubs and herbs
- Trees, shrubs, and herbs
- Trees and shrubs
- Annual and perennial herbs

3. The fruit of Prunoideae (subfamily of Rosaceae):

- Drupe
- Aggregate fruit
- Pome
- Berry
- Capsule

4. Morphological characteristics of *Potentilla erecta*:

- Odd-pinnate leaves, solitary, regular yellow flowers, epipetalous corolla.
- Trifoliolate stem leaves with stipules, flowers in loose cymes, regular yellow, 4-petaled corolla.
- Palmately divided leaves, flowers in panicles, regular yellow, 5-petaled corolla.

D. Practical Work

Task 1: Create a morphological description of a plant from the individual herbarium collection. Draw the plant's external features and indicate structural details. Determine its species.

Task 2: Write the Latin names and provide the complete taxonomic classification of the following plants:

- Sarepta mustard –
- Shepherd's purse –
- Gray wallflower –
- Common nettle –
- Thick-leaved bergenia –
- Black currant –
- Common raspberry –

Task 3. Make a comparative description of the morphological characteristics of the indicated plants in the form of a table.

Plant name \ Signs	Life form	Underground organs	Stems	Sheet	Flower	Fetus
Cinquefoil erecta						
Potentills anserina						
Silver cinquefoil						
Buethorn brittle						
Zhoster laxative						

G. TEST QUESTIONS

1. List the orders of the subclass Rosidae.

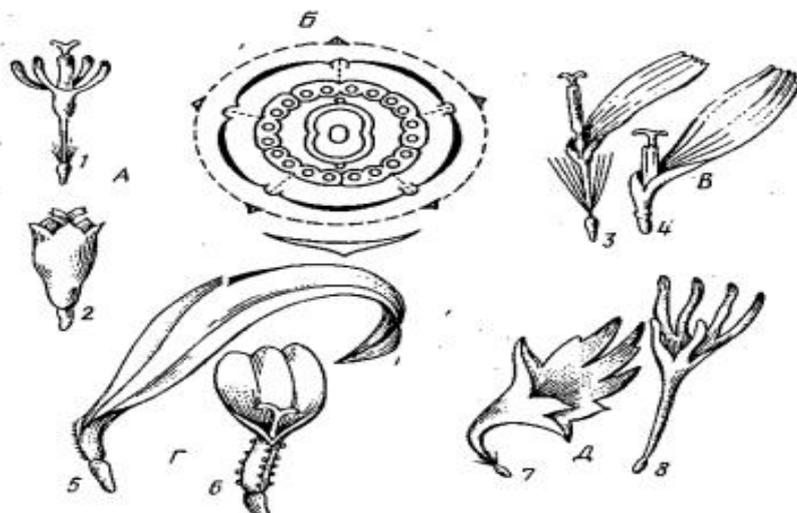
2. Characteristics of the orders Fabales, Araliales, Dipsacales.

3. Characteristics of the families: Araliaceae, Apiaceae, Caesalpiniaceae, Mimosaceae, Fabaceae, Caprifoliaceae, Valerianaceae.

D. WORKING WITH THE DRAWINGS.

Task 1. Study the structure of the flowers of the Asteraceae. Make the notations.

- A — Helianthus annuus
 B — Centaurea jacea
 C — Centaurea cyanus
 G — Artemisia absinthium
 D — Taraxacum officinale



LIST OF REFERENCES

1. Buinov L. G. Effect of Cortexin on Human Statokinetic Stability / L. G. Buinov, L. A. Sorokina, P. D. Shabanov, et al. // Reviews of Clinical Pharmacology and Drug Therapy. 2014. Vol. 12. No. 4. P. 67.
2. Solomin V. P. Method for Improving Students' Intellectual Activity / V. P. Solomin, P. V. Stankevich, L. G. Buinov, et al. // Patent for Invention RUS 2516115 20.08.2012.
3. Solomin V. P. Method for Improving Students' Intellectual Activity / V. P. Solomin, P. V. Stankevich, L. G. Buinov, et al. // Patent for Invention RUS 2516117 25.08.2012.
4. Solomin V. P. Method for improving the intellectual activity of students / V. P. Solomin, P. V. Stankevich, L. G. Buinov, etc. // Patent for invention RUS 2526126 08/20/2012.
5. Yakovlev, G. P. Botany / G. P. Yakovlev, V. A. Chelombitko. M.: Higher School, 1999. 647 p.
6. 3. Blinova, K. F. Botanical-pharmacognostic dictionary / K. F. Blinova, G. P. Yakovlev. M.: Higher School, 1990. 274 p.
7. Botany, morphology and anatomy of plants / A. E. Vasiliev [etc.]. M.: Education, 1988. 480 p.
8. Khrzhanovsky, V. G. Practical training in the course of general botany / V. G. Khrzhanovsky, S. F. Ponomarenko. Moscow: Agropromizdat, 1990. 416 p.