

Odessa National Medical University

Department of General and Clinical Pharmacology and Pharmacognosy

methodological developments
workshops
for full-time department faculty

Discipline: "Resursovedenie medicinal plants"

Session № 1 "Resursovedenie science and educational discipline.

**resursoznavstvu of HR tasks. The plant world and its wealth. Effect phase of
plant development and environmental factors on the formation and dynamics
of the accumulation of active substances"**

Course 3 Faculty medico-pharmaceutical

approved by
in the methodical meeting of the
Department
August 28, 2025
Protocol № 1
Head. Department of



_____ prof. Rozhkovsky YV

Odessa 2025

Subject of practical lesson number 1: "Resursovedenie as science and academic discipline. resursoznavstvu of HR tasks. The plant world and its wealth. Effect stages of plant and environmental factors in the development environment for the formation and dynamics of the accumulation of the active ingredients" - (2 hrs.)

1. Background.Resources of medicinal plants is the subject of a special section knowledge - resursovedenie medicinal plants, which operates certain concepts, terms, solves a very important and relevant research questions, evaluation and management of natural resources of medicinal plants as a source of raw materials for domestic production of herbal medicines. Ukraine is incredibly rich in natural plant resources, in particular, medicinal plants, but in recent years their condition worsened, which is very negative impact on the development of the domestic pharmaceutical industry is. Therefore, it is relevant is not only to assess the current state of the natural resources of the Republic of Lithuania in Ukraine, but also to find ways to more effectively use them.

2. Lesson Objectives:

- to expand and consolidate the students' understanding of resursovedenie medicinal plants as a system of rational use of HR resources, its main provisions and terms;

- focus the knowledge of the richness of flora in the natural herbal drugs;
- learn how to conduct a qualitative assessment of natural herbal drugs in accordance with the possible influence of various environmental factors.

2.1. Learning Objectives:

-Know (the level of assimilation of Bepal'ko -II):

1. The object of study and main tasks resursovedenie LR;
2. Basic concepts and terms of discipline;
3. The contents of the theoretical and practical resursovedenie;
4. Current status of the raw materials base of the Republic of Latvia in Ukraine;
5. abiotic and biotic environmental factors that affect the quality of the natural herbal drugs (storage and content BAS)

- Be able to (mastering level -III):

1. Define the basic concepts and terms resursovedenie LR
2. On osnovi Jerel literaturi otsinyuvati Suchasnyj camp prirodnoï sirovinnoï bazi specific vidiv LR;
3. Viznachat that otsinyuvati mozhlivy vpliv specific faktoriv on yakist prirodnoï RL vidiv scho traditsiyno zagotovlyuyutsya in Ukraïni.

2.2. Educational goals:

contribute to the formation of ecological outlook and respect for nature; liability for future pharmacists the use of natural resources, LRS, to arouse interest in the study of HR resources in the region.

3. Interdisciplinary integration:

number	discipline	Know	be able to
1	previous Medical botany	Phase of development, the environmental conditions of growth of medicinal plants;	To assess the current conditions of growth of specific types of LR
2	pharmacognosy	The effect of various factors on the contents of the main storage and a bar RL	Choosing optimum blank areas and periods native RL
3	Vnutrishnepredmetnaya integration (the topic of this discipline, which integrates that which is studied) ...	Resursovedenie as science and academic discipline. The raw material base of medicinal plants in Ukraine. The use of herbal medicines in the Republic of Lithuania and the modern world medical practice. Accounting for medicinal plant resources, the principles of their management and protection. Cultivation of Latvia in Ukraine and the world.	develop: on the harvesting instructions, drying and storage of raw wild higher plants, algae, lichens and fungi, newsletters; make reports for doctors and advise the public on matters related to the harvesting and use of raw materials and products of natural origin.

4. Content of the topic

The theoretical material topics outlined in the text of the lecture number 1, and the following sources of information:

1. Heinrich M., Barnes J., Prieto-Garcia J., Gibbons S., Williamson E. M. Fundamentals of Pharmacognosy and Phytotherapy. 3rd ed. Elsevier, 2023. 282 p.
2. Medicinal Plant Resources : textbook / V. M. Minarchenko et al. Kyiv : Palyvoda A. V., 2019. 128 p.
3. Bioprospecting of Ethnomedicinal Plant Resources: Sustainable Utilization and Restoration / ed. by G. Shukla et al. CRC Press, 2024. 466 p.
4. Medicinal Plants: Bioprospecting and Pharmacognosy / ed. by A. B. Sharangi, K. V. Peter. Apple Academic Press, 2022. 602 p.

5. Van Wyk B. E., Wink M. Medicinal Plants of the World. 2nd ed. CABI, 2017.

5. Plan and organizational structure of classes

Number	The basic stages of employment, their functions and content	Outcome goals in development levels	Training and controls	Methodological materials. Ensuring and the control of knowledge	duration min., or %
1.	preliminary stage Location - training room. Organizational measures. The wording of the objectives. Control of initial level of knowledge and skills.	II		Methodological developments; test items	1 minute. 2 minutes. 7 min.
2.	The main stage. <i>Location - training room.</i> Carrying out practical work	III	II- Maps, slides, herbaria, background and scientific literature	Methodical development - "Resursozna vstvo medicinal plants. Laboratory Journal "	130 min.
3.	The final stage. Location - training room. Check final level of knowledge. Inspection and assessment of practical skills. Checking and signing of the protocols in the laboratory journal. Scoring	III II- III	II- II-		15 minutes. 10 min. 10 min. 5 minutes.

knowledge. Summing up the lessons and homework wording.				
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6. Materials of methodical maintenance of employment.

6.1. control materials for the preparatory phase of exercises

Test questions:

1. Remember that the plants we call drugs?
2. Navedit examples officinal herbal drugs, which is now widely used only from wild plants of the local flora.
4. What is the terminology used in pharmacy to determine the type of RL?
5. What factors influence the diversity and distribution of wild LR?
6. Basic concepts and definitions: herb (LR) medicinal herbs (RL) phytocoenosis; BAR.
7. Recent data on the status and dynamics of HR resources in Ukraine.

tests:

1. Complete definition of "medicinal plants - a plant that contain the biologically active substances are used, or may be used ...

A medicine as a medicinal plant material "

BA in medicine and pharmacy "

B. as a medicament "

G. as a source for the pharmaceutical industry "

D. therapeutic purposes. "

2. Of all the diverse flora of the Earth (500,000) of scientific medicine during its existence known and used around

A. 250 0000

B. 50000

B. 5000

G. 1000

D. 900

3. The main purpose of resursoznavskih research as part of Pharmacognosy are:

A search for new medicinal plants in local flora

B. Study and definition of reserves RL

B. Organization of the wild herbal drug preparations

G. Determination of existing substances in herbal drugs

D. Establishment of the RL identity

4. BAS accumulation in plants is influenced by various factors: geographical, environmental, climatic, physiological. Thus, the environmental factor is:

- A. Phase Development
- B. Age of the plants
- B. Composition and soil moisture**
- G. Altitude
- D. Geographic Latitude

5. Divide into groups (A, B abiotic-biotic, namely anthropogenic) impacts on the state of the Republic of Lithuania resources: drought (A); firearms lightning (A); firearms from burning stubble (B) through the raw material charge mer (B) drying bogs (B) logging (B).

6. At what level of accumulation of biologically active substances in plants of the nightshade family especially affect the nitrogen content in the soil?

- A. Essential Oils
- B. Cardiac glycosides
- V. Alkaloids**
- G. saponin
- D. Polysaccharides

7. What is the main factor considered when deciding on the optimum timing of the workpiece on the RL RL underground organs?

- A. Soil moisture
- B. Illumination habitat
- V. vegetation period plants**
- G. The mechanical composition of the soil
- D. Mechanisms for excavation of raw materials.

8. What is the main factor considered when deciding on the optimum dates blank essential oil RL - grass?

- A. Illumination habitat
- B. Humidity
- B. Soil moisture
- G. The mechanical composition of the soil
- D. plant phenological stage**

9. The term "grass" in Pharmacognosy and resursovedenii determine:

- A. All herbaceous plants
- B. grassy herbs
- B. aerial parts of herbaceous LR
- G. Elevated shoots horsetails, club mosses, grasses and some shrubs**
- D. cereals.

6.2. Materials of methodical maintenance of the main phase of occupation

Methods of operation, performing the steps of:

A) Determination of the object and the basic tasks resursovedeniya (processing textbooks)

B) Determination of the basic concepts and terms resursovedeniya medicinal plants (processing textbooks)

B) The content of theoretical and practical resursovedeniya (processing textbooks)

D) Assessment of the current state of the raw material base of the Republic of Lithuania in Ukraine (processing of scientific and reference books, vegetation maps, resource maps);

D) abiotic and biotic environmental factors that affect the quality of the natural herbal drugs (storage and content BAS) (treatment of educational and scientific literature).

E) Homework: Resursovedcheskie studies in Ukraine: the institution, the objects, the mechanism to achieve (treatment of textbooks). search for potentially valuable prospects for the Republic of Lithuania on Pharmacy phytochemical markers (treatment of educational and scientific literature).

List of educational and practical tasks to be carried out during the practical sessions:

Exercise 1. With the help of the recommended educational and reference books to conclude its own glossary of terms (concepts) in resursovedenii and give written answers to questions (fill in the table 1)

Table 1

Resursovedenie science

The term (concept), the question	Definition (content) response
one	2
area	
The biological reserve of the RL	
Operating margin RL	
Thickets, overgrown industrial LR	
Herb-LR	
Herbal drugs, herbal drugs	
The population coenopopulations	
plant resources	
one	2
"Grass"	
Yields (stock density) RL	
The purpose of research	

Task 3. Mark shown on a map, based on Ukraine (see. Fig. 1) the locus of industrial thickets of specific sources RL, who have experienced the negative impact of radioactive pollution.

The task is performed on the basis of the recommended scientific and educational literature and maps of radioactive contamination of the territory of Ukraine.

The list of objects of study: creeping thyme; blueberries; cranberries; cranberry; Ledum ordinary; Watch a three-sheeted; bearberry; galangal (tormentil) ordinary lily; St. John's wort; yarrow; mountaineer snake.

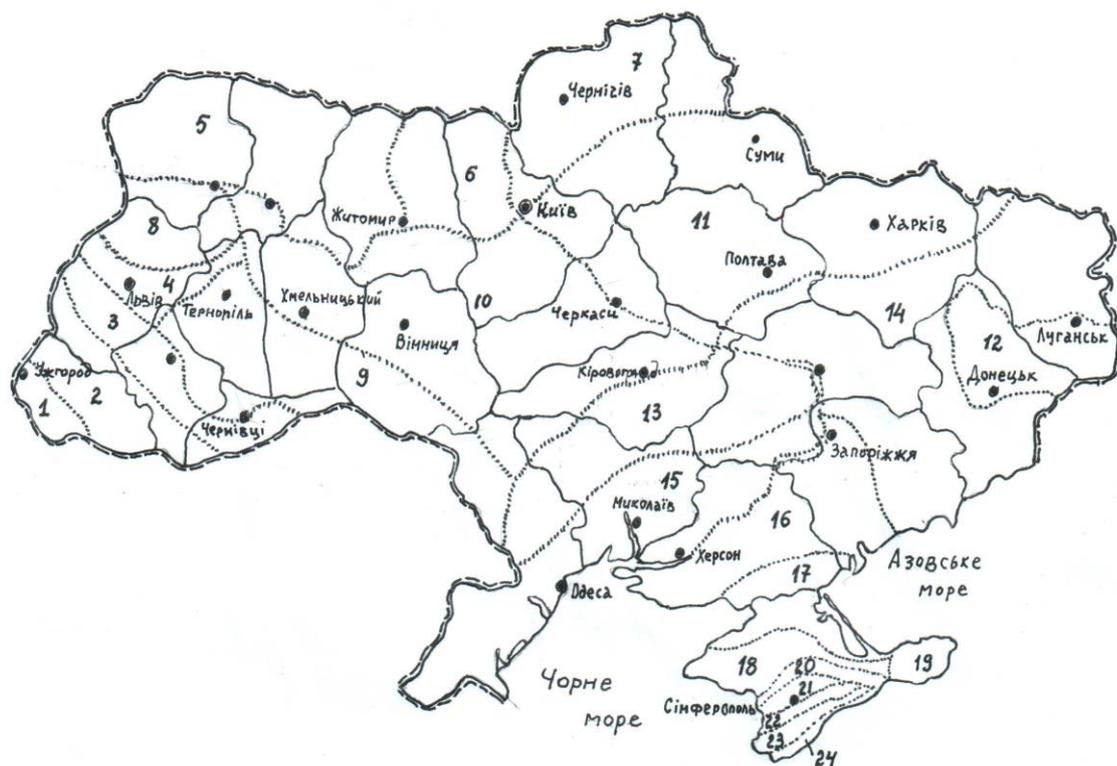


Fig. one.

locus ____ (LR name) _____ who have experienced the negative impact of radioactive contamination of the territory of Ukraine.

6.3. Materials control the final phase of occupation

Questions for self-control:

1. Definition resursovedenie as a science.
2. Value resursovedenie medicinal plants for pharmacy and medicine.
3. Subject resursovedenie study of medicinal plants.
4. The main objectives resursovedenie LR.
5. The theoretical aspect resursovedenie LR.
6. Contents of practical resursovedenie LR.

Tests and situational tasks:

1. The main purpose of resursovedcheskih research as part of Pharmacognosy are:

A. Search for new medicinal plants in local flora

B. Study and definition of reserves RL

B. Organization of the blanks wild herbal drugs

G. Determination of existing substances in herbal drugs

D. Establishment of the RL identity

2. For the first time the cultivation of medicinal plants for the needs of the domestic medicine in Ukraine became engaged in Lubny on orders

A. President of Ukraine

B. Ministry of the Medical Industry

V. Emperor Peter 1

G. Tsar Alexei Mikhailovich

D. Ministry of Health.

3. For special use of resources does not include harvesting of wild medicinal plant raw materials:

A. For Sale

B. For scientific purposes

B. In order to meet their own needs

G. Legal entities for industrial needs

4. BAS accumulation in plants is influenced by various factors: geographical, environmental, climatic, physiological. Thus, the environmental factor is:

A. Phase Development

B. Age of the plants

B. Composition and soil moisture

G. Altitude

D. Geographic Latitude

5. The maximum period of use of the results of evaluation of resources of wild herbal drugs

A. 2 years

B. 3 years

B. 5-7 years

G. 10 years

D. The term is not set

6. Resources of any kind from the above list are very vulnerable and are reduced due to the land reclamation activities:

A. Astragalus sherstistotsvetkovy

B. periwinkle

B. waterlily yellow

Watch a three-sheeted G.

Verba D. angustifolia

7. What is the main reason for the reduction of natural resources adonis spring, because of which he was listed in the Red Book of Ukraine:

A. Excessive operational load

B. Reclamation activities

B. Radioactive contamination of the territory

G. Destruction of cattle

D. Climate change

8. One of the reasons for the reduction of natural resources some of LR in Ukraine was the inability to use herbal drugs through contaminated with radionuclides due to the Chernobyl accident. Modern scientific evidence on various properties of plants to accumulate radionuclides.

Place in the degree of accumulation of radionuclides (from the highest to the smallest), such LR: cranberries; yarrow; Pulmonaria officinalis; oregano; bearberry; St. John's wort spotted; thyme; comfrey; Ham (camomile) formulation; Ledum ordinary. Explain how the resources of these plants suffer irreparable harm?

Answer: Ledum ordinary - cranberries - oregano - thyme - Pulmonaria officinalis - comfrey - bearberry - St. John's wort spotted - Yarrow - Ham (chamomile) drug.

9. Select from the provided list of crude drug such which are prepared from lower plants: thallus kelp (seaweed) thallus Iceland Moss (lichen), flax seeds; sumac leaves; Castor oil.

10. Select from a medicinal plant is provided list, which is obtained from fungi: Chaga; uterine horns; plantain leaves; Sophora fruit; yarrow.

6.4 Materials of methodical maintenance of self-students: orienting map for the organization of independent work of students with textbooks, Count of logical structure of employment and the like.

u m be r	The main task	indication	Responses
ne.	area	to define	
.	The biological reserve of the RL	to define	
.	Operating margin RL	to define	
	Thickets,	to define	

ou r.	overgrown industrial LR		
ive .	Herb-LR	to define	
.	Herbal drugs, herbal drugs	to define	
.	The population coenopopulations	to define	
ig ht.	plant resources	to define	
.	Yields (stock density) RL	to define	
en.	The purpose of research resursoznavchih	to define	
lev en.	The main directions of research resursoznavchih	to define	
2.	The content of the theoretical resursovedenie	to define	
3.	The content of practical resursovedenie	to define	
4.	Special use of natural resources of the Republic of Lithuania	to define	
5.	The overall use of natural resources of the Republic of Lithuania	to define	

6. 7. Literature Basic literature

7. Фармакогностичне ресурсознавство з основами інтродукції лікарських рослин / Навчальний посібник. – Полтава: ПДМУ, 2021.
8. Державна Фармакопея України : в 3 т. / ДП «Український науковий фармакопейний центр якості лікарських засобів». 2-е вид. Харків : Науковий фармакопейний центр, 2015. Т. 1. 1128 с.
9. Ресурсознавство лікарських рослин: Практикум / Тржецинський С. Д. та ін. – Запоріжжя: ЗДМУ, 2021.
10. Фармакогнозія: підручник для студентів фармацевтичних факультетів / Посилкіна О. В. та ін. – Харків: НФаУ, 2015–2018 (розділи, присвячені сировинній базі).
11. Тржецинський С. Д., Доля В. С., Денисенко О. М. Ресурсознавство лікарських рослин : навч.-метод. посіб. Запоріжжя : ЗДМУ, 2015. 115 с.

12. Грицик А. Р., Водославський В. М., Мельник М. В. Фармакогнозія. Ресурсознавство лікарських рослин : навч. посіб. Івано-Франківськ : ПП Голіней О. М., 2019. 248 с.
13. Зузук Б. М. Ресурсознавство лікарських рослин : навч. посіб. для студ. вищ. фармац. навч. закл. Вінниця : Нова Книга, 2015. 232 с.
14. Heinrich M., Barnes J., Prieto-Garcia J., Gibbons S., Williamson E. M. Fundamentals of Pharmacognosy and Phytotherapy. 3rd ed. Elsevier, 2023. 282 p.
15. Medicinal Plant Resources : textbook / V. M. Minarchenko et al. Kyiv : Palyvoda A. V., 2019. 128 p.
16. Bioprospecting of Ethnomedicinal Plant Resources: Sustainable Utilization and Restoration / ed. by G. Shukla et al. CRC Press, 2024. 466 p.
17. Medicinal Plants: Bioprospecting and Pharmacognosy / ed. by A. B. Sharangi, K. V. Peter. Apple Academic Press, 2022. 602 p.
18. Van Wyk B. E., Wink M. Medicinal Plants of the World. 2nd ed. CABI, 2017.

Additional literature:

19. Лікарські рослини: Рекомендаційний список літератури (актуальні видання 2024 року) / Уманський НУС.
20. Малопоширені ароматичні види лікарських рослин / Наукове видання. – Берегове: ЗУІ ім. Ф. Ракоці II, 2025.
21. Лабораторний журнал з ресурсознавства лікарських рослин : [посібник] / В. М. Мінарченко та ін. Київ : Паливода А. В., 2018. 94 с.
22. Фармакогнозія : підручник для студ. вищ. навч. закл. / В. С. Кисличенко та ін. ; за ред. В. С. Кисличенко. Харків : НФаУ : Золоті сторінки, 2015. 736 с.
23. Державна Фармакопея України : в 3 т. / ДП «Український науковий фармакопейний центр якості лікарських засобів». 2-е вид. Харків : Науковий фармакопейний центр, 2015. Т. 1. 1128 с. 520 p.

electronic resources

24. Medicinal Plant Names Services (MPNS) Resource. Kew Royal Botanic Gardens. URL: kew.org (дата звернення: 22.03.2026).
25. Ресурсознавство лікарських рослин : презентація лекції. Нац. фармац. ун-т. URL: https://cnc.nuph.edu.ua/wp-content/uploads/2023/09/prezentatsiia_resursoznnavstvo-lr.pdf (дата звернення: 22.03.2026).

9. Tema following classes: The raw material base of medicinal plants in Ukraine. Wild, cultivated the Republic of Lithuania in Ukraine. Papers and non-medicinal plants (4 hrs.)

Methodical recommendations were made by



associate professor Boyko IA