

MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
BELARUSIAN STATE MEDICAL UNIVERSITY



APPROVED

by Rector of the Educational Institution
«Belarusian State Medical University»

S.P.Rubnikovich

25.04.2025

Reg. No. UD-*091-08-04/24/25* /p.

**PROGRAM
OF PRACTICAL SESSIONS**

« PHARMACOGNOSTIC PRACTICE »

for the specialty
1-79 01 08 «Pharmacy»

AUTHORS:

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RECOMMENDED FOR APPROVAL:

By the Organization of Pharmacy Department of educational institution «Belarusian State Medical University» (protocol No. 9; 27.03.2025);

By the Council of the Medical Faculty for International Students of the educational institution «Belarusian State Medical University»
(protocol No. 7; 24.04.2025);

EXPLANATORY NOTE

The purpose of the pharmacognostic training practice is to consolidate and deepen the knowledge gained in the process of theoretical training, to master students' practical skills in the cultivation, harvesting, storage of medicinal plant raw materials (MPRM), standardization, application, release of MPRM and herbal preparations (HP), and to develop the necessary skills and competencies for subsequent independent professional activity.

The practice program has been developed in accordance with the curriculum of the educational institution in the specialty «Pharmacognostic Practice», approved by 28.12.2023, registration number УД-091-08-01/2324/П.

Students' academic practice is aimed at developing their practical skills, consolidating theoretical knowledge, and mastering primary skills.

The objectives of the educational practice are:

- mastering the skills of cultivation, harvesting, and storage of medicinal products;

- mastering the skills of standardization, application, and release of MPRM and herbal preparations.

Upon completion of the Pharmacognostic training practice, the student must:

know:

- morphological features of MPRM approved for use in medical practice, possible admixture plants;

- general principles of rational harvesting of medicinal plants, measures for the protection of medicinal plant thickets;

- nomenclature of medicinal plants;

- the nomenclature of drugs of animal and natural origin;

- the nomenclature of pharmaceutical enterprises of the MPRM and the Republic of Belarus.

be able to:

- determine by external signs of medical plants in natural habitats;

- determine stocks, possible volumes of MPRM harvesting;

possess:

- identification of medical plants skills in natural phytocenoses;

- skills of standardization, storage and application of MPRM and herbal drugs;

- pharmaceutical consulting skills in the implementation of MPRM and herbal drugs.

In total, 108 academic hours are allocated for the Pharmacognostic training practice for full-time students during 2 weeks at the end of the 6th semester and during the 7th semester.

Of these, 72 hours of classroom instruction, 36 hours of independent student work (hereinafter referred to as ISW).

In accordance with the schedule of the educational process, during the first two weeks after the end of the training practice, the student passes a differentiated credit to the head of the practice from the Department of Pharmacy Organization of the

educational institution «Belarusian State Medical University» (hereinafter – the University).

Graded credit is accepted if the student has a report on the completion of the internship program, a practice diary, and completed individual assignments.

A student who has not completed the training practice program and (or) received an unsatisfactory grade when passing the differentiated assessment is sent by order of the rector of the university for a second (no more than once) practice in his spare time to complete the internship program in full.

Students' academic practice is conducted in classrooms of the Department of Pharmacy Organization, Natural Phytocenoses in and around Minsk, as well as on the basis of the State Scientific Institution Central Botanical Garden of the National Academy of Sciences of Belarus.

Academic practice is not combined with the learning process.

The general management and organization of the students' practice is entrusted to the head of the practice from the university.

The general and direct management of the students' practice is carried out by the head of the practice from the Department of Pharmacy Organization of the University.

The scientific and methodological guidance of the university students' practice is provided by the Faculty of Pharmacy.

THE CONTENT OF THE PRACTICE

During the training practice period, students are required to complete occupational safety briefing provided for by law, comply with labor protection legislation, internal labor regulations of the practice base, rules and regulations of medical ethics and deontology, and requirements for the safe performance of work at the workplace. During the «Pharmacognostic» training practice, students visit natural phytocenoses; determine yields, MPRM reserves; cultivate medical plants, collect, primary process, dry; bring to a standard state, store MPRM; They study the nomenclature of pharmaceutical enterprises of the MPRM and medical plants of the Republic of Belarus and their forms of release.

The raw material base of medicinal plants

Cultivated and wild growing plants of the Republic of Belarus.

Determination of yields and MPRM reserves. Rational use of natural resources, protection of forests (identification of thickets, inventory accounting, mapping; reproduction of wild forests).

Fundamentals of the procurement process of medicinal plant raw materials

Collection MPRM of different morphological groups: leaves, herbs, flowers, buds, fruits, seeds, bark, roots, rhizomes.

Primary processing, drying, bringing to standard condition, storage.

Good practices for growing, harvesting, and storing MPRM.

Medicinal plants of natural phytocenoses

The range, places of growth, and external signs of species producing natural

phytocenoses. Differences from morphologically similar plant species and medical plant admixtures.

Pharmaceutical enterprises of medicinal plant raw materials and herbal preparations of the Republic of Belarus

The nomenclature of pharmaceutical enterprises of MPRM and herbal drugs of the Republic of Belarus.

The nomenclature of MPRM and herbal drugs, their forms of release.

Features of standardization, storage, application and release of MPRM and herbal drugs. Pharmaceutical consulting in the implementation of MPRM and herbal drugs.

INFORMATION AND METHODOLOGICAL PART

CALENDAR AND THEMATIC PLAN OF THE EDUCATIONAL PRACTICE

Name of work	Number of hours		
	In class	Supervised student independent work	Independent student work
Determination of MPRM reserves. Mastering the methodology for determining the yield of wild plants	12	-	6
Study of cultivated plants and methods of their cultivation. Mastering the MPRM harvesting process, herbarization of the medical plants	12	-	6
Acquaintance with the medical plants of natural phytocenoses. Mastering the MPRM harvesting process, herbarization of the medical plants	18	-	6
Pharmaceutical consulting in the sale of herbal preparations with expectorant effect and sore throat	6	-	6
Pharmaceutical consulting in the sale of herbal preparations with sedative effect	6	-	6
Pharmaceutical consulting in the sale of herbal preparations used in diseases of the gastrointestinal tract	6	-	6
Pharmaceutical consulting in the implementation of herbal preparations with diuretic, uroantiseptic and immunomodulatory effects	6	-	-
Summarizing the practice results	6	-	-
Total:	72	-	36

LIST OF PRACTICAL SKILLS TO BE ACQUIRED DURING PRACTICE AND THE LEVELS OF THEIR MASTERING

Levels of mastering practical skills:

- 1 – to know theoretically, to be professionally oriented, to know the indications for conducting;
- 2 – to know theoretically, to evaluate, to take part in the work of personnel;
- 3 – know theoretically, do it yourself..

№	Practical skills	Recommended	
		Number	Level of mastering
1.	Herbarization of medicinal plants	2	2,3
2.	Harvesting, primary processing, drying, and standartization of medicinal plant raw materials of morphological groups: leaves, herbs, flowers, buds, fruits, seeds, bark, roots, and rhizomes	6	3
3.	Determination of yields and stocks of medicinal plant raw materials	3	3
4.	Cultivation and cultivation of medicinal plants	4	3
5.	Pharmaceutical consulting in the sale of herbal preparations with expectorant effect	5	2,3
6.	Pharmaceutical consulting in the sale of herbal preparations with sedative effect	2	2,3
7.	Pharmaceutical consulting in the implementation of herbal preparations with immunomodulatory effects	2	2,3
8.	Pharmaceutical consulting in the sale of herbal preparations used in diseases of the gastrointestinal tract	4	2,3
9.	Pharmaceutical consulting in the sale of herbal preparations with diuretic and uroantiseptic effects	2	2,3
10	Pharmaceutical consulting in the sale of herbal medicines for sore throat	3	2,3

TOPICS OF INDIVIDUAL TASKS

During the training practice, the student independently performs an individual task. The individual task of the student in the educational practice «Pharmacognostic» is to prepare 500 g of MPRM of a given medical plant.

MPRM harvesting includes the following stages: raw material collection, primary processing, drying, standardizing, packaging, and storage.

The MPRM must comply with all the requirements of the regulatory documentation.

The dried MPRM is packed in a paper bag or cardboard box.

A label containing information describing the collected MPRM is glued to a paper bag or cardboard box:

Latin and Russian names;
 species name;
 family of plant;
 place of harvesting;
 date of harvesting;
 mass of raw materials;
 name of student who collected the plant.

SAMPLE QUESTIONS FOR THE GRADED CREDIT

1. Wild growing medicinal plants of Belarus. The possibilities of harvesting wild growing species. Advantages of harvesting wild growing medicinal plants.

2. Cultivation of medicinal plants in Belarus: current state, problem field, and development prospects. The advantages of cultivating medicinal plants. Selection of species introduced into the culture.

3. Fundamentals of the procurement process. Procurement of medicinal plant raw materials. Mechanization of the process of harvesting medicinal plant raw materials.

4. General rules and features of buds harvesting.

5. General rules and features of bark harvesting .

6. General rules and features of leaves harvesting.

7. General rules and features of harvesting flower buds and flowers.

8. General rules and features of harvesting herbs and shoots.

9. General rules and features of harvesting fruits and seeds.

10. General rules and features of harvesting underground organs (roots, rhizomes, tubers).

11. Primary processing of raw materials: concept, stages, features for different morphological groups of medicinal plant raw materials.

12. The general concept of drying medicinal plant raw materials. Free and bound moisture in medicinal plant raw materials. Drying methods.

13. Features of drying of raw materials containing essential oils, cardiac glycosides, ascorbic acid.

14. Features of drying raw materials containing iridoids, flavonoids, tannins, alkaloids.

15. Drying of medicinal plant raw materials of various morphological groups.

16. Natural: air-shade and solar drying of medicinal plant raw materials. The principle of determining the end of drying.

17. Thermal drying: infrared and convective drying of medicinal plant raw materials. The principle of determining the end of drying.

18. Bringing medicinal plant raw materials to a standard state.

19. General principles of storage of medicinal plant raw materials. Factors affecting the stability of medicinal plant raw materials.

20. Packaging, labeling and transportation of medicinal plant raw materials.

21. Introduction to the resource science of medicinal plants. Theoretical and practical aspects of resource management of medicinal plants. Characteristics of medicinal plant resources.
22. General principles of resource research. Preparatory and expedition stages.
23. Basic concepts, rules and features of determining the resources of medicinal plants by the method of accounting sites.
24. Basic concepts, rules and features of determining the resources of medicinal plants by the method of projective coverage.
25. Basic concepts, rules and features of determining the resources of medicinal plants by the method of model specimens.
26. Basic concepts, rules and features of determining the resources of medicinal plants by the method of key sites (using a palette).
27. Basic concepts, rules and features of determining the resources of medicinal plants by the method of key sites (weight method).
28. Calculation of stocks of medicinal plants in specific thickets. Biological and operational reserves. Possible annual harvesting.
29. Medical use of raw materials of animal origin.
30. Rules of Good pharmacy practice for the cultivation, collection, processing and storage of raw materials of plant origin.
31. Nomenclature of pharmaceutical enterprises of medicinal plant raw materials of the Republic of Belarus. Forms of release of medicinal plant raw materials.
32. Nomenclature of pharmaceutical enterprises of herbal preparations of the Republic of Belarus. Forms of release of herbal preparations.
33. Pharmaceutical consulting in the sale of herbal preparations with expectorant effect.
34. Pharmaceutical consulting in the sale of herbal preparations with sedative effect.
35. Pharmaceutical consulting in the implementation of herbal preparations with immunomodulatory effects.
36. Pharmaceutical consulting in the sale of herbal preparations used in diseases of the gastrointestinal tract.
37. Pharmaceutical consulting in the sale of herbal preparations with diuretic and uroantiseptic effects.
38. Pharmaceutical consulting in the sale of herbal preparations for sore throat.

REQUIREMENTS FOR THE CONTENT OF ACCOUNTING DOCUMENTATION

During the training practice, the student performs a practice program under the supervision of the direct supervisor of the practice from the department.

Every day, the student fills out a diary according to Appendix 1.

The daily of practice is signed by the head of the practice from the department.

Based on the results of the course, a written report on the implementation of

the internship program is prepared in accordance with Appendix 2.

The training practice report is signed by the student, the direct supervisor of the practice from the department.

The report is executed on A4 paper using the Ms Word application and is carried out in accordance with the requirements of the state standard STB 6-38-2004 for details, text, document design and data in tables.

Reports on students' academic practice are kept in accordance with the nomenclature of the university department responsible for organizing academic practice.

MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS

Educational institution

«BELARUSIAN STATE MEDICAL UNIVERSITY»

The base of practice

Name of health care organization institution

Department _____
(name)**DIARY
OF PRACTICAL SESSIONS «PHARMACOGNOSTIC PRACTICE»**

Student

Specialty

Faculty

Course, group No.

Terms of the internship

Practice supervisor from the
department_____
(department name)_____
(signature) Full name

THE THEME
DETERMINING RESERVES OF MEDICINAL PLANT RAW MATERIALS

The date _____

Type of work performed _____

Introduction to the calendar-thematic plan, the practical program. Briefing on safety.

Determining reserves of medicinal plant raw materials

Conditions of task 1 and calculations:

--

Do tasks 2 and 3 by analogy.

Commodity analysis of medicinal plant raw materials

Medicinal plant raw material type: _____

Conditions of task:

--

Section "Numerical indicators" of ND _____

Indicator	Allowed by ND	Value which is set in the task	
		%	grams

Calculations:

--

Signature of the student _____

Signature of the practice head _____

THE THEME
MASTERING THE METHODOLOGY OF DETERMINING THE YIELD OF WILD
MEDICINAL PLANTS

The date _____

Type of work performed _____

Task 1. Calculate the size of the operational reserve and the volume of possible annual procurement

Type of phytocenosis _____

Calculation method _____

Name of the medicinal plant raw material (Latin) _____

Area of the harvesting _____

Calculations:

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Do tasks 2 and 3 by analogy.

Signature of the student _____

Signature of the practice head _____

THE THEME**INTRODUCTION TO CULTIVATED MEDICINAL PLANTS AND THEIR
CULTIVATION METHODS. MASTERING THE PROCESS OF PREPARING
MEDICINAL PLANT RAW MATERIALS, GERARIZATION OF MEDICINAL PLANTS**

The date _____

Type of work performed _____

Location of the site _____

Types of medicinal plants which are cultivated on the
site: _____

Task 1. Describe one of the cultivated plants

Latin and Russian names of medicinal plant materials	
Latin and Russian names of producing medicinal plant and families	
Terms and rules for medicinal plant materials procurement	
Primary processing of the medicinal plant materials	
Possible impurities (distinctive features)	
Conditions for rational use of thickets and their restoration (for wild plants)	
Drying conditions and coefficient of dry medicinal plant materials yield	
BAS group	
Quality indicators of medicinal plant materials according to ND requirements (numerical indicators)	
Method of standardization of medicinal plant materials according to ND	
Medical use	

Do tasks 2 and 3 by analogy.

Signature of the student _____

Signature of the practice head _____

THE THEME
INTRODUCTION TO MEDICINAL PLANTS OF NATURAL PHYTOCENOSIS.
MASTERING THE PROCESS OF PREPARING MEDICINAL PLANT RAW
MATERIALS, GERARIZATION OF MEDICINAL PLANTS

The date _____

Type of work performed _____

Phytocenosis type _____

Medicinal plants which are growing in this phytocenosis: _____

Task 1. Describe one of the cultivated plants

Latin and Russian names of medicinal plant materials	
Latin and Russian names of producing medicinal plant and families	
Terms and rules for medicinal plant materials procurement	
Primary processing of the medicinal plant materials	
Possible impurities (distinctive features)	
Conditions for rational use of thickets and their restoration (for wild plants)	
Drying conditions and coefficient of dry medicinal plant materials yield	
BAS group	
Quality indicators of medicinal plant materials according to ND requirements (numerical indicators)	
Method of standardization of medicinal plant materials according to ND	
Medical use	

Task 2. Specify the signs of drying completion of medicinal plant materials of various morphological groups

Morphological group of raw materials	Signs of completion of raw material drying
Flowers	
Leaves	
Grass	
Fruits (juicy)	
Bark	
Underground organs	

Signature of the student _____

Signature of the practice head _____

THE THEME
INTRODUCTION TO MEDICINAL PLANTS OF NATURAL PHYTOCENOSIS.
MASTERING THE PROCESS OF PREPARING MEDICINAL PLANT RAW
MATERIALS, GERARIZATION OF MEDICINAL PLANTS

The date _____

Type of work performed _____

Phytocenosis type _____

Medicinal plants which are growing in this phytocenosis: _____

Task 1. Describe one of the cultivated plants

Latin and Russian names of medicinal plant materials	
Latin and Russian names of producing medicinal plant and families	
Terms and rules for medicinal plant materials procurement	
Primary processing of the medicinal plant materials	
Possible impurities (distinctive features)	
Conditions for rational use of thickets and their restoration (for wild plants)	
Drying conditions and coefficient of dry medicinal plant materials yield	
BAS group	
Quality indicators of medicinal plant materials according to ND requirements (numerical indicators)	
Method of standardization of medicinal plant materials according to ND	
Medical use	

Task 2. Draw up a scheme for harvesting wild-growing medicinal plant raw materials (using regulatory documentation on medicinal plant raw materials, instructions for collection and drying)

Latin and Russian names of medicinal plant materials	
Latin and Russian names of producing medicinal plant and families	
Characteristic external features of the producing plant	
Habitat of the producing plant	
Raw material base (collection point)	
Preparation times	
Basic collection techniques	
Primary processing	
Drying conditions and mode	
Bringing of the raw materials to a standard state	

Packaging and labeling	
Storage conditions	

Signature of the student _____
Signature of the practice head _____

THE THEME
INTRODUCTION TO MEDICINAL PLANTS OF NATURAL PHYTOCENOSIS.
MASTERING THE PROCESS OF PREPARING MEDICINAL PLANT RAW
MATERIALS, GERARIZATION OF MEDICINAL PLANTS

The date _____

Type of work performed _____

Phytocenosis type _____

Medicinal plants which are growing in this phytocenosis:

Task 1. Describe the technological process for obtaining whole medicinal plant raw materials _____ for medical use.

The following regulatory documentations were used in describing the technological process:

- _____
- _____

Medicinal plant _____

Plant family _____

Appearance of the producing plant

Life form	
-----------	--

Appearance of the plant (herbarium specimen)	Morphological features which are typical for the family
Natural habitats	
Phenological phase of medicinal plant material procurement (stage of seasonal plant development)	
Primary processing of medicinal plant material	
Drying conditions. Completion of drying	
Quality indicators of medicinal plant material according to ND requirements (numerical indicators)	
Storage conditions (temperature, humidity, other conditions)	
Active substances	
Accompanying substances	
Possible impurities (distinctive features)	
Conditions for rational use of thickets and their restoration (for wild plants)	
Formulas of the main compounds	
Availability of raw materials in pharmacies	
Industrial use	

Medical use	
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Do tasks 2 and 3 by analogy.

Signature of the student _____

Signature of the practice head _____

THE THEME
PHARMACEUTICAL CONSULTING IN THE SALE OF HERBAL MEDICINES

The date _____
Type of work performed _____

Task 1. Describe the herbal medicines, which are presented in the pharmacy assortment, according to the proposed plan (fill in the table).

Herbal medicines, for treatment: _____					
Herbal medicines, release form, country of origin	Medicinal plant, BAS group	Indications for use	Contraindications (diseases, individual intolerance)	Features of use • childhood • pregnancy, lactation • diabetes • compatibility with other medicines	Storage features (conditions, group)
1	2	3	4	5	6

Signature of the student _____
Signature of the practice head _____

THE THEME
SUMMARY OF THE PRACTICE

The date _____

Task 1. Describe the medicinal plant raw materials of the individual task

Latin and Russian names of the harvested raw materials	
Latin and Russian names of producing medicinal plant and families	
Terms and rules for medicinal plant materials procurement	
Primary processing of the medicinal plant materials	
Possible impurities (distinctive features)	
Conditions for rational use of thickets and their restoration (for wild plants)	
Drying conditions and coefficient of dry medicinal plant materials yield	
BAS group	
Quality indicators of medicinal plant materials according to ND requirements (numerical indicators)	
Method of standardization of medicinal plant materials according to ND	
Medical use	
Terms and rules for medicinal plant materials procurement	

Signature of the student _____

Signature of the practice head _____

MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS

Educational institution

«BELARUSIAN STATE MEDICAL UNIVERSITY»

The base of practice

Name of health care organization institution

Department _____
(name)

REPORT

on the implementation of the program
of practical sessions « Pharmacognostic Practice»

Student _____
Specialty _____
Faculty _____
Course, study group No. _____
Terms of the internship _____

№	List of practical skills	Recommended		Mastered	
		quantity	level of development	quantity	level of development
1.	Herbarization of medicinal plant materials	2	2,3		
2.	Procurement, primary processing, drying, standardization of medicinal plant raw materials of morphological groups: leaves, herbs, flowers, buds, fruits, seeds, barks, roots, rhizomes	6	3		
3.	Determination of yield, reserves of medicinal plant raw materials	3	3		
4.	Cultivation and cultivation of medicinal plants	4	3		
5.	Pharmaceutical consulting in the sale of herbal preparations with expectorant action	5	2,3		
6.	Pharmaceutical consulting in the sale of herbal preparations with sedative action	2	2,3		
7.	Pharmaceutical consulting in the sale of herbal preparations with immunomodulatory action	2	2,3		
8.	Pharmaceutical consulting in the sale of herbal preparations used in diseases of the gastrointestinal tract	4	2,3		
9.	Pharmaceutical consulting in the sale of herbal preparations with	2	2,3		

	diuretic and uroantiseptic effects				
10.	Pharmaceutical consulting in the sale of herbal preparations for sore throat	3	2,3		

Completion of an individual task for the procurement of medicinal plant materials: _____

Student _____ Full name
(signature)

Practice supervisor from the department

(department name)

(signature) Full name

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O.A. Yorshyk

The design of the educational practice program and accompanying documents meet the established requirements

Head of the practice of the educational
institution «Belarusian State Medical
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N.A. Medved

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S.A. Yankovich