MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
Faculty of Pharmacy
Department of Pharmacognosy and Nutriciology

PHARMACOGNOSTIC BASIS OF PHYTOTHERAPY

THE WORKING PROGRAMME
of the educational component

training the second (master's) level
(name of the higher education level)

area of knowledge «22 Healthcare»
(cipher, name of the area of knowledge)

specialty «226 Pharmacy, Industrial Pharmacy»
(cipher, speciality name)

of educational program «Pharmacy»
(name of the educational programme)

specialisation(s) «Pharmacy»
(cipher, name of the specialisation)

2024
(year of creation)

The working program of the educational component «Pharmacognostic basis of phytotherapy» in specialty 226 «Pharmacy, Industrial pharmacy» of the educational program «Pharmacy» (4.10д)англ and (4.10д)*англ higher education applicants of the 4 year.

Developers:

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(specify the LAST NAME, first name of the authors, their positions, academic degrees and academic titles)

The working program were reviewed at the Department of Pharmacognosy and Nutritiology meeting
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Head of the Department _____ prof. Viktoriia KYSLYCHENKO

The working program was approved at the meeting of the specialized Methodical Commission of chemical disciplines session
Record from « 3 » of September 2024 № 1

Head of the specialized Committee _____ prof. Viktoriya GEORGIYANTS

1. Description of the educational component

Language of teaching: ***English***

The status of the educational component: ***selective***

Prerequisites for studying the educational component: As an educational component "Pharmacognostic basis of phytotherapy":

- is based on the knowledge gained by students in the study of Latin, botany, organic chemistry, biological chemistry, analytical chemistry, physical and colloidal chemistry, pharmaceutical and toxicological chemistry, human physiology, pharmacology, drug technology, technology of perfumes and cosmetics, clinical pharmacy.

The subject of study of the educational component "Pharmacognostic basis of phytotherapy" is the study of the medicinal properties of plants, natural raw materials and products from it.

The information volume of the educational component. To study the educational component, 90 **hours** **3 ECTS credits**.

2. The purpose and objectives of the educational component

The purpose of teaching the educational component "Pharmacognostic basis of phytotherapy"is formation of a holistic view of the possibilities, forms and methods of phytotherapy among applicants for higher education, understanding of its place and role in the complex treatment, rehabilitation and prevention of the patient, taking into account the choleretic approach based on the established diagnosis; training in methods of preparation of various dosage forms, as well as the ability to find and determine, by morphological features, official and unofficial medicinal products in nature, periods of their rational preparation, drying and use conditions.

The main **tasks** of the educational component "Pharmacognostic basis of phytotherapy"are to define the key concepts of herbal medicine as a clinical discipline; learn the basic principles of herbal medicine, the rules for compiling the formulation of fees and teas; interpret the relationship between biologically active substances of medicinal plants and their pharmacotherapeutic effects; master the technique of manufacturing basic dosage forms from plants (infusions, decoctions, vapors, macerates, tinctures) and the use of herbal remedies; choose herbal remedies of general action depending on the existing functional disorders in patients of different profiles; be able, if necessary, to provide professional advice to the patient and the doctor on phytotherapy and the choice of herbal medicines and special foods; find the necessary information on pharmacognosy, phytochemistry, phytotherapy, resource management of the medical plants and use it in professional activities; learn the types of regulatory documentation; modern requirements of the Pharmacopeial Committee when creating the ARD; processing of medical raw materials in Ukraine; current state of production of domestic phytochemicals and dietary supplements; use poisonous and potent plants in herbal medicine; learn the general characteristics of toxic biologically active substances; to diagnose toxic impurities in phytocollections; learn the basic principles of treatment with medicinal plant materials; pharmacotherapeutic classification of medicinal plant materials; main chemical, pharmacological and technological incompatibilities of medicinal products; the role of different groups of biologically active substances in prevention and treatment of various pathological conditions of a person; learn information about agricultural and industrial crops as a source of biologically active substances and their use in the treatment of various diseases; develop information leaflets, hold conferences, webinars for doctors and advise the public on issues related to medical plants, raw materials and products of natural origin.

3. Competencies and planned educational outcomes

The educational component "Pharmacognostic Basis of Phytotherapy" provides applicants with the following competencies:

• ***integral:*** the ability to solve typical and complex specialized tasks and practical problems in professional pharmaceutical activities in the field of health care on a socially oriented basis or in the learning process, which involves conducting chemical, biopharmaceutical, biomedical, sociological, etc. research and/or innovation and is characterized by uncertain conditions and requirements; integrate knowledge, think critically and solve complex issues, make decisions in difficult unpredictable conditions, formulate judgments in the presence of incomplete or limited information, taking into account aspects of social and moral responsibility; clearly and unambiguously communicate their conclusions and knowledge, reasonably substantiating them, to a professional and non-professional audience.

general:

GC 6. Knowledge and understanding of the subject area and understanding of professional activity.

special (professional):

PC 16. Ability to organize and conduct the procurement of medicinal plant raw materials in accordance with the rules of Good Practice of Cultivation and Collection of Raw Materials of Plant Origin (GACP), as a guarantee of the quality of medicinal plant raw materials and medications based on it. Ability to predict and calculate ways to solve the problem of conservation and protection of thickets of wild medicinal plants, in accordance with current legislation.

PC 20. Ability to develop methods for quality control of medications, including active pharmaceutical ingredients, medicinal plant raw materials and excipients using physical, chemical, physicochemical, biological, microbiological, pharmacotechnological and pharmacoorganoleptic control methods.

Integrative final ***program learning outcomes*** (PLO), the formation of which is facilitated by the educational component:

PLO 7. To perform professional activities using creative methods and approaches.

PLO 28. To organize and conduct rational procurement of medicinal plant raw materials. To develop and implement measures for the protection, reproduction and rational use of wild species of medicinal plants.

As a result of studying the educational educational component, the applicant must

know:

- basic principles of herbal medicine;
- rules for compiling prescriptions for fees for the treatment of various diseases;
- the main chemical, technological and pharmacological incompatibilities found in the recipes of the collection;
- functions of different types of medicinal plant materials in the body;
- methods of pharmacognostic screening of new types of medicinal plants;
- morphological and anatomical features of medicinal plants and raw materials used in evidence-based and traditional medicine;
- the chemical composition of medicinal plant materials, taking into account the content of the main active and related substances;
- the main factors of influence on the interaction of biologically active substances in the composition of medicinal plant materials and the body;
- pharmacotherapeutic classification of medicinal plant materials;
- features of harvesting, drying and primary processing of plant materials using scientific and traditional medicine;
- the current state of the resources of medicinal plants in Ukraine and measures for resource conservation and reproduction of the resources of the MP;
- current state of production of domestic phytochemicals and dietary supplements;
- Fundamentals of dietology and diet therapy, the use of agricultural and industrial crops as a source of new types of plant materials used in the prevention and treatment of various diseases;
- basic information about the distribution and place of growth of the MP, used in scientific and traditional medicine
- regulatory and legal basis for the use of wild-growing MP resources at the present stage;
- organizing the harvesting of medicinal products;
- general rules for the harvesting of MPM and measures for the protection of natural commercial thickets of the MP;
- basics of industrial cultivation of MP;
- a system of standardization and certification of medicinal products, phytochemicals in Ukraine; documenting the results of the analysis of MPM; the legal meaning of the certificate;
- the main methods and forms of application of MPM in pharmaceutical practice and industrial production;
- the main directions of application in medicine of medicinal products of plant and animal origin;
- safety rules when working with medicinal plants and medicinal raw materials.

be able to:

- determine the systematic affiliation of medicinal plants;
- to determine, by morphological features, medicinal plant materials studied in this course in native and herbarized form;
- to carry out harvesting, drying, primary processing and storage of MPM, which are studied in this course, taking into account its chemical composition;
- characterize different classes of chemical compounds, both the main and accompanying active substances in the composition of medicinal plant materials;
- to explain the influence of factors of the organism itself and the external environment on the formation of the pharmacological effect;
- explain the mechanisms of the physiological effects of the main active substances of medicinal plant materials on the body;
- group types of medicinal plant materials according to their physiological effects on the body;

- create recipes and prepare herbal preparations with the inclusion of official and unofficial medicinal products for the prevention and treatment of diseases of various systems and organs of the body;
- identify official and unofficial raw materials, analyze multicomponent collections, briquettes, granules, capsules, whole and cut raw materials, determine their authenticity and good quality;
- to develop methods for pharmacognostic analysis of MPM and substances derived from it;
- to carry out phytochemical screening of MPM;
- to use the knowledge and skills gained in the study of special disciplines in further professional activities.

possess:

an applicant for a higher education degree (master) must have general (GC 06) and professional (special) (PC 16, PC 20) competencies (expected learning outcomes).

4. The structure of the educational component

Names of content modules and topics	Volume in hours			
	total	full time study (4,10д)		
		l.	pc	iw
Module 1. Rules and principles of phytotherapy. MP and MPM, herbs and teas used in herbal medicine for diseases of various systems of the human body.				
Content module 1. Basics of phytotherapy.				
Topic 1. Definition of the course "Pharmacognostic basis of phytotherapy" and its relationship with related disciplines. The current state of the production of phytopreparations.	4,5	0,5	1	3
Topic 2. MPM processing in Ukraine.	4,5	0,5	1	3
Topic 3. Poisonous and potent plants in herbal medicine.	5,5	0,5	2	3
Topic 4. Basic principles of treatment of plants materials.	5,5	0,5	2	3
Control of the content module 1	7	-	2	5
Total by content module 1	**27**	**2**	**8**	**17**
Content module 2. MP and MPM, collections and teas used in phytotherapy for diseases of various systems of the human body.				
Topic 5. Phytotherapy of allergic diseases and diseases of the immune system.	5,5	0,5	1	4
Topic 6. Phytotherapy of neuroses.	5,5	0,5	1	4
Topic 7. Phytotherapy for respiratory diseases.	6,5	0,5	2	4
Topic 8. Phytotherapy for diseases of the cardiovascular system.	7	1	2	4
Topic 9. Phytotherapy of gastrointestinal diseases.	5,5	0,5	1	4
Topic 10. Phytotherapy for diseases of the kidneys and genitourinary system.	7	1	2	4
Topic 11. Phytotherapy in dermatology and cosmetology. Aromatherapy.	4,5	0,5	1	3
Topic 12. Phytotherapy in the prevention and treatment of radiation sickness.	4,5	0,5	1	3
Topic 13. Phytotherapy of hypo- and vitamin deficiency.	4,5	0,5	1	3
Topic 14. Agricultural and technical crops as a source of BAC and their use in the treatment of various diseases.	4,5	0,5	1	3
Control of the content module 2	7	-	2	5
Total by content module 2	**62**	**6**	**15**	**41**
Semester examination	**1**	**-**	**1**	**-**
Total hours	**90**	**8**	**24**	**58**

5. The content of the educational component programme

Module 1. Rules and principles of phytotherapy. MP and MPM, herbs and teas used in herbal medicine for diseases of various systems of the human body.

Content module 1. *Basics of phytotherapy.*
Topic 1. Definition of the course "Pharmacognostic basis of phytotherapy" and its connection with related disciplines. The current state of production of phytopreparations.
Topic 2. MPM processing in Ukraine.
Topic 3. Poisonous and potent plants in phytotherapy.
Topic 4. Basic principles of treatment with plants.

Content module 2. *MP and MPM, collections and teas used in phytotherapy for diseases of various systems of the human body.*
Topic 5. Phytotherapy of allergic diseases and diseases of the immune system.
Topic 6. Phytotherapy of neuroses.
Topic 7. Phytotherapy of respiratory diseases.
Topic 8. Phytotherapy of diseases of the cardiovascular system.
Topic 9. Phytotherapy of diseases of the gastrointestinal tract.
Topic 10. Phytotherapy of diseases of the kidneys and genitourinary system.
Topic 11. Phytotherapy in dermatology and cosmetology. Aromatherapy.
Topic 12. Phytotherapy in the prevention and treatment of radiation sickness.
Topic 13. Phytotherapy of hypo- and vitamin deficiency.
Topic 14. Agricultural and technical crops as a source of BAC and their use in the treatment of various diseases**.**
Semester control of the module

2. Lecture topics

№	The topic name	**Volume in hours** Full-time form
1.	**Topic 1.** Definition of the course "Pharmacognostic basis of phytotherapy" and its relationship with related disciplines. The current state of the production of phytopreparations and dietary supplements.	0,5
2.	**Topic 2.** Processing of MPM in Ukraine.	0,5
3.	**Topic 3.** Poisonous and potent plants in herbal medicine. General characteristics of poisonous biologically active substances. Diagnosis of toxic impurities.	0,5
4.	**Topic 4.** Basic principles of treatment of plant materials. Pharmacotherapeutic classification of medicinal plant materials. Chemical, pharmacological and technological incompatibilities in the preparation of prescriptions for fees.	0,5
5.	**Topic 5.** Phytotherapy of allergic diseases and diseases of the immune system.	0,5
6.	**Topic 6.** Phytotherapy of neuroses.	0,5
7.	**Topic 7.** Phytotherapy for respiratory diseases.	0,5
8.	**Topic 8.** Phytotherapy for diseases of the cardiovascular system.	1
9.	**Topic 9.** Phytotherapy of gastrointestinal diseases.	0,5
10.	**Topic 10.** Phytotherapy for diseases of the kidneys and genitourinary system.	1
11.	**Topic 11.** Phytotherapy in dermatology and cosmetology. Aromatherapy.	0,5
12.	**Topic 12.** Phytotherapy in the prevention and treatment of radiation sickness.	0,5
13.	**Topic 13.** Phytotherapy for hypo- and avitaminosis.	0,5
14.	**Topic 14.** Agricultural and industrial crops as a source of BAS and use in the treatment of various diseases.	0,5
	Total hours	**8,0**

7. Topics of seminars

Not provided for in the working curriculum.

8. Topics of practical classes

№	The topic name	The amount of hours
1.	**Topic 1.** Definition of the course "Pharmacognostic basis of phytotherapy" and its relationship with related disciplines. The current state of the production of phytopreparations and dietary supplements.	1
2.	**Topic 2.** Processing of MPM in Ukraine.	1
3.	**Topic 3.** Poisonous and potent plants in herbal medicine. General characteristics of poisonous biologically active substances. Diagnosis of toxic impurities.	2
4.	**Topic 4.** Basic principles of treatment of plant materials. Pharmacotherapeutic classification of medicinal plant materials. Chemical, pharmacological and technological incompatibilities in the preparation of prescriptions for fees.	2
5.	**Control of the content module 1**	2
6.	**Topic 5.** Phytotherapy of allergic diseases and diseases of the immune system.	1
7.	**Topic 6.** Phytotherapy of neuroses.	1
8.	**Topic 7.** Phytotherapy for respiratory diseases.	2
9.	**Topic 8.** Phytotherapy for diseases of the cardiovascular system.	2
10.	**Topic 9.** Phytotherapy of gastrointestinal diseases.	1
11.	**Topic 10.** Phytotherapy for diseases of the kidneys and genitourinary system.	2
12.	**Topic 11.** Phytotherapy in dermatology and cosmetology. Aromatherapy.	1
13.	**Topic 12.** Phytotherapy in the prevention and treatment of radiation sickness.	1
14.	**Topic 13**. Phytotherapy for hypo- and avitaminosis.	1
15.	**Topic 14.** Agricultural and industrial crops as a source of BAS and use in the treatment of various diseases.	1
16.	**Control of the content module 2**	2
17.	**Semester credit from module 1**	1
	Total hours	**24,0**

9. Topics of laboratorial lessons

Not provided for in the working curriculum.

10. Individual work

№	The topic name	**Volume in hours** Full-time form
1	**Topic 1.** Definition of the course "Pharmacognostic basis of phytotherapy" and its relationship with related disciplines. The current state of the production of phytopreparations and dietary supplements.	3
2	**Topic 2.** Processing of MPM in Ukraine.	3
3	**Topic 3.** Poisonous and potent plants in herbal medicine. General characteristics of poisonous biologically active substances. Diagnosis of toxic impurities.	3
4	**Topic 4.** Basic principles of treatment of plant materials. Pharmacotherapeutic classification of medicinal plant materials. Chemical, pharmacological and technological incompatibilities in the preparation of prescriptions for fees.	3

5	**Control of the content module 1**	5
6	**Topic 5.** Phytotherapy of allergic diseases and diseases of the immune system.	4
7	**Topic 6.** Phytotherapy of neuroses.	4
7	**Topic 7.** Phytotherapy for respiratory diseases.	4
8	**Topic 8.** Phytotherapy for diseases of the cardiovascular system.	4
9	**Topic 9.** Phytotherapy of gastrointestinal diseases.	4
10	**Topic 10.** Phytotherapy for diseases of the kidneys and genitourinary system.	4
11	**Topic 11.** Phytotherapy in dermatology and cosmetology. Aromatherapy.	3
12	**Topic 12.** Phytotherapy in the prevention and treatment of radiation sickness.	3
13	**Topic 13**. Phytotherapy for hypo- and avitaminosis.	3
14	**Topic 14.** Agricultural and industrial crops as a source of BAS and use in the treatment of various diseases.	3
15	**Control of the content module 2**	5
	Total hours	**58,0**

Theoretical questions and tasks for individual work

Topic 1. Types of AND. Modern requirements of the Pharmacopoeial Committee in the development of AND.

Topic 2. Processing of pesticides in Ukraine.

Topic 3. General characteristics of poisonous biologically active substances. Diagnosis of toxic impurities.

Topic 4. Basic principles of treatment of plant materials. Pharmacotherapeutic classification of medicinal plant materials. Chemical, pharmacological and technological incompatibilities in the preparation of prescriptions for the collection.

Topic 5. Phytotherapy of allergic diseases. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 6. Phytotherapy of neuroses. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 7. Phytotherapy for respiratory diseases. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 8. Phytotherapy for diseases of the cardiovascular system. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 9. Phytotherapy of gastrointestinal diseases. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 10. Phytotherapy for diseases of the kidneys and genitourinary system. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 11. Phytotherapy in dermatology and cosmetology. Aromatherapy. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 12. Phytotherapy in the prevention and treatment of radiation sickness. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 13. Phytotherapy for hypo- and avitaminosis. MP and MPM that are part of the meeting. Unofficial types of MPM.

Topic 14. Agricultural and industrial crops as a source of BAS and their use in the treatment of various diseases.

11. Criteria and the procedure for assessing learning outcomes

Subject number of the educational component	***Maximum number of points for the topic***	***Distribution of the maximum number of points per topic by type of work***	***Types of work for which the applicant receives points***
Content module 1			
Topic 1.	4	1	testing
		3	oral answer
Topic 2. *(topic for independent study)*	5	5	*writing an essay or preparing a presentation*

Topic 3.	5	2	testing
		3	oral answer
Topic 4.	4	1	testing
		3	oral answer
Total points for the content module 2:		***18***	
Content module 2			
Topic 5.	3	1	testing
		2	oral answer
Topic 6.	3	1	testing
		2	oral answer
Topic 7.	3	1	testing
		2	oral answer
Topic 8.	3	1	testing
		2	oral answer
Topic 9.	3	1	testing
		2	oral answer
Topic 10.	3	1	testing
		2	oral answer
Topic 11.	3	1	testing
		2	oral answer
Topic 12.	3	1	testing
		2	oral answer
Topic 13. *(topic for independent study)*	4	4	*writing an essay or preparing a presentation*
Topic 14. (*topic for independent study)*	4	4	*writing an essay or preparing a presentation*
Total points for the content module 2:		***32***	
Total points for the module:		***50***	

Instead of performing types of work on any topic of the educational component, the following types of work of a student of higher education may be counted:

- participation in workshops, forums, conferences, seminars, webinars on the topic of the educational component (with the preparation of essays, abstracts of reports, information messages, etc., which is confirmed by the program of the event, or abstracts of reports, or a corresponding certificate);

- participation in research and applied research on the topic of the educational component (in the development of questionnaire forms, conducting experimental studies, processing research results, preparing a report, presenting the results, etc., which is confirmed by the demonstration of relevant materials).

Evaluation of winners <u>by types of work during classes:</u>

Types of work, for which the acquirer receives points	***Maximum number of points***
testing	14
answers to theoretical questions	28
solving tasks for independent work	8
Total points:	***50***

Assessment during control of content modules:

Types of work, for which the acquirer receives points	***Distribution of the maximum number of points for control of the content module by types of works***	***The maximum number of points for control of the content module***
Content module 1		
testing	15	32
answers to theoretical questions	17	
Content module 2		
testing	8	18
solution of calculation tasks	10	
Total points for control of content modules:		***50***

Organization of independent work:

Independent work includes the study of topics 2, 13, 14 of the educational component, which were not included in classroom classes, and the performance of tasks on these topics in order to consolidate the theoretical material.

Evaluation of independent work of the student of education:

during the current control: 12 points: 4 points - writing an abstract or preparing a presentation (topic 2), 4 points - writing an abstract or preparing a presentation (topic 13), 4 points - writing an abstract or preparing a presentation (topic 14);

during content module 1 control: tickets for content module 1 include theoretical questions and test tasks from topic 2;

during content module 2 control: tickets for content module 2 include theory questions and test tasks from topic 13 and 14.

Evaluation scale of the semester credit:

When studying the educational component, several assessment scales are used: a 100-point scale, an undifferentiated ("passed", "not passed") two-point scale and the ECTS rating scale. The results are converted from one scale to another according to the table.

Total points on a 100-point scale	ECTS scale	Evaluation on a non-differentiated scale
90-100	A	passed
82-89	B	
74-81	C	
64-73	D	
60-63	E	
35-59	FX	not passed
1-34	F	

12. Methods of teaching

Current control of theoretical and practical knowledge in the form of an oral, written and test survey using standardized methods for diagnosing knowledge, abilities and skills is carried out at each laboratory session in accordance with the specific goals of the topic and during the individual work of the teacher for topics that are not included in the structure of the lesson and are developed by the student of higher education independently.

Control of content modules - control of theoretical knowledge in the form of an oral, written and test survey of

applicants for higher education, as well as practical skills in determining the identity and benignity of MPM. Control refers to knowledge and skills, both acquired in classes, and objects and topics developed independently by students of higher education.

Form of control - semester credit.

13. Methodological support

1. Educational work program of educational component
2. Work program of educational component.
3. Calendar and thematic plans of lectures and laboratory lessons.
4. Textbooks, workshops, manuals, methodical recommendations, etc.
5. Materials of computer presentations of lectures.
6. Methodological recommendations for laboratory lessons, as well as independent work of students of higher education.
7. A list of theoretical questions for independent work of students of higher education.
8. List of questions and tasks for current control of knowledge and skills of higher education applicants.
9. List of theoretical questions and practical tasks for the control of meaningful modules, the exam.
10. Collection of MP herbariums and samples of MPM.

14. Recommended reading

Essential reading

1. Fundamentals of pharmacognosy and phytotherapy E-BOOK / Heinrich M. et al. – Elsevier Health Sciences, 2017.
2. Bone K., Mills S. Principles and practice of phytotherapy: modern herbal medicine. – Elsevier Health Sciences, 2012.
3. Pharmacognosy: textbook for higher school students / V.S. Kyslychenko, L.V. Upyr, Ya.V. Dyakonova, V.Yu. Kuznetsova, I.G. Zinchenko, O.A. Kyslychenko; ed. byV.S. Kyslychenko. – Kharkiv : NUPh : GoldenPages, 2011. – 552 p.; il.

Supplementary literature

1. Governa P. et al. Phytotherapy in the management of diabetes: a review // Molecules. – 2018. – T. 23. – №. 1. – P. 105.
2. Kelber O., Bauer R., Kubelka W. Phytotherapy in functional gastrointestinal disorders //Digestive Diseases. – 2018. – T. 35. – №. Suppl. 1. – C. 36-42.
3. Lopes C. M. et al. Phytotherapy and nutritional supplements on breast cancer //BioMed research international. – 2017. – T. 2017.
4. Textbook of Pharmacognosy and Phytochemistry - E-Book / Shah B., Seth A. – Elsevier Health Sciences, 2012. – 620 p.
5. Pieroni A. et al. Traditional phytotherapy and trans-cultural pharmacy among Turkish migrants living in Cologne, Germany //Journal of ethnopharmacology. – 2005. – T. 102. – №. 1. – P. 69-88.
6. Akah P. A., Okoli C. O., Nwafor S. V. Phytotherapy in the management of diabetes mellitus //Journal of Natural Remedies. – 2002. – T. 2. – №. 1. – P. 1-10.
7. Laccourreye O. et al. Benefits, pitfalls and risks of phytotherapy in clinical practice in otorhinolaryngology //European annals of otorhinolaryngology, head and neck diseases. – 2017. – T. 134. – №. 2. – P. 95-99.
8. Kim S. W. Phytotherapy: emerging therapeutic option in urologic disease //Translational andrology and urology. – 2012. – T. 1. – №. 3. – C. 181.
9. Medicinal plants resource science : handbook for students of higher schools / V.S. Kyslychenko, L.V. Upyr, I.G. Zinchenko, O.A. Kyslychenko, S.I. Stepanova; ed. by V.S. Kyslychenko. – Kharkiv : NUPh : Golden Pages, 2012. – 168 p.
10. Gokhale S. B., Kokate C. K., Purohit A. P. A textbook of Pharmacognosy. 29th Edition. 2017. – 284 p.
11. Kumar N. A Textbook Of Pharmacognosy. A.I.T.B.S. Publishers, India. 2010. – 502 p.
12. Shah B. N., Seth A.K. Textbook of Pharmacognosy and Phytochemistry. Elsevier. 2010. – 587 p.
13. Singh A. A Textbook of Pharmacognosy. Pharma Book Syndicate. 2013. – 836 p.

15. Information resources, including the Internet

1. Website of the Department of Pharmacognosy and Nutriciology – www.cnc.nuph.edu.ua
2. Website of the NUPh library – http://lib.nuph.edu.ua
3. Electronic archive of the NUPh – http://dspace.nuph.edu.ua
4. Center for Distance Technologies of the National Academy of Sciences of Ukraine – pharmel.Kharkiv.edu
5. NUPh. Online tests – http://tests.nuph.edu.ua
6. Vernadsky National Library of Ukraine – http://www.nbuv.gov.ua
7. V.G. Korolenko Kharkiv State Scientific Library – http://korolenko.kharkov.com