



MINISTRY OF HEALTH OF UKRAINE  
NATIONAL UNIVERSITY OF PHARMACY  
Department pharmaceutical technology of  
drugs

**TECHNOLOGY OF VETERINARY PREPARATIONS**

(the name of educational component)

**EDUCATIONAL WORK PROGRAM  
of educational component**

training for \_\_\_\_\_ master \_\_\_\_\_  
(Higher Educational Level Name)  
in specialty « \_\_\_\_\_ 22 Public Health \_\_\_\_\_ »  
(Code and Specialty Name)  
field of knowledge « \_\_\_\_\_ 226 Pharmacy, industrial pharmacy \_\_\_\_\_ »  
(Code and Knowledge Field Name)  
of educational program « \_\_\_\_\_ Pharmacy for foreign students (Language of Instructions - English) \_\_\_\_\_ »  
(Educational Program Name)  
in specialization(s) \_\_\_\_\_  
(name of specialization, if available)

Kharkiv-2023  
(Year of creation)

CONSIDERED AND APPROVED: NATIONAL UNIVERSITY OF PHARMACY  
(the full name of the institution of higher education)

EDUCATIONAL COURSE TEAM:

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The work program was reviewed and approved at the meeting of the  
pharmaceutical technology of drugs

Record No. 1 from " \_ 1\_ " of September 2023

Head of the department



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The work program was approved at a meeting of the specialized methodological  
commission for technological disciplines

Record No. 1 from 1 September 2023

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(sig)

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(first name LAST NAME)

## INTRODUCTION

**The educational component study program «TECHNOLOGY OF VETERINARY PREPARATIONS»** compiled in accordance with the Standard of Higher Education of Ukraine (hereinafter referred to as the Standard) / Educational (educational-professional, educational-scientific) program The second (master's) level  
(the name of the level of higher education)

in specialty « 22 Public Health »  
(Code and Specialty Name)  
field of knowledge « 226 Pharmacy, industrial pharmacy »  
(Code and Knowledge Field Name)  
of educational program « Pharmacy for foreign students (Language of Instructions - English) »

**Description of the educational component (abstract)** The subject of the study of the educational component "Technology of veterinary preparations" is the question of the state of the market of veterinary drugs and animal protection products in Ukraine, trends in the development of the production of veterinary drugs, the main provisions of regulatory documentation and the Technology of veterinary preparations in various dosage forms of pharmaceutical and industrial production .

**The subject of study of the educational component** "Technology of veterinary preparations" is the question of the state of the market of veterinary drugs and animal protection products in Ukraine and the availability of veterinary drugs to navigate the nomenclature of domestic and foreign veterinary drugs.

**Interdisciplinary connections: the component** is based on theoretical positions of physics, mathematics, botany, anatomy and physiology of animals, microbiology, physical and colloid chemistry, as well as pharmacognosy, pharmaceutical chemistry, pharmacology, pharmaceutical chemistry, medical and pharmaceutical commodity science, organization and economics of pharmacy, etc. and integrates with these educational components

### **1. The purpose and tasks of the educational component**

1.1. The purpose of teaching the educational component "Technology of veterinary preparations" is to deepen professional knowledge about the Technology of veterinary preparations and animal protection products, to determine the influence of storage conditions and the type of packaging on their stability.

1.2. The main tasks of the educational component "Technology of veterinary preparations" are:

- learn the basic concepts and terms of veterinary medicine and veterinary pharmacy; directions of state regulation of production and sale of veterinary drugs;
- learn the structure of the prescription and registration dossier for veterinary drugs; principles of dosage of medicines in veterinary practice;
- learn the theoretical foundations of pharmacy and industrial technology of various medicinal forms used in veterinary medicine;
- to master the implementation of continuous control of veterinary drugs and means of animal protection.

1.3 Competences and learning outcomes, the formation of which is facilitated by education component (interrelationship with the normative content of the training of students of higher education, formulated in terms of learning outcomes in the Standard).

According to the requirements of the standard, the educational component "Technology of veterinary preparations" ensures that students of higher education acquire the following competencies: integral:

ability to consider typical and specialized practical problems in professional pharmaceutical activity with application of provisions and methods of fundamental, professionally-oriented including

technological sciences, to solve difficult questions, to formulate judgments on insufficient and limited information, to substantiate, clearly and unambiguously communicate the conclusions and knowledge to professional and non-professional audience.

- *general:*

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

GC 11. Ability to evaluate and ensure the quality of performed works.

- *special (professional, subject):*

PC14. The ability to organize and carry out the production activities of pharmacies for the manufacture of medicinal products in various dosage forms according to the prescriptions of doctors and orders of medical institutions, including the justification of technology and the selection of auxiliary materials in accordance with the rules of Good Pharmacy Practice (GPP).

Integrative final program learning results, the formation of which is facilitated by the educational component.

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

PLO 3. To comply with the norms of the sanitary and hygienic regime and the requirements of safety equipment when carrying out professional activities.

PLO 4. Demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.

PLO 5. To position one's professional activity and personal qualities on the pharmaceutical labor market; formulate the goals of one's own activity taking into account public and industrial interests.

PLO 7. Perform professional activities using creative methods and approaches.

PLO 26. Choose a rational technology, manufacture medicinal products in various dosage forms according to the prescriptions of doctors and orders of medical institutions, prepare them for release. Perform technological operations: weigh, measure, dose various medicinal products by weight, volume, etc. Develop and draw up technological documentation for the manufacture of medicinal products in pharmacies.

As a result of studying the educational component, the student of higher education must: know:

- basic concepts and terms of veterinary medicine and veterinary pharmacy;
- directions of state regulation of production and sale of veterinary drugs;
- the structure of the prescription and registration dossier for veterinary drugs;
- principles of dosage of medicines in veterinary practice;
- theoretical foundations of the Technology of veterinary preparations and animal protection products in pharmacy and industrial conditions;
- determining the influence of storage conditions and the type of packaging on the stability of veterinary drugs and animal protection products.

be able:

- formulate basic concepts and terms of veterinary medicine and veterinary pharmacy;
- to use regulatory and reference literature on prescribing, preparing and regulating the quality of veterinary medicinal products;
- navigate the nomenclature of domestic and foreign veterinary drugs;
- formulate directions for state regulation of production and sale of veterinary drugs;
- take into account the factors affecting the dosage of medicinal substances for animals;
- substantiate the technology of veterinary medicinal products in the form of various medicinal forms (solid, soft veterinary medicinal forms, veterinary medicinal products with a liquid dispersion medium, suppository medicinal forms, medicinal products under pressure, aseptic medicinal forms, specific veterinary medicinal forms);
- evaluate the quality of medicines for the treatment of animals, prepare them for release.

## 2. Information content of the educational component

3 ECTS credit \_90\_\_hours are allocated to the study of the educational component.

If the program is structured in a module:

**Module 1.** Current state of veterinary pharmacy Technology of veterinary preparations

**Topic 1. The current state of veterinary pharmacy.**

Basic concepts and terms of veterinary medicine: veterinary medicine, veterinary medicine, veterinary pharmacy, veterinary drugs, feed, feed additives, animals, etc. The main tasks of veterinary medicine. Public administration bodies in the field of veterinary medicine. History of the development of veterinary medicine The emergence of veterinary pharmacy. Tasks of Technology of veterinary preparations as a science and educational discipline. International cooperation in the field of veterinary medicine. International Office of Epizootics, its tasks and functions. International Veterinary Code.

**State standardization of production and sale of veterinary drugs.**

State standardization of production and sale of veterinary drugs. The structure of the registration dossier. The current state of the market of veterinary drugs. Assortment of veterinary drugs on the market of Ukraine.

Requirements for good manufacturing practice for the preparation of non-sterile and sterile veterinary medicinal products. Basic requirements for the premises of the pharmacy, its employees, etc. Features of extraction of prescriptions for veterinary drugs in accordance with the order of the State Committee of Veterinary Medicine of Ukraine №97 from 03.06.2008. Principles of dosage of drugs in veterinary practice. Factors affecting the dosage of drugs for animals.

**Topic 2. Solid veterinary dosage forms.**

Veterinary dosage forms: classification, routes of administration, principles of selection of dosage forms for the treatment of animals.

Powder in veterinary practice. Requirements for them. Dusty. Characteristic. Application in veterinary practice. Premix as a specific veterinary dosage form. Classification of premixes by composition, purpose, depending on the pharmacological group of substances. Biologically active and auxiliary substances from prefixes. Importance of antioxidants, detergents and others in premixes. Introduction of premixes in animal feed and use in veterinary practice.

Briquettes. Application in veterinary practice.

**Topic 3. Veterinary preparations with liquid dispersion medium.**

Liquid dosage forms for internal use in veterinary practice (solutions, potions, drops, syrups) and external use (ear and nasal drops, baths, etc.).

Liquid specific dosage forms for external use in veterinary practice (concentrates for bathing, solutions for irrigation, spot application, for treatment of dicks, ablution of the udder, etc.), concentrates for impregnation, etc. Shampoos in veterinary practice.

**Topic 4. Mild veterinary dosage forms. Drugs for rectal and vaginal use.**

Characteristics of soft dosage forms. Classification. Application for the treatment of animals.

Characteristics of rectal dosage forms used in veterinary practice.

Medicines for vaginal use. Pulp and bolus as veterinary dosage forms. Rules for issuing prescriptions for boluses and porridges. Calculation of drugs and excipients for the preparation of bolus and porridge. Technology and application of boluses and slurries in veterinary medicine

Medical plasters, their classification by functional purpose, composition and physical state. Application for the treatment of animals.

**Topic 5. Specific veterinary dosage forms. Medicines under pressure in veterinary practice.**

Characteristics of pressurized drugs are positive aspects of their use in veterinary practice. Classification by action and application. Specific veterinary dosage forms. Strips. Characteristic. Use to treat bees. Collars as a veterinary dosage form. Characteristics of veterinary use. Features of their use in veterinary practice. Dietary rations. Application in veterinary practice.

Intrauterine rigid dosage forms (tablets, capsules, rods). HFC requirements for them. Foaming tablets in the form of sticks. Application for the treatment of animals.

Intra-scar hard drugs. Definition. Characteristic.

Characteristics of rare dosage forms for intrauterine use in the treatment of animals (solutions, suspensions, emulsions). Features of application in veterinary practice. Intramammary veterinary drugs.

Intrauterine foams medical for veterinary medicine.

### **Topic 6. Semester control.**

Semester control is carried out in order to check the level of assimilation of theoretical material.

Theoretical knowledge is monitored by means of a written survey on individual cards.

### **3. Form of semester control of study success.**

Semester control is carried out in order to check the level of assimilation of theoretical material.

Theoretical knowledge is monitored by means of a written survey on individual cards.

Control form: *credit*.

### **4. Methodological support**

1. Working training program.
2. Schedules of lectures and laboratory classes.
3. Tutorial.
4. Multimedia lecture texts.
5. Videos.
6. Methodical recommendations for classroom work of students.
7. Methodological support of control of students' knowledge (control tasks and tests), criteria for their assessment, standards of answers.
8. Tickets for FMC.
9. Tests to determine the basic, current and final level of knowledge. A set of situational tasks for classes.
10. Educational equipment, technical teaching aids.

### **5. Recommended reading**

#### **Main**

1. Tykhonov O. I., Yarnykh T. G., Rukhmakova O. A. Pharmacy - based technology of drugs : the manual for applicants of higher education. 2019. Kharkiv : NUPhGolden Pages. – 301 p
2. Technology of veterinary preparations: method. rec. for preparation for the control of the content module / T. G. Yarnykh [et al.] ; under the editorship T. G. Yarnykh. - Kharkiv: NUPh, 2023. - 30 p.
3. Technology of veterinary preparations: method. rec. for independent work of students of higher education/ T. G. Yarnykh [etc.] ; under the editorship T. G. Yarnykh. - Kharkiv: NUPh, 2023. - 48 p.

#### **Subsidiary**

1. State Pharmacopoeia of Ukraine / SE "Ukrainian Scientific Pharmacopoeia Center for the Quality of Medicinal Products". 1st edition Kharkiv: State Enterprise "Ukrainian Scientific Pharmacopoeial Center for the Quality of Medicinal Products", 2014. Vol. 2. 724 p.
2. State Pharmacopoeia of Ukraine / SE "Ukrainian Scientific Pharmacopoeia Center for the Quality of Medicinal Products". 2nd edition Kharkiv: State Enterprise "Ukrainian Scientific Pharmacopoeia Center for the Quality of Medicines", 2015. Vol. 3. 732 p.
3. State Pharmacopoeia of Ukraine / SE "Ukrainian Scientific Pharmacopoeia Center for the Quality of Medicinal Products" 2nd ed. Kharkiv: State enterprise "Ukrainian Scientific Pharmacopoeia Center for the Quality of Medicinal Products". 2015. Vol. 1. 1128 p.

### **6. Information resources on the Internet**

1. Сайт кафедри аптечної технології ліків: [www.atl.nuph.edu.ua](http://www.atl.nuph.edu.ua)
2. Центр дистанційних технологій НФаУ – <http://pharmel.kharkiv.edu>
3. Електронний архів бібліотеки НФаУ . <http://lib.nuph.edu.ua>

