

Epizootiology and Parasitology Chair

"CONFIRMED"



Chief of Epizootiology and Parasitology Chair

(V. Y. Kassich)

_____ 2020

CURRICULUM

PP 04 Veterinary and clinical pharmacology and toxicology

For graduate students in specialties

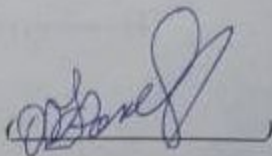
211 Veterinary science

Work program on discipline "Veterinary and clinical pharmacology and toxicology" for postgraduate students in the specialty ; 211 Veterinary science ;

Author:

Doctor, Professor

Fotina H. A.

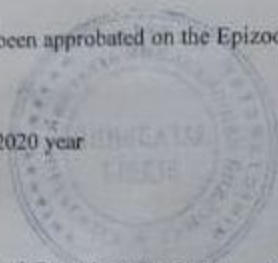


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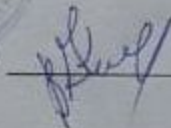
Curriculum has been approbated on the Epizootiology and parasitology Chair

Meeting.

Protocol from "15" 1.03.2020 year



Chief of Epizootiology and Parasitology Chair
V. Y. Kassich)



(Doctor, prof.

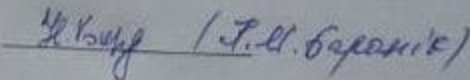
Coordinated by:

Dean of the Faculty



(O. L. Nechiporenko)

Methodist of academic department



Registered in electronic data base

03.07.

2020

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1. Description of the discipline

Name of indicators	Branch of knowledge, direction of training, educational-qualification level	Characteristics of the discipline	
		full-time education	Part-time form
Number of credits - 1, 5	Branch of knowledge: 211 Veterinary science		
Modules - 1		Year of training:	
Content modules : 1		2020	
		Course	
		2	
		Semester	
Total hours: - 150		4nd	
		Lectures	
		- 36	
		Practical, seminars	
		- 36	
		Laboratory	
		-	
		Independent work	
		- 78	
		Type of control: credit Computer testing Oral questioning.	
Weekly hours for full-time study: classroom - 3 independent work of the student - 1	Education level: <i>postgraduate</i>		

The ratio of the number of hours of classroom studies to independent and individual work is: for full-time study in the spring semester - 48/15.

The purpose and tasks of the discipline. The purpose of the discipline is to get acquainted with the methodology for creating and conducting an analysis of the quality of medicinal products based on the general and individual laws of pharmacognosy and pharmaceutical chemistry as one of the applied pharmaceutical disciplines. In this case, materials related to issues of pharmacognosy, general pharmaceutical chemistry, which reveal a systematic approach and provide an integral system of theoretical foundations of discipline will be presented. To study the modern classification of medicinal products, which is based on their raw material origin and chemical characteristics. To get acquainted with the algorithm of groups and individual drugs, which includes: the chemical structure and nomenclature of the medicinal

substance; preconditions for application in veterinary medicine; Pharmacological group, connection "chemical structure - biological action"; sources and methods of extraction; requirements synergetics and hermeneutics.

The purpose of teaching discipline is to familiarize post-graduate students with the processes of scientific research, their structure, as well as with deductive, hypothetical-deductive and systematic research methods.

The task of studying the discipline is to develop the ability of postgraduate students to apply new methods of ecological and biological research, based on the ideas and principles of the system approach, to the quality of the drug, depending on the method of extraction, the nature of the dosage forms and stability; standardization; pharmacopoeial methods for assessing the quality of the dosage forms; conditions of storage of finished medicines.

3. PROGRAM OF TRAINING DISCIPLINE

Module I. Topics in Veterinary Pharmacology

Content module 1. Topics in Veterinary Pharmacology. Introduction

Topic 1. Introduction. Introduction.

From Materia Medica to Veterinary Pharmacology and Therapeutics. Diversity of Species and Breeds of Interest for Veterinary Medicine. Origin of Interspecies Differences in Modalities of Drug Administration. Origin of Interspecies Differences in Drug Disposition and Drug Action

Topic 2. Species Differences in Pharmacokinetics and Pharmacodynamics. Species Differences in Pharmacokinetics and Pharmacodynamics. Origin of Interspecies Differences in Dosage Regimens. Pour-on Formulations: Dermal or Oral Route of Administration? Interspecies Differences in Drug Disposition in Relation to Digestive Tract Physiology. Kidney Function and Urinary pH. Specificity in Drug Administration and Disposition in Poultry. Species Variability in Drug Administration and Disposition in Fish.

Topic3. Comparative and Veterinary Pharmacogenomics. Comparative and Veterinary Pharmacogenomics. New Technologies for Application to Veterinary Therapeutics. Drug Disposition. Oxidative Enzymes. Conjugative Enzymes. Transporters .

Topic 4. Pharmaceutical Chemistry. Pharmaceutical Chemistry . Organization of quality control of medicinal substances in Ukraine. Chemical methods of analysis of medicinal substances. General identification reactions. General methods of analysis used to characterize the quality of medicinal substances (appearance, solubility, reaction of the medium. Determination of the sensitivity of the reaction). Tests on purity and admissible limits of impurities. Standard solutions. Complete pharmacopeia analysis of purified water.

Topic 5. Drug Delivery Systems in Domestic Animal Species. Drug Delivery Systems in Domestic Animal Species Introduction to Veterinary Drug Delivery: Comparison with Drug Delivery in Human Medicine. Controlled-Release Principles in Veterinary Medicine. Exogenous Regulation: Devices and Formulations. Oral Formulations. Airway Delivery: Pulmonary and Nasal .

Topic 6. Population Medicine and Control of Epidemics. Population Medicine and Control of Epidemics. Helminth Control. Helminth Parasites of Ruminants . Helminth Parasites of Dogs and Cats .Anthelmintic Agents. Anthelmintic Resistance. Mastitis Control in Dairy Cows.

Scientific publications . Scientific research and source of knowledge of scientific publications. Monograph , dissertation, preprint, abstracts and materials of the scientific conference, collection of scientific works.

Scientific nonperiodic edition: book, brochure, scientific collections, journals.

Types of monographs: scientific and practical.

Forms of coverage of the results of scientific work: abstracts, abstracts, abstracts. Types of lectures: informative, extended or consolidated, scientific.

Inventive activity. Research results: new technological processes and aggregates, materials and connections, devices and structures can make the subject of invention or discovery.

Oral transmission of information about scientific results. Report, reports at meetings, seminars, symposiums, conferences. Conversations at personal meetings.

4. STRUCTURE OF EDUCATIONAL DISCIPLINE

Modules	Types of work	Module name	Forms of training
Module 1	Audit work	Module I. Content module Topics in Veterinary Pharmacology. Introduction.	Lectures, problem lecture
			Training
			Consultations, individual lessons
			Control measures (module control, checking)
Module 1	Independent work	Module I. Content module 1. Pre-clinical and clinical research of drugs.	Writing more themes of discipline Individual research work

Table structure of the course

Form Teaching	Normative data						Control of educational work
	Course	Semester	Total (year)	Lecture classes (year)		Independent work (hours)	Modules and control 1 The final one control (offset)
				Lectures (year)	Practical classes (hours)		
Daytime	2	4	1 5 0	36	36	78	4 semesters

5. REQUIREMENTS TO KNOWLEDGE AND THE POSSIBILITIES OF ASSISTANTS (TASKS OF THE TRAINING PROGRAM)

	The content of the goal
	<ul style="list-style-type: none"> Postgraduate student should know: The origins of veterinary pharmacology and therapeutics. Differences in the modalities of drug administration across species. The causes of interspecies differences in drug disposition Veterinary and sanitary measures that promote the efficiency of livestock breeding, methods of diagnosis, treatment and sanitary measures, disinfection, as well as viral, bacterial, highly contagious and exotic animal diseases. Methods of diagnostics, treatment and elimination of viral, bacterial, fungal (including highly contagious and exotic) diseases of cattle, principles of carrying out of veterinary and sanitary measures and improvement measures that promote efficient livestock management. Methods of diagnosis and elimination of viral, bacterial, fungal diseases of small cattle, principles of transplantation of veterinary and sanitary and sanitary measures; principles of preventive antiepidemiological veterinary and sanitary measures in horses; methods of diagnosis, treatment and elimination of viral, bacterial, fungal diseases of horses.
	Postgraduate student must be able to: analyze a scientific problem and find algorithms for its solution; to formulate a hypothesis, to heuristic evaluate, to derive empirically verifiable consequences from it, to compare it with experimental data and practice; apply a systematic method to understand the structure of theories and problems of modern science methodology.
	Post-graduate student must have skills: summarizing literary sources; public speaking; independent work on studying materials of educational discipline; free possession of the conceptual apparatus; operating terminology when performing training tasks and

presentations at seminars, conferences, etc.

6. FORMS OF CONTROL

The specifics of teaching this subject are to use three types of control: current, modular, and final.

Current control includes:

- testing (t) - this form of control allows you to check the preparation of postgraduate students for each class; is conducted on a regular basis on a selective basis;
- training (t) - is conducted in order to develop skills and abilities of postgraduate students in practical direction, formation of modern scientific thinking, ability to take responsible and effective decisions;
- independent work (cf.) - this form of control allows to reveal the ability to clearly, logically and consistently answer the questions posed, the ability to work independently;
- Individual research work of postgraduate students (INDR) - is conducted with the aim of obtaining practical skills and abilities in using and processing scientific sources, writing articles, abstracts, drawing up reports, developing presentation materials, using theoretical and empirical research methods.

Final control is conducted in the form of an exam, which is aimed at testing the knowledge of postgraduate students.

7. THEMATIC PLANNING OF EDUCATIONAL DISCIPLINE

Full-time education

№ п / п	Title of topic	Lectures (hours)	Seminar classes(year)	self work (year)	Total (h)
	Module I. Content module 1.				
	Topic 1. Introduction.	6	6	10	22
	Topic 2. Species Differences in Pharmacokinetics and Pharmacodynamics.	6	6	10	22
	Topic 3. Comparative and Veterinary Pharmacogenomics.	6	6	10	22
	Topic 4. Pharmaceutical chemistry	6	6	15	27
	Topic 5. Drug Delivery Systems in Domestic Animal Species	6	6	15	27
	Topic 6. Population Medicine and Control of Epidemics	6	6	18	30
	Individual research work	-	-		
	Total	36	36	78	150

8. PLANNING OF THEORETICAL COURSE

Full-time education

	Title of the course, lectures and their contents	Number of hours	points	Bibliography
	Module I. Content module 1.			
	Topic 1. Introduction. 1. From Materia Medica to Veterinary Pharmacology and Therapeutics. 2. Diversity of Species and Breeds of Interest for Veterinary Medicine 3. Origin of Interspecies Differences in Modalities of Drug Administration	6	1	Basic summer. [3, c. 4-39; 5, p.6] Add summer [1, c.4-39] [3, p.66-79]

	4 Origin of Interspecies Differences in Drug Disposition and Drug Action			
	Topic 2. Species Differences in Pharmacokinetics and Pharmacodynamics. Origin of Interspecies Differences in Dosage Regimens Pour-on Formulations: Dermal or Oral Route of Administration? Interspecies Differences in Drug Disposition in Relation to Digestive Tract Physiology. Kidney Function and Urinary pH Specificity in Drug Administration and Disposition in Poultry. Species Variability in Drug Administration and Disposition in Fish .	6	1	Basic summer. [3, c. 4-39; 5, p.14] Add summer [1, pp. 99-119] [1, c. 142-179]
	Topic 3. Comparative and Veterinary Pharmacogenomics. New Technologies for Application to Veterinary Therapeutics. Drug Disposition. Oxidative Enzymes. Conjugative Enzymes. Transporters.	6	1	Basic summer. [3, c. 4-39; 5, p.57] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
	Topic 4. Pharmaceutical chemistry 1. Organization of quality control of medicinal substances in Ukraine. 2. Chemical methods of analysis of medicinal substances. General identification reactions. General methods of analysis used to characterize the quality of medicinal substances (appearance, solubility, reaction of the medium. 3. Determination of the sensitivity of the reaction). Tests on purity and admissible limits of impurities. Standard solutions. 4. Complete pharmacopeia analysis of purified water.	6	1	Basic summer. [3, c.4 -39; 5, p.49] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
	Topic 5. Drug Delivery Systems in Domestic Animal Species. 1. Introduction to Veterinary Drug Delivery: Comparison with Drug Delivery in Human Medicine. 2. Controlled-Release Principles in Veterinary Medicine. 3. Exogenous Regulation: Devices and Formulations. 4. Oral Formulations. 5. Airway Delivery: Pulmonary and Nasal.	6	1	Basic summer. [3, c.4-39; 5, p.16] Add summer [1, c. 180-188] [1, c. 189-222]
	Topic 6. Population Medicine and Control of Epidemics. Helminth Control. Helminth Parasites of Ruminants. Helminth Parasites of Dogs and Cats .Anthelmintic	6	1	Basic summer. [3, c.4-39; 5, p.86] Add summer [1, pp. 64-98]

Agents. Anthelmintic Resistance. Mastitis Control in Dairy Cows.			[2, p.75-81]
Total	36	0	

9. Planning of practical work

Full-time education

Title of the course, practical classes and their contents	hours.	points	Bibliography
Module I.			
Topic 1 Preclinical and clinical research of medicinal products. 1. Preclinical research of medicinal products. 2. Clinical research of medicinal products.	6	2	Basic summer. [2, c. 7] Add summer [1, c.4-39; 3, p.66-79]
Topic 2. Pain and Analgesia in Domestic Animals 1. Significance of Pain Evaluation in Animals 2. .Relevance to the Human Experience 3. Analgesic Factors 4. Analgesic Strategies and Techniques	6		Basic summer. [2, c. 8] Add summer [1, pp. 99-119; 1, c.142-179]
Topic 3. New Technologies for Application to Veterinary Therapeutics 1. Major Dynamics Affecting Veterinary Pharmacology 2. Technological Developments. 3. Continued Advances in Computer Technology	6		Basic summer. [2, c. 11] Add summer [1, c.223-271] [2, c.337-369]
Topic 4. Pharmaceutical chemistry 1. Organization of quality control of medicinal substances in Ukraine. 2. Chemical methods of analysis of medicinal substances. General identification reactions. General methods of analysis used to characterize the quality of medicinal substances (appearance, solubility, reaction of the medium. 3. Determination of the sensitivity of the reaction). Tests on purity and admissible limits of impurities. Standard solutions. 4. Complete pharmacopeia analysis of purified water.	6		Basic summer. [2, c. 12] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]
Topic 5. Pharmacy and Pharmaceutical Technology. 1. Basic principles of organization of pharmaceutical activity. State policy and management in the field of pharmaceutical provision of population with veterinary drugs and medicines 2. The pharmacy as an animal health establishment and as an enterprise. The order of opening and operation of veterinary pharmacies and their structural	6		Basic summer. [2, c. 14] Add summer [1, pp.180-188] [1, pp. 89-222]

	subdivisions. 3. The procedure for the circulation of narcotic drugs, psychotropic substances and drugs 4. Organization of the state system of quality control of medicinal products. Laboratory quality control of drugs.			
	Theme 6. Pre-clinical and clinical research of medicinal products 1. Basic principles of pre-clinical research of veterinary medicinal products. 2. Methods of determining the toxicity of new drugs. Pre-clinical studies of drugs in laboratory animals. 3. Requirements for the quality of laboratory animals. 4. Alternative Methods for Determining the Toxicity of Veterinary Medicinal Products Good Laboratory Practice (GLP) when conducting preclinical drug research. 5. Basic rules for working with laboratory animals during preclinical drug research. 6. Physiological and biochemical indices in the evaluation of veterinary medicinal products. Study of acute drug toxicity, its parameters and evaluation of results. 7. Study of chronic toxicity of vet. drugs Study of cumulative properties of drugs .	6	2	Basic summer. [2, c. 16] Add summer [1, pp. 64-98] [2, p.75-81]
	Total	36		

**10. Planning of independent work for postgraduates
Full-time education**

No.	Title of the course, their content	hours	Points	Bibliography
Module I. Content module 1.				
	Topic 1. Interspecies Allometric Scaling. 1. History of Scaling 2. Linear Extrapolation 3. Metabolic Scaling 4. Allometric Scaling	10	5	Basic summer. [1, c. 7] Add summer [1, c.4-39; 3, p.66-79]
	Topic 2. Pain and Analgesia in Domestic Animals 5. Animal Pain 6. .Significance of Pain Evaluation in Animals 7. .Relevance to the Human Experience 8. Analgesic Factors 9. Analgesic Strategies and Techniques 10. Laboratory Animals. 11. Dogs and Cats 12. Horses and Other Equines 13. Cattle, Sheep, Goats and Camels	10	2	Basic summer. [1, c. 15] Add summer [1, pp. 99-119; 1, c. 142-179]
	Topic 3. New Technologies for Application to Veterinary Therapeutics 4. Major Dynamics Affecting Veterinary Pharmacology 5. Technological Developments. 6. Continued Advances in Computer Technology	10	2	Basic summer. [1, c. 21] Add summer [1, c.223-271] [1, c.272-303] [2, c.337-369]

	<p>Topic 4. Genetically Modified Animals and Pharmacological Research</p> <p>1. The Potential of Detailed Animal Genomes</p> <p>2. Use of Transgenic Mice to Reveal Drug Targets</p> <p>3. The Development and Use of Transgenic Farm Animals</p>	15	2	<p>Basic summer. [1, c. 29]</p> <p>Add summer [1, c.223-271]</p> <p>[1, c.272-303]</p> <p>[2, c.337-369]</p>
	<p>Topic 5. Antimicrobial Drug Resistance</p> <p>1. Antimicrobial Mechanisms of Action</p> <p>2. Resistance</p> <p>3. Resistance Mechanisms</p> <p>4. Defining the Term “Resistance</p> <p>5. Monitoring Programmes: Points to Consider.</p>	15	2	<p>Basic summer. [1, c. 35]</p> <p>Add summer [1, pp.180-188]</p> <p>[1, pp. 89-222]</p>
	<p>Topic 6. Drug Residues</p> <p>1. The Food Safety Risk Analysis Framework</p> <p>2. Risk Assessment</p> <p>3. Risk Management</p> <p>4. Risk Communication</p>	18	2	<p>Basic summer. [1, c. 42]</p> <p>Add summer [1, pp. 64-98]</p> <p>[2, p.75-81]</p>
	Individual research work			
	Total	78	15	

11 . The list of issues that are set aside

- 1 Relationship and differences of everyday and scientific knowledge.
- 2 Methods of scientific knowledge.
- 3 Criteria and norms of scientific knowledge.
- 4 Models of analysis of scientific discovery and research.
- 5 Methodology of scientific research and substantiation of its results.
- 6 Scientific problem.
7. Hypothesis as a form of scientific knowledge, its probabilistic nature.
- 8 The essence of the hypothetical-deductive method.
- 9 Method of mathematical hypothesis as a kind of hypothetical-deductive method.
- 10 Abduction and explanatory hypotheses.
- 11 General characteristics and definition of scientific theory.
- 12 Classification of scientific theories.
13. Methodological and heuristic principles of constructing theories.
- 14 Methods and models of scientific explanation.
- 15 Methods and functions of understanding.
16. Methods of prediction, prediction and prediction.
17. Methods of studying economic life.
- 18 Methods of social research.
- 19th Humanitarian research methods.
- 20 Characteristic features of the systematic method of research.
21. Construction and structure of the system.
22. Classification of systems.
23. Self-organization and evolution of systems.
24. Methods and perspectives of system research.
25. System method and modern scientific worldview.
26. Classification of research.
- 27 Stages of the study.
- 28 Development of the program and research plan.
29. Setting the goals and objectives of the study.
- 30 Choice of object and object of research.

31. Logical analysis of key concepts.
32. Formulation and substantiation of the research.
33. Scientific idea.
34. Principles, laws, categories.
35. Empirical, theoretical, logical knowledge.
36. The concept of science and scientific research.
37. Theory, functions of scientific theory.
38. Methodology of economic and social evaluation of fundamental research.
39. Methodology for assessing the effectiveness of R & D.
40. Analysis and use of research results.
41. Methods of collecting economic information (observation method, experiment method).
42. Economic information (primary and secondary).
43. Calculation of R & D expenditures (estimate, structure).
44. Methods of collecting economic information (method of analysis of documents, expert evaluation).
45. Methods of collecting economic information (survey method).
46. Methodological approaches to the calculation of economic efficiency of applied developments.
47. Risk assessment in conducting research.
48. Management and marketing of scientific developments.
49. Terms of comparison of options in the assessment of the economic effect of innovation.
50. Effectiveness of the results of scientific research and its criteria.

12 . Methods of training

1. Methods of learning by the source of knowledge:

1.1. **Verbal** : story , explanation , conversation (heuristic and reproductive), lecture , coaching , work with the book (reading, transcribing, writing out, drawing up a plan, reviewing, annotation, making tables, charts, reference notes, etc.).

1.2. **Visual** : demonstration , illustration , observation.

1.3. **Practical** : laboratory method , practical work , exercise , production-practical methods.

2. Methods of learning by the nature of the logic of knowledge.

2.1. **Analytical** (*essence: a schedule of parts in order to study their essential features*).

2.2. **Methods of synthesis** (*essence: the connection of the analysis of the elements or properties of the object, the phenomenon in one unit*).

2.3. **Inductive method** (*essence: the study of objects or phenomena from individual to general*).

2.4. **Deductive method** (*essence: the study of objects or phenomena from the general to the individual*).

2.5. **Productive method** (*essence: these are conclusions from general to general, from partial to partial, from one to one*).

3. Methods of training by the nature and level of independent mental activity of students.

3.1. **Problem** (*problem-information*)

3.2. **Partial search** (*heuristic*)

3.3. **Research**

3.4. **Reproductive** (*essence: possibility of application of the learned in practice*).

3.5. **Explanatory-demonstrative**

4. Active teaching methods (*for example*) - use of technical means of training, brainstorming, crossword puzzles, contests, debates, round tables, binary classes, business and

role games, talk shows, trainings, use of problem situations, excursions, classes in production, group research, self-knowledge, simulation training (built on simulation of future professional activities), use of teaching and control tests, use of reference notes of lectures, etc.)

5. Interactive Technologies teaching (for example) - the use of multimedia technology, interactive whiteboard and spreadsheets, case - study (method of analysis of specific situations) *and others*.

13. Accounting and control

Management of research work of subjects of scientific activity can not be carried out without such instruments as accounting and control. They are carried out for the purpose of successful and effective implementation of complex target programs and operational plans.

Post-graduate study, department and dean's office are registered and controlled by means of reports, reviews, inspections of documented work, etc. The normative documents on the postgraduate study stipulate that the individual plan of research work for a postgraduate student shall be approved by the academic council of the faculty upon the submission of the department, on which it is fixed. To carry out the research work, a postgraduate student is appointed by a scientific supervisor from among the doctorates or professors. When conducting research on the border of adjacent issues, it is allowed to have two executives and a consultant.

Postgraduate student is obliged to master profound professional knowledge, to acquire skills of independent research work, to have a wide scientific and cultural outlook. Postgraduates may be seconded to scientific centers and leading educational institutions of Ukraine, as well as abroad, for conducting research on the chosen topic.

Post graduate students studying in isolation from production and without separation should work on a single individual plan of research work on the chosen subject of the dissertation.

14. Recommended Books

Basic

1. Arnold D (2004) Risk assessments for substances, without ADI/MRL – an overview, 23–32.
2. JointFAO/WHO Technical Workshop on Residues of Veterinary Drugs without ADI/MRL. 24–26 August 2004, Bangkok, Thailand Cannavan A (2004)
3. Capacity building for veterinary drug residue monitoring programmes in developing countries, 43–7.
4. Joint FAO/WHO Technical Workshop on Residues of Veterinary Drugs without ADI/MRL. 24–26 August 2004, Bangkok, Thailand CCRVDF (2000)
5. Annex to Priority List of veterinary drugs. Report of the twelfth session of the Codex Committee on Residues of Veterinary Drugs in Foods, Washington DC, USA, 28–31 March 2000
6. CCRVDF (2001) Consideration of draft maximum residue limits for veterinary drugs at step 7.
7. 13th Session of the Codex Committee on Residues of Veterinary Drugs in Foods, Charleston, South Carolina, USA, 4–7 December 2007
8. CCRVDF (2009) Draft priority list of veterinary drugs requiring evaluation or re-evaluation by JECFA.
9. Report of the eighteenth session of the Codex Committee on Residues of Veterinary Drugs in Foods, Natal, Brazil, 11–15 May 2009
10. Cerniglia CE, Kotarski S (2005) Approaches in the safety evaluations of veterinary antimicrobial agents in food to determine the effects on the human intestinal microflora.
11. J Vet Pharmacol Ther 28:3–20 Crump KS (2004) A new method for determining daily intakes. Fundam Appl Toxicol 4:854–871
12. Davies L, O'Connor M, Logan S (2003) Chronic intake. In: Hamilton D, Crossley S (eds) Pesticide residues in food and drinking water: human exposure and risks. Wiley Chichester, pp 213–241
13. Ellis R (2004) US FDA regulatory approach for control of residues of veterinary drugs, 49–55.
14. Joint FAO/WHO Technical Workshop on Residues of Veterinary Drugs without ADI/MRL. Bangkok, Thailand, 24–26 August 2004

Extra

1. Ambrose, P. G. (2006). Monte Carlo simulation in the evaluation of susceptibility breakpoints: Predicting the future: Insights from the society of infectious diseases pharmacists. *Pharmacotherapy*, **26**(1), 129–134. <https://doi.org/10.1592/phco.2006.26.1.129>
2. Ambrose, P. G., Bhavnani, S. M., & Owens, R. C. (2003). Clinical pharmacodynamics of quinolones. *Infectious Disease Clinics*, **17**(3), 529–543. [https://doi.org/10.1016/S0891-5520\(03\)00061-8](https://doi.org/10.1016/S0891-5520(03)00061-8)
3. Ambrose, P. G., Bhavnani, S. M., Rubino, C. M., Louie, A., Gumbo, T., Forrest, A., & Drusano, G. L. (2007). Pharmacokinetics-pharmacodynamics of antimicrobial therapy: It's not just for mice anymore. *Clinical Infectious Diseases*, **44**(1), 79–86.
4. EMEA-CVMP (2005) CVMP guideline on injection site residues. EMEA/CVMP/542/03-Final. <http://www.emea.europa.eu/index/indexv1.htm>. Cited 5 May 2009
5. EMEA-CVMP (2008a) Reflection paper on the new approach developed by JECFA for exposure and MRL assessment of residues of VMP. EMEA/CVMP/SWP/138366/2008-Rev. 1
6. EMEA-CVMP (2008b) Reflection paper on injection site residues: Considerations for risk assessment and residue surveillance. EMEA/CVMP/520190/2007-Consultation European Commission (2003) Rules governing medicinal products in the European Union. Vol. 8:
7. Notice to applicants and note for guidance. Establishment of maximum residue limits (MRLs) for residues of veterinary medicinal products in foodstuffs of animal origin. Final revision 1. <http://pharmacos.eudra.org/F2/home.html>. Cited 5 May 2009
8. FAO (2006) Food safety risk analysis. A guide for national food safety authorities. FAO Food and Nutrition Paper 87
9. FAO–WHO (1996) Codex Alimentarius Volume 3, Residues of veterinary drugs in foods. Joint FAO/WHO Food Standards Programme

Information resources

library, library reading room, Internet .