



UNIVERSITY OF AGRONOMIC SCIENCES AND VETERINARY
MEDICINE
FACULTY OF VETERINARY MEDICINE
Splaiul Independen ei 105, sector 5, 050097, BUCHAREST, ROMANIA
Tel.: + + 4021 318 0469; Fax: + + 40 21 318 0498
www.fmvb.ro, e-mail: info@fmvb.ro



DEPARTMENT: PRECLINICAL SCIENCES

DISCIPLINE: PHARMACOLOGY

Course responsible teacher: Professor Maria Crivineanu, DVM PhD / Alina Drăghici, DVM PhD

LICENSE EXAM QUESTIONS

1. Choose the wrong answer.
Antibiotics may have :
 - a. antibacterial activity
 - b. antifungal activity
 - c. anti yeasts activity
 - d. antiviral activity
 - e. antiprotozoal activity
2. Choose from the options below an antibiotic with bactericidal action.
 - a. Tetracycline
 - b. Gentamicin
 - c. Erythromycin
 - d. Azithromycin
 - e. Clindamycin
3. Choose from the options below the antibiotic with bacteriostatic action.
 - a. Neomycin
 - b. Ampicillin
 - c. Oxacillin
 - d. Doxycycline
 - e. Cefazolin
4. Choose from the quinolones below the one that is used only in veterinary medicine:
 - a. Norfloxacin
 - b. Enrofloxacin
 - c. Ciprofloxacin
 - d. Enoxacin
 - e. Gemifloxacin
5. Choose the wrong answer:
 - a. Vancomycin is a glycopeptide with narrow spectrum of action

- b. Vancomycin is effective in infections with Methicillin-resistant Staphylococcus aureus
 - c. Vancomycin has bactericidal action.
 - d. The most important side effects of vancomycin are nephrotoxicity and ototoxicity
 - e. Vancomycin is considered “Last resort” drug in veterinary medicine for the treatment of infections with Staphylococcus aureus
6. Deafness is the main undesirable side effect after prolonged use of:
- a. Tetracycline
 - b. Penicillin
 - c. Streptomycin
 - d. Gentamicin
 - e. Cephalosporin
7. Choose an antibiotic that can be effective in treating infectious meningitis:
- a. Ampicillin
 - b. Amoxicillin
 - c. Rifampicin
 - d. Tetracycline
 - e. Chloramphenicol
8. Choose from below the substance that is effective against anaerobic bacteria, but also against some protozoa:
- a. Fluoroquinolones
 - b. Chloramphenicol
 - c. Cephalosporins
 - d. Polymyxins
 - e. Metronidazole
9. Choose the wrong answer: Chloramphenicol is:
- a. bacteriostatic
 - b. rarely used in humans
 - c. hematotoxic
 - d. widely used in animals of economic interest
 - e. forbidden in pets
10. Which of the antibiotics below has the broadest spectrum of action?
- a. Polymyxin B
 - b. Cefazolin
 - c. Tetracycline
 - d. Oxacillin
 - e. Polymyxin E
11. Gram negative bacteria have natural resistance to:
- a. Penicillins
 - b. Aminoglycosides
 - c. Fluoroquinolones
 - d. All answers are correct
 - e. No answer is correct.
12. From the examples below choose the correct statement:
- a. Florfenicol is a „second line antibiotic”
 - b. Florfenicol is an antibiotic used seldom in humans

- c. Florfenicol is an antibiotic used only in humans
 - d. Florfenicol is an antibiotic used seldom in animals
 - e. Florfenicol is antibiotic used only in animals
13. Choose from the options below an antibiotic that belongs to Category 2 (antibiotics from the „second line“):
- a. Enrofloxacin
 - b. Erytromycin
 - c. Clindamycin
 - d. Streptomycin
 - e. Polymixin B
14. Choose from the options below: According to the recommendation of use, Vancomycin belongs to:
- a. First category of antibiotics
 - b. Antibiotics from the „second line“
 - c. Second category of antibiotics
 - d. Third category of antibiotics
 - e. Antibiotics from the „first line“
15. „These reserved antimicrobials should be used only when there are no alternative antimicrobials authorized for the respective target species and indication“, is a statement that refers to:
- a. Fluoroquinolones
 - b. Cephalosporins
 - c. Fluoroquinolones and Cephalosporins
 - d. all Fluoroquinolones and Cephalosporins from the 3rd and 4th generation
 - e. only Fluoroquinolones and Cephalosporins from the 3rd and 4th generation that reach in the systemic circulation
16. „For antibiotics whenever possible, individual treatment of the affected animal(s) (e.g. injectable treatments) should be preferred to group or mass treatment“ is a recommendation made by EMA to reduce the risk of:
- a. Overdosing
 - b. Underdosing
 - c. Intolerance to the medicinal product
 - d. Resistance to the active substance
 - e. Toxicity
17. When should we not wait for the results of sensitivity tests to administer an antibiotic?
- a. Never
 - b. When we suspect an etiological agent sensitive to the antibiotic that we intend to use
 - c. If we use a broad-spectrum antibiotic
 - d. When we have an emergency
 - e. If we use the same antibiotic used at another farm where there were animals with similar clinical signs
18. Choose from the below options and complete the statement: “..... should be reserved for the treatment of clinical conditions which have responded poorly, or are expected to respond poorly, to other classes of antimicrobials.”
- a. Vancomycin
 - b. Enrofloxacin

- c. Tetracycline
 - d. Rifamycins
 - e. Cefazolin
19. In relation to the current tendency to minimize the risk of developing and spreading antibiotic resistance, choose from the options below the wrong requirement:
- a. The prescription and dispensation of antimicrobials must be justified by a veterinary diagnosis in accordance with the current status of scientific knowledge.
 - b. Antimicrobial susceptibility testing should be carried out to determine the choice of antimicrobial
 - c. Antibiotics will be used prophylactically whenever is considered necessary
 - d. A narrow-spectrum antimicrobial should always be the first choice
 - e. Administering medication to an entire herd or flock should be avoided whenever possible.
20. Choose the wrong statement:
- a. Antimicrobial metaphylaxis should be prescribed only when there is a real need for treatment
 - b. The veterinarian should justify and document the treatment on the basis of clinical findings on the development of a disease in a herd or flock
 - c. Antimicrobial metaphylaxis should never be used in place of good management practices
 - d. Metaphylaxis can be applied in all categories of animals
 - e. Metaphylaxis involves the administration of antibiotics to contact animals, without clinical signs of disease
21. Critically important antibiotics
- a. can not be used in animals
 - b. can not be used in pets
 - c. can not be used in horses
 - d. can not be used in food producing animals
 - e. can be used only in young animals in order to increase the chances of survival
22. Currently in the treatment of bacterial meningitis it is recommended to use cephalosporins from the:
- a. 1st generation
 - b. 2nd generation
 - c. 3rd generation
 - d. 4th generation
 - e. 5th generation
23. Which of the following antibiotics work by inhibiting nucleic acid synthesis?
- a. Enrofloxacin
 - b. Gentamicin
 - c. Penicillin V
 - d. Clindamycin
 - e. Polymyxin B
24. For the treatment of Lyme disease it is recommended to use cephalosporins from the:
- a. 1st generation
 - b. 2nd generation
 - c. 3rd generation
 - d. 4th generation
 - e. 5th generation

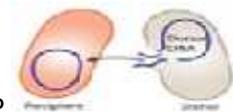
25. Inhibition of protein synthesis is not the mechanism of action for:
- Aminoglycosides
 - Tetracyclines
 - Macrolides
 - Amphenicols
 - Beta lactam antibiotics
26. Which of the following antibiotics works by inhibiting cell wall synthesis?
- Enrofloxacin
 - Gentamicin
 - Penicillin V
 - Clindamycin
 - Polymyxin B
27. Cephalosporins are bactericidal and they act :
- by inhibiting the bacteria cell wall synthesis
 - as protein synthesis inhibitor
 - as an anti 50-ribosome subunit
 - as a DNA synthesis inhibitor
 - no answer is correct
28. An antibiotic will have a longer duration of action if:
- C_{max} after administration is higher
 - if the percentage of active substance molecules linked to plasma proteins is higher
 - if the percentage of active substance molecules linked to plasma proteins is lower
 - C_{max} after administration is lower
 - no answer is correct.
29. MIC represents:
- the maximum safe plasma concentration of an administered antibiotic
 - the minimum safe plasma concentration of an administered antibiotic
 - the minimum plasma concentration of an antibiotic at which the development of a microorganism is inhibited
 - the maximum plasma concentration of an antibiotic at which the development of a microorganism is inhibited
 - no answer is correct.
30. Which is the most important side effect of antibiotics in the GI tract:
- suppression of normal flora
 - toxic effects
 - the intensification of the peristalsis
 - the decrease of the peristalsis
 - antibiotics have no side effects on the GI tract
31. Which of the following practices increases the risk of developing antibiotic resistance?
- exceeding the recommended dose
 - underdosing
 - administration of an antibiotic for more than 10 days
 - extrapolation of the administration to other species than the target
 - no response is correct

32. What kind of resistance is that which is predictable and chromosomally mediated?
- acquired resistance
 - natural resistance
 - resistance to a single antibiotic
 - multiple resistance
 - cross-resistance
33. Extrachromosomal mutations - are very often (90%). This type of mechanism of resistance to antibiotics consists in transmission of plasmids from one bacteria to another by:
- conjugation
 - phage transduction
 - transformation
 - a+b+c
 - a+c

34. Which type of resistance to antibiotics corresponds to the image below?



- extrachromosomal mutations by conjugation
- extrachromosomal mutations by phage transduction
- extrachromosomal mutations by transformation
- natural
- chromosomal transfer



35. Which type of resistance to antibiotics corresponds to the image below?
- extrachromosomal mutations by conjugation
 - extrachromosomal mutations by phage transduction
 - extrachromosomal mutations by transformation
 - natural
 - chromosomal transfer

36. Which type of resistance to antibiotics corresponds to the image below?



- extrachromosomal mutations by conjugation
 - extrachromosomal mutations by phage transduction
 - extrachromosomal mutations by transformation
 - natural
 - chromosomal transfer
37. In emergencies:
- we can use a broad-spectrum antibiotic
 - we choose an antibiotic with a narrow spectrum of action
 - we wait the results of the laboratory tests
 - we use the antibiotic we have at hand until the laboratory results arrive
 - no answer is correct

38. Choose the exception

How can healthcare professionals help prevent the spread of antibiotic resistance?

- a. prescribing an antibiotic only when it is likely to benefit the patient
- b. prescribing an antibiotic that targets the bacteria that is most likely causing the patient's illness when an antibiotic is likely to provide benefit
- c. encouraging patients to use the antibiotic in the line of the package leaflet
- d. collaborating with each other, office staff, and patients to promote appropriate antibiotic use
- e. encouraging patients to use the antibiotics for prevention

39. It is contraindicated to associate an immunosuppressive with:

- a. NSAIDs
- b. glucocorticoids
- c. sulfonamides
- d. antibiotics
- e. antivirals

40. Classical NSAID:

- a. inhibit Cox1
- b. inhibit Cox 2
- c. inhibit Cox 1 and Cox2
- d. inhibit Cox1 and stimulate Cox2
- e. stimulate Cox1 and inhibit Cox2

41. Cyclooxygenase 2 could be found in:

- a. normal tissues
- b. inflamed tissues;
- c. both types of tissue
- d. none of the 2 types of tissues
- e. in greater quantity in inflamed tissue and in smaller quantities in normal tissue

42. Ketoprofen works by inhibiting synthesis of:

- a. PGI₂
- b. PGE₂
- c. PGF₂α
- d. a+b+c
- e. b + c

43. Choose the exception: The general features of NSAID PK are:

- a. usually good bioavailability from oral, intramuscular and subcutaneous administration routes
- b. a lower degree of binding to plasma protein
- c. low volumes of distribution
- d. crosses the placenta
- e. most metabolites are eliminated through urine

44. Which of the following effects are not specific for NSAID:

- a. a strong anti-inflammatory
- b. analgesic
- c. antipyretic
- d. antiemetic
- e. prevent aggregation of blood platelets

45. One of the most common side effect to NSAIDs is:
- liver failure
 - kidney failure
 - GI disorders
 - skin reactions
 - none
46. Administration of an NSAID increases the risk of hypoglycaemia when is associated with:
- oxicams
 - another NSAID
 - furosemide
 - acepromazine
 - sulfonamides
47. From the list below choose the best analgesic:
- acetylsalicylic acid
 - ibuprofen
 - metamizole
 - carprofen
 - ketoprofen
48. Agranulocytosis is one of the secondary reactions of:
- acetylsalicylic acid
 - ibuprofen
 - metamizole
 - carprofen
 - ketoprofen
49. The anti-inflammatory that can cause liver necrosis due to prolonged use is:
- paracetamol
 - diclofenac
 - carprofen
 - ketoprofen
 - indomethacin
50. The analgesic of first intention in young animals and in pregnant animals is:
- ketoprofen
 - carprofen
 - ibuprofen
 - paracetamol
 - metamizole
51. Choose the correct and complete answer: Ketoprofen 100 mg/ml is an:
- anti-inflammatory medicinal product
 - NSAID
 - antibiotic
 - corticosteroid
 - anti-inflammatory product among classic NSAIDs
52. Which of the following active substances should not be used in the treatment of inflammation in cats:

- a. aspirin
 - b. carprofen
 - c. ketoprofen
 - d. piroxicam
 - e. all substances are safe for cats
53. Which of the following is an anti-inflammatory active substance that can selectively inhibit Cox2?
- a. meloxicam
 - b. nimesulide
 - c. celecoxib
 - d. all of them
 - e. a+b
54. Choose the wrong answer: Glucocorticoids inhibit inflammation, by:
- a. decreasing primary and secondary response of macrophages
 - b. inhibiting the activation of component C3 of the complement
 - c. inhibiting the production of collagenase
 - d. increasing the release of histamine
 - e. inhibiting the production of elastase and cytokines
55. Which of the following substances does not fit with the others in the group of inhibitors of cyclooxygenase-2 ?
- a. meloxicam
 - b. nimesulide
 - c. robenacoxib
 - d. celecoxib
 - e. none
56. Choose the wrong answer: Trocoxil 95 mg chewable tablets is a medicinal product:
- a. that contain celecoxib
 - b. indicated for the treatment of pain
 - c. indicated for the treatment of inflammation associated with degenerative joint disease
 - d. for dogs
 - e. for cases where continuous treatment exceed one month
57. Thrombostop is a drug indicated for the treatment and prophylaxis of thromboembolic disease. The association with NSAID is:
- a. recommended
 - b. not recommended
 - c. contraindicated
 - d. there are no reactions between the 2 active substances
 - e. no answer is correct
58. Choose the wrong answer: Flunixin is:
- a. a corticosteroid
 - b. a NSAID
 - c. an analgesic,
 - d. an antinarcotic,
 - e. an antiendotoxic

59. In order to reduce the risk of ulcer in dogs in case of long-term administration of anti-inflammatory drugs, it is preferable to use:
- oral solutions with paracetamol
 - suppository with diclofenac
 - tablets with mavacoxib
 - tablets with carprodil
 - none
60. Glucocorticoids are involved in:
- carbohydrate metabolism
 - protein metabolism
 - water retention
 - salt retention
 - all answers are correct
61. Choose the correct answer: Other effect of glucocorticoids, besides anti-inflammatory, is:
- antiallergic action
 - decreases the synthesis of lymphocytes by the thymus, lymph nodes, spleen
 - increases hemoglobin concentration
 - action on digestive system by stimulating gastric secretion of pepsin and hydrochloric acid
 - all answers are correct
62. Choose from the options below a short-acting glucocorticoid:
- hydrocortisone
 - prednisone
 - methylprednisolone
 - dexamethasone
 - triamcinolone
63. Choose from the options below a long-acting glucocorticoid:
- hydrocortisone
 - prednisone
 - methylprednisolone
 - dexamethasone
 - triamcinolone
64. Choose from below what is the most important side reaction following glucocorticoid administration:
- steroid diabetes
 - fluid retention
 - decreases the ability of the body's defense
 - a+b+c
 - none
65. Choose from the following examples a glucocorticoid obtained from natural sources:
- prednisone
 - prednisolone
 - hydrocortisone
 - methylprednisolone
 - paramethasone.

66. In animals with thrombocytopenia it is contraindicated to administer:
- Cephalosporins
 - Fluoroquinolones
 - Macrolides
 - NSAIDs
 - no answer is correct
67. Choose the wrong answer: Ketofen 10% solution for injection is a product that contains ketaprofen and it is indicated for:
- treatment of infectious mastitis of the dry cows
 - the alleviation of inflammation and pain associated with musculoskeletal disorders
 - the alleviation of visceral pain associated with colic
 - reduction of the pyrexia and distress associated with bacterial respiratory disease when used in conjunction with antimicrobial therapy as appropriate
 - reduction of pain associated with lameness
68. Easotic Ear Drops Suspension for Dogs - Multidose is a veterinary medicinal product that contains the following active substances: hydrocortisone aceponate, miconazole nitrate and gentamicin sulphate. In what kind of condition can the product be ineffective?
- acute otitis externa
 - acute exacerbation of recurrent otitis externa associated with bacteria
 - acute otitis caused by *Malassezia pachydermatis*
 - acute otitis caused by *Otodectes cynotis*
 - acute otitis caused by *Candida albicans*
69. Betamethasone valerate is a potent synthetic corticosteroid (dexamethasone-analogue) used for topical application. It is indicated for the treatment of:
- pyoderma caused *Staphylococcus aureus*
 - intertrigo (allergic contact dermatitis)
 - fungal dermatitis
 - viral infection
 - demodicosis
70. Mastiplan LC, 300mg/20mg (Cefapirin/Prednisolone), intramammary suspension for lactating cows is a medicinal product used for the treatment of clinical mastitis in lactating dairy cows. Taking into account the indication and the active substances from the product, identify the type of etiological agent that cannot be affected by the product.
- Staphylococcus aureus*
 - Escherichia coli*
 - Fusobacterium necrophorum*
 - Streptococcus agalactiae*
 - Streptococcus dysgalactiae*
71. A dog infected with *Microsporum canis* can be treated with:
- Imaverol 100 mg / ml Concentrate for Cutaneous Emulsion, a product containing enilconazole
 - Fungizone 10 %, oral solution, a product containing amphotericin B
 - Macmiror ointment, a product containing nistatin
 - any of the above products
 - none of the above products
72. Which of the following species has a higher sensitivity to Griseofulvin?

- a. cattle
 - b. sheep
 - c. dog
 - d. cat
 - e. none
73. Griseofulvine is not effective in the treatment of:
- a. infection with *Trichophyton verrucosum*,
 - b. infection with *Microsporum canis*
 - c. infection with *Microsporum gypseum*
 - d. infection with *Malassezia pachydermatis*
 - e. ringworms
74. The mechanism of action of ketoconazole consists of:
- a. disruption of multiplication of the fungi
 - b. inhibition of the synthesis of ergosterol
 - c. increasing the permeability of fungal cell membrane as a result of the modification of the ergosterol structure
 - d. modification of the nucleic acid synthesis process
 - e. another mechanism
75. Amfotericin B acts by:
- a. disruption of multiplication of the fungi
 - b. inhibition of the synthesis of ergosterol
 - c. increasing the permeability of fungal cell membrane as a result of the modification of the ergosterol structure
 - d. the modification of the nucleic acid synthesis process
 - e. another mechanism
76. Identify the "intruder" of the group:
- a. Fluconazol
 - b. Itraconazol
 - c. Clotrimazol
 - d. Terbinafine
 - e. Thiabendazol
77. To which groups of active substances do Fluconazol, Itraconazol and Clotrimazol belong?
- a. Polyenes
 - b. Other antibiotics
 - c. Allylamine derivates
 - d. Azole
 - e. None
78. Which one from below is not correct when we speak of an ideal anthelmintic? An antihelmintic should have:
- a. high therapeutic index
 - b. a narrow/targeted spectrum of activity
 - c. a short withdrawal period
 - d. minimum/no side effects
 - e. accessible price

79. The mechanism of action of benzimidazoles consists of:
- bind to beta-tubulin and so they compromise the cytoskeleton
 - inhib the mitochondrial phosphorylation
 - inhibitors of glycolysis
 - GABA agonists
 - inhibitors of acetylcholinesterase
80. Choose from the substances below which one is highly effective against immature *Fasciola hepatica* in the liver parenchyma and against the mature stage in the bile ducts:
- albendazole
 - triclabendazole
 - fenbendazole
 - oxibendazole
 - thiabendazole
81. Choose from the following substances the one that could be effective against adult flukes, tapeworms and roundworms:
- albendazole
 - febantel
 - fenbendazole
 - flubendazole
 - mebendazole
82. Which active substance from the examples below is effective only against roundworms?
- triclabendazole
 - mebendazole
 - oxfendazole
 - ricobendazole
 - oxibendazole
83. If we use Levamisol in a cow, we will not have results if the animal is infected with:
- Thelazia* spp.
 - Dicrocoelium lanceolatum*
 - Ostertagia ostertagi*
 - Haemoncus contortus*
 - Dictyocaulus viviparus*
84. The mechanism of action of levamisol consists of:
- inhibition of nematode lymph nodes with paralysis of the musculature
 - disturbance of the energy metabolism of the parasite
 - interruption of the reproductive cycle
 - degradation of the integument of the parasite
 - the mechanism of action is unknown
85. In which species Levamisol is rarely used as antiparasitic active substance but as a immune stimulant:
- cattle
 - sheep
 - horses
 - dogs
 - cats

86. Which of the following active substances is most commonly found in combination with pyrantel for broadening the range of action in dogs?
- morantel
 - actamer
 - praziquantel
 - nitroscanate
 - niclosamid
87. Choose from the following active substance the one that is effective in the treatment of Fasciolosis in sheep:
- fenbendazole
 - oxibendazole
 - clorsulon
 - morantel
 - levamisole
88. Amitraz is an active substance that belongs to the group of:
- organochlorines
 - organophosphorics
 - formamidines
 - neonicotinoids
 - synthetic pyrethroids
89. Choose from the pyrethroids below which one is used in the treatment of varoosis in bees:
- deltamethrin
 - flumethrin
 - permethrin
 - tetramethrin
 - none
90. Which of the following substances is not part of the group of Isoxazolines:
- Afoxolaner
 - Fluralaner
 - Fipronil
 - Sarolaner
 - Lotilaner
91. Frontline contains fipronil. It is effective against:
- fleas and ticks
 - fleas, ticks and mange
 - ticks
 - fleas
 - mange
92. Diflubenzuron is part of the group:
- amidines
 - synthetic pyrethroids
 - benzoylureas
 - macrocyclic lactones
 - neonicotinoids
93. Neonicotinoids are not efficient against:

- a. fleas
 - b. flies
 - c. lice
 - d. a+b+c
 - e. mites
94. In the veterinary pharmacies there are products for dogs that contain fipronil and methoprene. These products are not efficient against?
- a. fleas
 - b. flies
 - c. lice
 - d. a+b+c
 - e. mites
95. An endectocide is an active substance efficient against:
- a. internal parasites
 - b. external parasites
 - c. internal and external parasites
 - d. parasites from the GI tract
 - e. parasites from respiratory tract
96. Choose the correct answer: Phenylpyrazoles
- a. are inhibitors of GABA
 - b. are insecticide and acaricide
 - c. are effective against fleas, flies, ticks, lice and mites
 - d. a+b+c
 - e. a+c
97. Which bacterial process(es) do quinolones and fluoroquinolones inhibit?
- a. DNA synthesis
 - b. DNA synthesis and RNA synthesis
 - c. Quinolones and fluoroquinolones do not affect nucleic acid synthesis
 - d. RNA synthesis
 - e. Quinolones and fluoroquinolones inhibit the protein synthesis
98. Natural penicillin that can be administered by oral route is:
- a. ampicillin
 - b. methicillin
 - c. amoxicillin
 - d. phenoxymethylpenicillin
 - e. a + b + c
99. Rifampicin exhibits the following antibacterial mechanism of action:
- a. inhibits bacterial RNA synthesis
 - b. inhibits protein synthesis
 - c. inhibits bacterial wall synthesis
 - d. substitution of paraaminobenzoic acid
 - e. interferes with the bacterial membrane
100. Aminoglycosides diffuse well into the following biological liquids, with one exception:
- a. pleural fluid
 - b. pericardial fluid

- c. ascitic fluid
- d. cerebrospinal fluid
- e. synovial fluid

BIBLIOGRAPHY

1. **Jim E. Riviere, Mark G. Papich**, (2017) -*Veterinary Pharmacology and Therapeutics -Tenth Edition*, Ed John Wiley& Sons
2. Note de curs.