Questionnaire

FOR THE EXAM OF VETERINARY MICROBIOLOGY

I. GENERAL PART:

1. Place of microbiology in veterinary medicine. History of microbiology - stages and achievements.
2. Taxonomy of bacteria - principles, prokaryotes and eukaryotes arheobakteria, determiner of Bergey.
3. Morphology of bacteria - basic structures.
4. Morphology of bacteria - additional structures, durable forms.
5. Methods for assaying the motility of the bacteria. Bacterial cytochemistry - paints, color solutions, mordants
6. Techniques of preparation of microscope slides. Staining of bacteria - simple methods (by Loeffler and Pfeiffer) and complex methods - by Gram, Cyl - Nilzen and others.
7. Reproduction, distribution and significance of bacteria.
8. Culturing the bacteria. Culture media - purpose, requirements, composition, pH, sterilization. Types of nutrient media.
9. Seeding and reseeding in liquid and on solid culture media. Isolation of pure cultures - general and specific methods.
10. Periodical cultivation - aerobic and anaerobic, laboratory and industrial. Growth phases.
11. Metabolism in bacteria - constructive and energy. Types of feeding and breathing.
12. Bacterial enzymes - nature, characteristic, classifications.
13. Genetics of bacteria - relation with their evolution; genotype and phenotype, modification, and recombination.
14. Genetic engineering. Selection of the mutant and recombinant forms.
15. Effects of physical and chemical factors on the bacteria.
16. Sterilisation and disinfection - nature, methods.
17. Bacteriophages - theoretical and practical significance. Bdellovibrios.
18. Ethiotropic therapy of bacterioses - antibiotics and chemotherapeutics.
19. Laboratory determination of the sensitivity of bacteria to antimicrobial agents. Method of Bauer and Kirby. Determination of the MIC and MBC. Combined action of antimicrobials.
20. Bacterial infections - basic concepts.
21. Immunity in bacterioses - basic concepts.
22. Specific prophylaxis and therapy of bacterial infections - vaccines, antisera and immunoglobulins.
23. Morphology, physiology, reproduction, distribution and significance of pathogenic fungi.

II. SPECIAL PART:

1. Gram-positive cocci. Fam. *Micrococcaceae*. Genus *Staphylococcus*.
2. Gram-positive cocci. Fam. *Streptococcaceae*. Genus *Streptococcus*.
3. Gram-negative aerobic bacteria. Genus *Burkholderia*. *B. mallei*.
4. Genus *Pseudomonas, P. aeruginosa. Burkholderia pseudomallei*.
5. Genus *Brucella* – characteristic, morphology, cultivation, antigenic structure, differentiation of brucella species, pathogenicity, diagnostics.
6. Genus *Francisella*. Causative agent of tularemia. Genus *Bordetella*.
7. Fam. *Enterobactericeae* – characteristics, pathogenicity. Genus *Proteus, Providencia, Morganella, KES.*

8. Intestinal bacteria. Genus *Escherichia* – characteristic. Morphology, cultural and biochemical characteristics, antigenic structure, pathogenicity, microbiological diagnosis, specific prophylaxis and therapy.
9. Genus *Salmonella* – characteristic morphology, cultivation, biochemical characteristics, antigenic structure, pathogenicity, microbiological diagnosis.
10. Genus *Yersinia* – *Y. pestis, Y. pseudotuberculosis, Y. enterocolitica*.
11. Genus *Pasteurella* – characteristic, morphology, cultivation, biochemical references, antigenic structure, pathogenicity, microbiological diagnosis, specific prevention and therapy. Characteristics of families *Haemophylus* and *Actinobacillus*.
12. Gram-negative anaerobic bacteria. *Dichelobacter nodosus, Fusobacterium necrophorum*.
13. Order *Spirochaetales*. Pathogenic leptospires - common characteristic, morphology, cultivation, pathogenicity, microbiological diagnosis, specific prophylaxis and therapy.
14. Genus *Brachyspira*. Genus *Borrelia*.
15. Aerobic vibroidal Gram-negative bacteria. Genus *Campylobacter*.
16. Spore-forming bacteria. Genus *Bacillus*. Causative agent of anthrax - characteristic, morphology, sporulation, cultivation, sustainability, antigenic structure, pathogenicity, microbiological diagnosis, differentiation from non-pathogenic bacilli, specific prophylaxis and therapy.
17. Genus *Clostridium* – Causative agent of black leg, agents of malignant edema.
18. *Clostridium tetani, Clostridium botulinum*.
19. Fam. *Lactobacillaceae*. Causative agent of rhuseopathia in swine.
20. *Listeria monocytogenes*.
21. Pathogenic mycobacteria. Causes of tuberculosis and paratuberculosis.
22. Order *Rickettsiales* – general characteristics. Causative agents of Q fever, of ehrlichiosis in dogs, heartwater and conjunctivitis in ruminants.
23. Order *Chlamydiales* – Common characteristic, morphology and sustainability, cultivation, pathogenicity, microbiological diagnosis, specific prophylaxis and therapy.
24. Pathogenic mycoplasmas. General characteristics of genus *Mycoplasma, M. mycoides, M. agalactiae, M. gallisepticum*.
25. Causative agents of dermatomycoses.
26. Causative agents of subcutaneous and deep mycoses.
27. Causative agents of mycotoxicoses.

Literature

Notes from the lectures and practicals.

Essentials of veterinary microbiology, G.R. Carter, M.M. Chengappa, A.W. Roberts, Williams and Wilkins, 1995.

Essentials of veterinary bacteriology and mycology, G.R. Carter, Michigan State University Press, 1982.

Murray, P. R., E. J. Baron, J. H. Jorgensen, M. A. Pfaller, R. H. Yolken. Mannual of Clinical Microbiology. 8th Edition, ASM Press, Washington, D. C., 1670-1675, 2003.

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