Examples of exam questions ECVPT examination

Part 1 : General multiple-choice questions

It possible that all answers are technically correct, but there is only one answer that fits best.

Choose that answer. No point will be deducted in case of a false answer.

Please find below ten examples of multiple-choice questions. The exam consists of more MCQ's. The answer key can be found at the end of this document.

1. Which one of the following statements is most correct for aminoglycosides such as gentamicin?
    a. It kills bacteria in a time-dependent fashion
    b. It has a large volume of distribution
    c. It disrupts cell wall synthesis
    d. It is synergistic to combine aminoglycosides with penicillins

2. Which one of the following agents has the narrowest spectrum of activity?
    a. Fenbendazole
    b. Pyrantel
    c. Eprinomectin
    d. Praziquantel

3. Which one of the following agents is best absorbed after oral administration?
    a. Penicillin G
    b. Polymyxin B
    c. Erythromycin
    d. Neomycin

4. Which of the following statements regarding to Toll-like receptors (TLRs) is false?
    a. TLRs recognise not only bacteria, but also viruses, fungi and spirochetes
    b. TLRs are all membrane spanning receptors with an extracellular, transmembrane and intracellular region
    c. TLR4 recognises lipopolysaccharide (LPS)
    d. TLR agonists can be used as adjuvants in vaccines to enhance the immune response

5. Which of the following statements regarding β_2-agonists is false?
    a. The β_2-receptor is linked to the G_s protein, but not to the G_i protein
    b. The β_2-receptor is a G-protein coupled receptor
    c. β_2-agonists increase the intracellular concentration of cAMP through activation of adenylate cyclase
    d. The β_2-agonist clenbuterol has anti-inflammatory properties

6. After intravenous administration of a drug at a dose of 100 mg, an area under the curve of plasma concentration (AUC) of 350 mg/l*h was determined. After oral administration at a dose of 200 mg, the AUC was 175 mg/l*h. This means that:
    a. F=2
    b. F=1
    c. F=0.5
    d. F=0.25

7. What is most correct regarding control of drug residues in honey?
    a. MRLs have been established in honey
    b. For some substances no MRL is required
    c. MRLs for honey are not required
    d. For control purposes a level of twice the limit of quantification is used

8. Which of the following answers best describes how the highly reactive intermediate arises from aflatoxin B1:
    a. glucuronyltransferase
    b. hydroxylase
    c. oxidase
    d. amidase

9. Which of the following rules best describes the first step in the prescribing cascade if no veterinary medicinal product for that indication exists in a member state of the European Union?
    a. An authorised human medicine
    b. An authorized veterinary medicine from another European member state
    c. An authorized veterinary medicine for another species in that member state
    d. An extemporaneously prepared product

10. Which best answer describes why colistin has received recent media attention?
    a. A new resistance mechanism has been found
    b. It has been used in human and veterinary medicine for more than 50 years
    c. It is a last resort antimicrobial in human medicine
    d. It shows no cross-resistance to any antimicrobial used in human medicine

Part 1 : Certifying multiple-choice questions

Please find below six examples of certifying multiple-choice questions. The exam consists of more certifying multiple-choice questions.

1. Detailed study of the pharmacokinetics of maropitant showed that systemic clearance following intravenous administration was 970, 995 and 533 mL/h.kg at doses of 1, 2 and 8 mg/kg, respectively. Non-proportional kinetics were observed for orally administered maropitant at dose rates ranging from 2 to 16 mg/kg. Dose proportionality was demonstrated at higher doses (20-50 mg/kg). Linearity was demonstrated following subcutaneous administration at 0.5, 1 and 2 mg/kg. These observations are best explained by?

a. A single hepatic enzyme pathway which became saturated at dose rates exceeding 2 mg/kg
b. Plasma protein binding which has a high affinity, low capacity site that is saturated if the dose rate exceeds 2 mg/kg
c. The presence of both a high affinity, low capacity metabolic pathway in the liver that is saturated if the dose rate exceeds 2 mg/kg and a low affinity, high capacity metabolic pathway that starts to contribute to the metabolic clearance significantly at dose rates exceeding 8 mg/kg
d. Two sites for plasma protein binding, one of which is a high affinity, low capacity system that is saturated if the dose rate exceeds 2 mg/kg and a low affinity, high capacity binding site that starts binding maropitant at the plasma concentrations yielded by dose rates exceeding 8 mg/kg

2: When oxytetracycline and carprofen are co-administered to calves at therapeutic doses:

a. there is displacement of carprofen from the plasma protein binding site and thus the dose of carprofen has to be lowered by 50%
b. the pharmacokinetic properties of carprofen and oxytetracycline are mainly unaltered and thus no dose adjustment is needed
c. oxytetracycline is eliminated much faster and thus has to be given twice daily
d. carprofen displaces oxytetracycline from the plasma protein binding site increasing free oxytetracycline and thus the dose of oxytetracycline has to be lowered by 50%

Introduction to questions 3 and 4

Intravenously administered potentiated sulphonamide drugs given to horses and cattle occasionally cause sudden collapse within 1 minute of completing the intravenous injection. This idiosyncratic arrhythmogenic reaction could be made more likely to happen if either phenylbutazone or detomidine is administered immediately before or after the potentiated sulphonamide.

In questions 3 and 4 below select which one of the following answers is the most likely reason for the drug increasing the likelihood of collapse.

a) This drug increases the release of catecholamines from sympathetic nerve endings to the heart and raises vagal tone, both of which increase the likelihood of cardiac arrhythmias
b) This drug also blocks cardiac ion channels, increasing the likelihood of arrhythmias
c) This drug is a weak base which competes with the sulphonamide for binding sites on albumin, raising the free plasma sulphonamide concentration if both are given one after the other intravenously
d) This drug is a weak acid which competes with the sulphonamide for binding sites on albumin, raising the free plasma sulphonamide concentration if both are given one after the other intravenously
e) By blocking post-synaptic alpha-2 adrenoceptors in cardiac muscle this drug is pro-arrhythmogenic
f) By inhibiting cyclo-oxygenase in cardiac muscle this drug removes the cardio-protective effect of locally produced prostanoids, increasing the chances of arrhythmias
g) Intravenous administration of this drug raises systemic vascular resistance increasing cardiac afterload and so the work load of the heart
h) Intravenous administration of this drug lowers systemic vascular resistance leading to increased likelihood of brain ischaemia occurring in the face of a cardiac arrhythmia

3. Why is this idiosyncratic arrhythmogenic reaction more likely to happen if phenylbutazone is administered immediately before or after the potentiated sulphonamide?

Insert letter of correct answer from list above_____

4. Why is this idiosyncratic arrhythmogenic reaction more likely to happen if detomidine is administered immediately before or after the potentiated sulphonamide

Insert number of correct answer from list above_____

A number of active agents have been approved in the last few years in Europe for use in companion animal species. Select the agent that best answers each of the questions below. Each agent can be selected more than once.

a) Oclacitinib
b) Imepitoin
c) Hydrocortisone aceponate
d) Telmisartan

5. Which agent is glucuronidated extensively by cats?

Insert number of correct answer from list above_____

6. Which agent can cause decreased dermal thickness following repeated topical application?

Insert number of correct answer from list above_____

Answer key General MCQ's:

1 d

2 d

3 c

4 b

5 a

6 d

7 b, (additional reference: Regulation (EC) No 470/2009)

8 b, (additional reference: Gupta, page 1187 2nd edition)

9 c

10 a (additional reference: EMA press release 11 January 2016)

Answer key Certifying MCQ's:

1) c, Reference: *J Vet Pharmacol Ther. 2013 Oct;36(5):462-70. The pharmacokinetics of maropitant citrate dosed orally to dogs at 2 mg/kg and 8 mg/kg once daily for 14 days consecutive days. Lesman SP1, Boucher JF, Grover GS, Cox SR, Bidgood TL.*

2) b, Reference*: J Vet Pharmacol Ther. 2013 Aug;36(4):320-8, Influence of oxytetracycline on carprofen pharmacodynamics and pharmacokinetics in calves. Brentnall C, Cheng Z, McKellar QA, Lees P.*

3) d, Reference: *Br J Pharmacol. 1971 Oct;43(2):325-34.Drug displacement from protein binding: source of the sulphadoxine liberated by phenylbutazone. Wardell WM.*

4) a, Reference: *J Vet Pharmacol Ther. 1994 Feb;17(1):64-73.Trimethoprim/sulfonamide combinations in the horse: a review.* Van Duijkeren E*,* Vulto AG*,* Van Miert AS*.V*

5) d, Reference: *In vitro glucuronidation of the angiotensin II receptor antagonist telmisartan in the cat: a comparison with other species. Ebner T, Schänzle G, Weber W, Sent U, Elliott J. J Vet Pharmacol Ther. 2013 Apr;36(2):154-60.*

6) c, Reference: *Vet Dermatol. 2010 Feb;21(1):70-9. Effect of a novel topical diester glucocorticoid spray on immediate- and late-phase cutaneous allergic reactions in Maltese-beagle atopic dogs: a placebo-controlled study. Bizikova P, Linder KE, Paps J, Olivry T.*