2010 Pharm Exam1

All questions: Select the single, most appropriate answer.

B

1. Which one of the following drugs is a centrally acting alpha-2 adrenoceptor agonist, producing dry mouth, drowsiness and bradycardia?

A. Prazosin
B. Clonidine
C. Guanethidine
D. Doxazosin
E. Phenoxybenzamine

D

2. Muscarinic receptors are the primary receptor interacting with acetylcholine in which of the following sites:

A. Parasympathetic preganglionic neurons
B. Parasympathetic postganglionic neurons
C. Sympathetic postganglionic neurons
D. Cardiac atria
E. Skeletal muscles

B

3. Which main ion channel do the benzodiazepines act on?

A. Calcium (Ca^{++})
B. Chloride (Cl^{-})
C. Potassium (K^{+})
D. Lithium (Li^{++})
E. Sodium (Na^{+})

A

4. The protein that couples a receptor (example - β-adrenergic receptor) to the inhibition of adenylyl cyclase is called:

A. Gi
B. Gs
C. Gq
D. G12
E. G13

C

5. Which one of the following drugs, applied topically to the eye, causes mydriasis without producing cycloplegia?

A. Phentolamine
B. Neostigmine
C. Phenylephrine
D. Pilocarpine
E. Atropine

B

6. The long-term use of which of the following drugs has often been associated with Tardive dyskinesia?

A. Midazolam
B. Haloperidol
C. Methadone
D. Protriptyline
E. Isocarboxazid

D

7. Which step in adrenergic neurotransmission is blocked by amitriptyline?

A. Synthesis – enhances the rate of synthesis by tyrosine hydroxylase
B. Uptake – prevents storage of norepinephrine into vesicles
C. Receptor binding – directly activates postsynaptic adrenergic receptors
D. Reuptake – blocks norepinephrine reuptake by the amine pump
E. Release – prevents norepinephrine exocytosis

C

8. With inhalation anesthetics the rate on onset of anesthesia is:

A. independent of the partial pressure of the anesthetic gas in the lung.
B. inversely proportional to the partial pressure of the anesthetic gas in the lung.
C. inversely proportional to the solubility of anesthetic gas in the blood.
D. independent of the solubility of anesthetic gas in the blood.
E. proportional to the solubility of anesthetic gas in the blood.

D

9. A drug that is rapidly and completely absorbed is given in a dose of 100 mg. The half-life of the drug is 4 hrs. After 8 hrs, the quantity remaining in the patient is about

A. 3 mg
B. 6 mg
C. 12 mg
D. 25 mg
E. 43 mg

D

10. Which of the following statements about inhaled general anesthetics is true?

A. Their solubility in the blood determines their potency
B. They are best given singly to minimize side effects
C. They block axonal conduction by inhibiting voltage-gated sodium channels.
D. They modulate the activity of receptor-operated ion channels.
E. They block binding of GABA to the GABAa receptor.

C

11. It is desired to rapidly achieve a plasma concentration of 0.2 mg/L for a drug whose apparent volume of distribution is 50 L. The initial loading intravenous dose should be:

A. 4 mg
B. 8 mg
C. 10 mg
D. 20 mg
E. 100 mg

B

12. What is the most common toxic side effect in patients receiving L-dopa?

A. Bleeding
B. Nausea and vomiting
C. Colitis
D. Skin rush
E. Low white cells count

D

13. Botulinum toxin, commonly known as Botox, produces a long-lasting muscle paralysis. The release of which of the following neurotransmitters is blocked by Botox.

A. Serotonin
B. Dopamine
C. Glutamate
D. Acetylcholine
E. Glycine

C

14. Metabolism of which of the following local anesthetics is slowed down in patients with liver cirrhosis?

A. Tetracaine
B. Procaine
C. Mepivacaine
D. Cocaine
E. Benzocaine

C

15. Dantrolene reduces skeletal muscle contraction by:

A. Suppressing δ-aminobutyric acid (GABA) release from spinal interneurons
B. Blocking calcium entrance into the nerve ending
C. Interfering with calcium release from sacroplasmic reticulum
D. Enhancing glutamate release from spinal motoneurons
E. Reducing glutamate release from spinal motoneurons

A

16. Which of the following is a rapid acting inhalational anesthetic, but with low potency; useful in minor dental procedures?

A. Nitrous oxide
B. Desflurane
C. Midazolam
D. Enflurane
E. Halothane

C

17. Which of the following terms is best defined as the movement of drug away from its site of action to other tissues, thus decreasing the duration of its effect?

A. Absorption
B. Excretion
C. Redistribution
D. Distribution
E. Elimination

C

18. A drug with apparent volume of distribution = 10 L is administered intravenously as a bolus dose of 100 mg. The initial plasma concentration (mg/L) attained is approximately:

A. 0.15
B. 4.30
C. 10
D. 100
E. 1500

C

19. Postoperative vomiting is less with this general anesthetic. Patients recover faster, are able to walk sooner and generally feel better after its use.

A. Thiopental
B. Ketamine
C. Propofol
D. Halothane
E. Fentanyl

A

20. The potency of a drug is indicated by which of the following?

A. ED50
B. E_{max}
C. Clearance
D. Receptor concentration (R_t)
E. Half-life

B

21. Which of the following drugs is most useful for the treatment of myasthenia gravis?

A. Carbachol
B. Pyridostigmine
C. Pralidoxime
D. Nicotine
E. Propranolol

B

22. An overdose of which of the following compounds would cause dry and hot skin, dilated pupil, and rapid pulse rate:

A. Physostigmine
B. Atropine
C. Propranolol
D. Dantrolene
E. Baclofen

A

23. Muscarinic receptor blockers are most useful

A. To produce mydriasis and cycloplegia for eye examinations
B. To treat cardiac tachycardias
C. To treat paralytic ileus
D. To treat atony of the bladder
E. To treat orthostatic hypotension

E

24. Which of the following is a ligand-gated ion channel that allows Ca^{2+} or Na^{+} to enter cells

A) $GABA_A$ receptor
B) $GABA_B$ receptor
C) β-adrenergic receptor
D) Muscarinic Acetylcholine Receptor
E) Nicotinic Acetylcholine Receptor

E

25. Propranolol is most useful in the treatment of:

A. Attention-deficit hyperactivity disorder
B. Bronchial asthma
C. Glaucoma
D. Hypoglycemia
E. Angina pectoris

E

26. A 70 year old man develops acute urinary retention and blurred vision after taking an antidepressant for 3 days. Which medication is most likely to cause such effects?
A. Venlafazine

B. Paroxetine
C. Fluoxetine
D. Benztropine
E. Amitriptyline

C

27. Which statement best describes the general anesthetic halothane?

A. It is not metabolized in the liver and thus is not hepatotoxic.
B. It is a relatively weak agent not useful for stage three anesthesia.
C. It is depresses cardiac output
D. It is administered intravenously
E. It is pungent and thus cannot be used for mask induction.

C

28. A schizophrenic individual taking a traditional antipsychotic developed severe muscle rigidity and fever (neuroleptic malignant syndrome). The drug was discontinued immediately and the patient was given which one of the following drugs?

A. Propofol
B. Fentanyl
C. Dantrolene
D. Oxazepam
E. Scopolamine

E

29. Which one of the following drugs is most likely to stimulate excessive release of prolactin, causing galactorrhea and menstrual irregularities?

A. Sodium valproate
B. Chlordiazepoxide
C. Fluoxetine
D. Sertraline
E. Haloperidol

E

30. Which one of the following drugs is the most appropriate for the treatment of pheochromocytoma?

A. Dopamine
B. Phenylephrine
C. Atropine
D. Isoproterenol
E. Phentolamine

D

31. A 30 year old male is rushed to the emergency room having taken an overdose of chlordiazepoxide. Which one of the following drugs would be most effective in reversing his symptoms?

A. Propranolol
B. Ephedrine
C. Tubocurarine
D. Flumazenil
E. Amphetamine

B

32. Buspirone is an anti-anxiety agent that acts as:

A. An agonist at dopamine D-2 receptors in the striatum
B. A partial agonist at serotonergic-1A receptors
C. A selective serotonin reuptake inhibitor
D. A pro-drug for nordiazepam
E. An agonist at GABA receptors

B

33. Among the listed antipsychotic medications, which one can best ameliorate negative symptoms of schizophrenia?

A. Fluphenazine
B. Risperidone
C. Haloperidol
D. Thioridazine
E. Chlorpromazine

C

34. Which of the following drugs is a potent bronchodilator?

A. Prazosin
B. Carbidopa
C. Albuterol
D. Nadolol
E. Doxazosin

D

35. Which of the following is most useful in relieving symptoms of benign prostatic hyperplasia?

A. Ephedrine
B. Clonidine
C. Amphetamine
D. Terazosin
E. Methoxamine

A

36. A 50-year-old woman is spraying plants in her greenhouse with malathion, a cholinesterase inhibitor. She accidentally inhales the chemical and begins to experience signs of intoxication. Her symptoms are most likely to include

A. Bronchoconstriction and diarrhea
B. Urinary retention and constipation
C. Mydriasis and cycloplegia
D. Fever and xerostomia
E. Hepatotoxicity

C

37. Which of the following is the most effective treatment for status epilepticus?

A. Phenobarbital
B. Lamotrigene
C. Lorazepam followed by fosphenytoin
D. Gabapentin
E. Ethosuximide followed by propranolol

A

38. Agranulocytosis is a side effect most commonly associated with therapeutic doses of which one of the following drugs?

A. Clozapine
B. Quetiapine
C. Haloperidol
D. Pentazocine
E. Clonidine

C

39. A 36-year-old man is treated with pilocarpine for xerostomia. Which of the following statements best describes the drug's mechanism of action?

A. Stimulation of beta-1 adrenergic receptors
B. Inhibition of alpha-1 adrenergic receptors
C. Stimulation of muscarinic receptors
D. Inhibition of beta-2 adrenergic receptors
E. Stimulation of nicotinic receptors

A

40. The site where ropivacaine produces its pharmacological effects is:

A. the intracellular side of sodium channels
B. the extracellular side of sodium channels
C. the intracellular side of potassium channels
D. the extracellular side of potassium channels
E. the intracellular side of chloride channels

D

41. Which of the following drugs is most useful in preventing the symptoms of motion sickness?

A. Mecamylamine
B. Clonidine
C. Bethanechol
D. Scopolamine
E. Albuterol

E

42. A 23-year old male needs to have wisdom teeth extracted. The dentist injected lidocaine solution containing epinephrine. What is the purpose of including epinephrine in the preparation?

A. counter the action of lidocaine on the heart
B. slow down the metabolism of lidocaine
C. slow down the excretion of lidocaine
D. stabilize lidocaine in solution
E. slow down the absorption of lidocaine into systemic circulation

E

43. Which of the following is the main neurotransmitter lacking in an individual with Parkinsons' disease?

A. Serotonin
B. Acethylcholine
C. Bardikinin
D. GABA
E. Dopamine

B

44. Which of the neuromuscular blocking drugs produce transient muscle fasciculations followed by muscle paralysis that is not reversed by neostigmine?

A. D-tubocurarine
B. Succinylcholine
C. Recuronium
D. Pancuronium
E. Vecuronium

C

45. Why is Carbidopa generally given together with Levodopa in the treatment of Parkinson's disease?

A. To increase the absorption of levodopa from the gut
B. To increase the elimination of levodopa from the body
C. To block the decarboxylase activity in the periphery and increase the amount of levodopa which passes the blood brain barrier .
D. To enhance the endogenous levels of Dopamine
E. To combat the on-off effect

C

46. A patient has ingested a toxic overdose of aspirin, which is a weak acid. Which of the following measures can increase the excretion of aspirin in the urine?

A. Administration of a weak base
B. Administration of an acidifying agent, ammonium chloride
C. Administration of an alkalinizing agent, sodium bicarbonate
D. Administration of another weak acid
E. You have no control over the excretion rate

D

47. Local anesthetics are weak bases. If you use a local anesthetic with a pKa of 8.4, what would be the ratio of ionized to non-ionized drug in the plasma, with a pH of 7.4?

A. 1/100
B. 1/10
C. 1/1
D. 10/1
E. 100/1

C

48. The therapeutic action of diazepam in relieving muscle spasm is related to:

A. It increases excitatory transmitter release from the nerve terminal
B. It antagonizes the action of glutamate on postsynaptic membrane
C. It enhances the action of γ-aminobutyric acid on $GABA_A$ receptors
D. It stimulates glycine receptors
E. It attenuates the action of γ-aminobutyric acid on $GABA_B$ receptors

A

49. A young child accidentally eats a plant, containing a toxic substance. His symptoms include dry mouth and eyes; his skin is flushed, red and dry; he has a fever and is tachycardic; his vision is blurred; and he becomes confused. He most likely has ingested

A. Atropine
B. Propranolol
C. Nicotine
D. Pralidoxime
E. Phentolamine

A

50. The reversible competition between an active and an inactive drug for a common receptor (e.g., phentolamine and norepinephrine on vascular smooth muscle) represents a drug interaction termed:

A. Competive antagonism
B. Functional antagonism
C. Chemical antagonism
D. Noncompetive antagonism
E. Physiological antagonism