

CATHOLIC UNIVERSITY OF CAMEROON (CATUC), BAMENDA
SCHOOL OF HEALTH SCIENCES, KUMBO
FIRST SEMESTER EXAMINATIONS (2012/2013)

NEUROPHARMACOLOGY FOR PHARMACY STUDENTS

Instructions: Choose the ONE best Answer

- (1) All of the following statements concerning the ANS are true except:
 - (a) The ANS is composed of entirely efferent neurons
 - (b) The sympathetic division is activated in response to stressful situations.
 - (c) The parasympathetic division originates from cell bodies in the CNS
 - (d) The control of blood pressure is mainly sympathetic activity, with essentially no participation of the parasympathetic system
 - (e) **The parasympathetic NS is not required for life.**
- (2) Which one of the following statements concerning the parasympathetic nervous system is correct
 - (a) The parasympathetic NS uses NE as a neurotransmitter
 - (b) The parasympathetic NS often discharges as single, functional system.
 - (c) **The postganglionic fibers of the parasympathetic division are long, compared to those of the sympathetic NS.**
 - (d) The parasympathetic system controls the secretion of adrenal medulla
- (3) Which one of the following is characteristic of parasympathetic stimulation?
 - (a) Decrease in intestinal motility
 - (b) Inhibition of bronchial secretions
 - (c) **Contraction of sphincter muscle in the iris of the eye (miosis)**
 - (d) Contraction of the urinary bladder
 - (e) Increase in heart rate
- (4) Which of the following is not expected symptom of poisoning with isoflurophate?
 - (a) Paralysis of skeletal muscle
 - (b) Increased bronchial secretions
 - (c) Miosis
 - (d) **Tachycardia**
 - (e) Convulsions
- (5) Which of the following incorrectly matches a cholinergic agonists with a pharmacologic action?
 - (a) Bethanechol: stimulate bladder.
 - (b) Carbachol: induces release of epinephrine from the adrenal medulla
 - (c) Acetylcholine: decreases heart rate and cardiac output
 - (d) Pilocarpine: reduces intraocular pressure
 - (e) **Physostigmine: decreases intestinal motility**
- (6) Pilocarpine:
 - (a) **Is used to lower intraocular pressure in glaucoma**
 - (b) Is cleaved by acetylcholinesterase

- (c) Selectively binds to nicotinic receptors
 - (d) Inhibits secretions such as sweat, tears, and saliva
 - (e) Cannot enter the brain.
- (7) Neostigmine:
- (a) Is contraindicated in glaucoma
 - (b) Has a short duration of action than edrophonium
 - (c) Decreases the acetylcholine concentration at the neuromuscular junction
 - (d) May result in bowel hypermotility, salivation, and sweating
 - (e) Exacerbate tubocurarine poisoning
- (8) Which one of the following drugs does not produce miosis (marked constriction of the pupil)?
- (a) Carbachol
 - (b) Isoflurophate
 - (c) Atropine
 - (d) Pilocarpine
 - (e) Neostigmine
- (9) Which one of the following drugs would be useful in long term treatment of mysasthenia gravis?
- (a) Edrophonium
 - (b) Atropine
 - (c) Neostigmine
 - (d) Scopolamine
 - (e) Bethanechol
- (10) Diastolic pressure is increased after the administration of which of the following drugs?
- (a) Norepinephrine
 - (b) Epinephrine
 - (c) Isoproterenol
 - (d) Albuterol
 - (e) Terbutaline
- (11) All of the following statements are true except:
- (a) Among physiologic responses caused by α -receptor stimulation are vasoconstriction, mydriasis, and decreased gastrointestinal motility
 - (b) Among the physiologic responses caused by β -receptor stimulation are vasodilation, cardiac stimulation, and bronchial relaxation.
 - (c) Norepinephrine has a stronger affinity for α receptors compared to β receptor
 - (d) Administration of atropine prior to norepinephrine leads to an increase in heart rate after norepinephrine administration
 - (e) Dobutamine is a potent vasoconstrictor
- (12) Dopamine causes all but which of the following actions?
- (a) Increases cardiac output
 - (b) Dilates renal vasculature
 - (c) Dilates bronchi
 - (d) Increases blood pressure
 - (e) Increases production of urine

- (13) All of the following statements concerning phenylephrine are true except:
- (a) It is an agonist that causes vasoconstriction
 - (b) It is a synthetic direct acting agonists
 - (c) It is used to prevent bronchospasm
 - (d) It causes mydriasis when introduced into the eye
 - (e) It is used as a nasal decongestants.
- (14) Systolic pressure is decreased after the injection of which of the following drugs?
- (a) Phenylephrine
 - (b) Dopamine
 - (c) Ephedrine
 - (d) Reserpine
 - (e) Norepinephrine
- (15) Which one of the following drugs is useful in treating tachycardia?
- (a) Phenoxybenzamine
 - (b) Isoproterenol
 - (c) Phentolamine
 - (d) Propranolol
 - (e) Prazosin
- (16) Which one of the following statements is correct?
- (a) Chlorpromazine is indicated in treating the nausea of levodopa treatment
 - (b) Vitamin B₆ increases the effectiveness of levodopa
 - (c) Administration of dopamine is an effective treatment of Parkinson's disease
 - (d) Levodopa-induced nausea is reduced by carbidopa
 - (e) Non-specific MAO-inhibitors, such as phenelzine, are a useful adjunct to levodopa therapy
- (17) Which one of the following statements is incorrect?
- (a) Parkinson's patients are characterized by an increased ratio of dopaminergic/cholinergic activity in the neostriatum
 - (b) Overtreatment of Parkinson's disease can result in the symptoms of psychosis.
 - (c) Diets rich in protein may decrease the effects of levopoda
 - (d) Dyskinesia is the most important side effect of levodopa.
 - (e) Treatment with deprenyl can delay the onset of Parkinson's disease.
- (18) All of the following statements are correct except
- (a) Atropine blocks the cholinergic pathway in the neostriatum.
 - (b) Deprenyl inhibits monoamine oxidase B and increases dopamine levels in the brain.
 - (c) Bromocriptine directly activates dopaminergic receptors.
 - (d) Amantadine inhibits the metabolism of levodopa.
 - (e) Antimuscarinic agents are generally less efficacious than levopoda in the treatment of Parkinson's disease.
- (19) Which of the following statements is correct?
- (a) Benzodiazepines directly opens chloride channels.
 - (b) Benzodiazepines shows analgesic actions.
 - (c) Clinical improvement of anxiety requires 2 to 4 weeks of treatment with Benzodiazepines

- (d) All Benzodiazepines have some sedative effects.
- (e) Benzodiazepines like other CNS depressants, readily produce general anesthesia.
- (20) All of the following respond to treatment with Benzodiazepines except:
- (a) Tetanus
 - (b) Schizophrenia
 - (c) Epileptic seizure
 - (d) Insomnia
 - (e) Anxiety
- (21) Which one of the following is a short-acting hypnotic?
- (a) Phenobarbital
 - (b) Diazepam
 - (c) Chlordiazepoxide
 - (d) Thiopental
 - (e) Flurazepam
- (22) Which one of the following statements is correct?
- (a) Phenobarbital induces respiratory depression, which is enhanced by the consumption of ethanol.
 - (b) Phenobarbital shows analgesic properties.
 - (c) Diazepam and Phenobarbital induce the P₄₅₀ enzyme system.
 - (d) Phenobarbital is useful in the treatment of acute intermittent porphyria.
 - (e) Buspirone has actions similar to the benzodiazepines.
- (23) Which of the following is not characteristics of cocaine overdose?
- (a) Dilation of the pupil.
 - (b) Euphoria
 - (c) Tachycardia
 - (d) Peripheral vasodilation.
 - (e) Hallucinations.
- (24) Which of the following statements about amphetamine is incorrect?
- (a) Overdosage of amphetamine can be managed with chlorpromazine.
 - (b) Amphetamine is used as an adjunct with MAO inhibitors in the treatment of depression.
 - (c) Amphetamine has a longer duration of action than cocaine.
 - (d) Amphetamine depresses the hunger center in the hypothalamus.
 - (e) Amphetamine acts on a- and b-adrenergic presynaptic terminals.
- (25) Which one of the following drugs is incorrectly paired with its toxic effects?
- (a) Amphetamine: paranoid psychosis
 - (b) Nicotine (low dose): Decreased heart rate and blood pressure.
 - (c) Cocaine: Anxiety and depression.
 - (d) LSD: Hallucination.
 - (e) Caffeine: Insomnia and agitation.
- (26) This drug act as a potent analgesic and a weak.
- (a) Nitrous oxide
 - (b) Thiopental

- (c) Innovar
 - (d) Methoxyflurane.
 - (e) diazepam
- (27) This drug act as a potent anesthetic and a weak analgesic.
- (a) Nitrous oxide
 - (b) Thiopenthal
 - (c) Innovar
 - (d) Methoxyflurane.
 - (e) diazepam
- (28) This drug combination produces neuroleptic analgesia.
- (a) Nitrous oxide
 - (b) Thiopenthal
 - (c) Innovar
 - (d) Methoxyflurane.
 - (e) diazepam
- (29) This drug facilitates surgical anesthesia.
- (a) Nitrous oxide
 - (b) Thiopenthal
 - (c) Innovar
 - (d) Methoxyflurane.
 - (e) diazepam
- (30) Which one of the following is most likely to require administration of a muscle relaxant?
- (a) Ethyl ether
 - (b) Halothane
 - (c) Methoxyflurane
 - (d) Benzodiazepines
 - (e) Nitrous oxide
- (31) Which one of the following is an appropriate therapeutic use for imipramine?
- (a) Insomnia
 - (b) Epilepsy
 - (c) Bed-wetting in children
 - (d) Glaucoma
 - (e) Mania
- (32) MAO inhibitors are contraindicated with all of the following except:
- (a) Indirect adrenergic agents, such as ephedrine.
 - (b) Tricyclic antidepressants
 - (c) Beer and cheese.
 - (d) Aspirin
 - (e) Dopamine
- (33) Which of the following statements concerning tricyclic antidepressants is correct.
- (a) All of the tricyclic antidepressants show similar therapeutic efficacy.

- (b) Hypertension is a common adverse effect.
 - (c) The tricyclic antidepressants selectively inhibit uptake of norepinephrine into the neuron.
 - (d) These drugs show an immediate therapeutic effect.
 - (e) These drugs must be administered intramuscularly.
- (34) Which of the following is common to tricyclic antidepressants and MAO inhibitors
- (a) They cannot produce sedation.
 - (b) They produce physical dependence.
 - (c) They show strong interaction with certain foods.
 - (d) They can produce postural hypotension.**
 - (e) They decrease availability of epinephrine and serotonin in the synaptic cleft.
- (35) Which of the following antidepressant agents exhibits an amphetamine-like CNS stimulation?
- (a) Imipramine
 - (b) Doxepin
 - (c) Tranylcypromine**
 - (d) Trazadone
 - (e) Lithium salts
- (36) The neuroleptic drugs:
- (a) Are adequately effective against the positive and negative symptoms of schizophrenia.
 - (b) Can cause blurred vision, urinary retention and other signs of muscarinic blockade.**
 - (c) Bind selectively to D2-dopaminergic receptors
 - (d) Have antiparkinsonism effects similar to levodopa.
 - (e) Have a rapid onset of antipsychotic action.
- (37) All of the following statements about the extrapyramidal effects of neuroleptics are correct except:
- (a) they are caused by blockade of dopamine receptors.
 - (b) They are less likely to be produced by clozapine than by fluphenazine
 - (c) They can be countered to some degree by antimuscarinic drugs.
 - (d) Haloperidol does not cause extrapyramidal disturbances.**
 - (e) Neuroleptics may cause tardive dyskinesia.
- (38) All of the following are observed in patients taking neuroleptic agents except:
- (a) Sexual dysfunction
 - (b) Increased blood pressure**
 - (c) Altered endocrine function.
 - (d) Constipation
 - (e) Orthostatic hypotension
- (39) All of the following statements concerning methadone are correct except:
- (a) It has less potent analgesic activity than that of morphine.**
 - (b) It has a longer duration of action than that of morphine.
 - (c) It is effective by oral administration.
 - (d) It causes a milder withdrawal syndrome than morphine.
 - (e) It has the greatest action on μ receptors.
- (40) Which of the following statements about pentazocine are incorrect?
- (a) it is a mixed agonist-antagonist.

- (b) It may be administered orally or parentally.
 - (c) It produces less euphoria than morphine.
 - (d) It is often combined with morphine for maximal analgesic effects.
 - (e) High doses of pentazocine increase blood pressure.
- (41) Which of the following statements about morphine is incorrect?
- (a) it is used therapeutically to relieve pain caused by severe head injury.
 - (b) Its withdrawal symptoms can be relieved by methadone.
 - (c) It causes constipation.
 - (d) It is most effective by parenteral administration.
 - (e) It rapidly enters all body tissues, including the fetus of a pregnant woman.
- (42) For which one of the following drugs is the therapeutic indication incorrect?
- (a) Ethosuximide: Absence seizures
 - (b) Phenobarbital: Febrile seizures in children.
 - (c) Diazepam: Status epilepticus
 - (d) Phenytoin: Absence seizures
 - (e) Carbamazepine: Tonic-clonic seizures.
- (43) Which of the following statements concerning phenytoin is incorrect?
- (a) Causes less sedation than Phenobarbital.
 - (b) Causes gingival hyperplasia
 - (c) May cause fetal hyantoin syndrome if given during pregnancy.
 - (d) Is excreted unchanged in the urine.
 - (e) The plasma half-life increases as the dose is increased.
- (44) All of the following drugs are useful in treating complex partial seizures except:
- (a) Ethosuximide
 - (b) Phenobarbital
 - (c) Carbamazepine
 - (d) Phenytoin
 - (e) Gabapentin
- (45) Which of the following drug/toxicity pairs is incorrect?
- (a) Valproic acid: Nausea and Vomiting.
 - (b) Ethosuximide: Stevens-Johnson syndrome.
 - (c) Carbamazepine: Bone marrow suppression.
 - (d) Primidone: Hepatotoxicity.
 - (e) Phenobarbital: Sedation.
- (46) Beta-blockers cause :
- (a) nausea
 - (b) postural hypotension
 - (c) hypertension
 - (d) sweating
 - (e) vomiting.
- (47) The rate limiting enzyme in the synthesis of dopamine is:
- (a) DOPA decarboxylase.

- (b) DOPA hydrolase.
 - (c) Dopamine b hydrolase.
 - (d) Tyrosine decarboxylase.
 - (e) Tyrosine hydroxylase.
- (48) The control centers of the ANS are located in the
- (a) cerebral cortex
 - (b) medulla oblongata
 - (c) Reticular formation
 - (d) Hypothamus
 - (e) b and d above are correct.
- (49) The subthalamic neurons, which project to the output structures of the basal ganglia, are:
- (a) Gabaergic
 - (b) Dopaminergic
 - (c) Glutamatergic
 - (d) Cholinergic
 - (e) Serotonergic
- (50) The division of the autonomic Nervous essential for life is
- (a) enteric NS
 - (b) parasympathetic division
 - (c) sympathetic division
 - (d) somatic division
 - (e) ganglionic division.
- (51) Which of these compounds are NOT used for treatment of Parkinson's disease?
- (a) MAO inhibitors
 - (b) COMT inhibitors
 - (c) D₂ receptor agonists
 - (d) D₂ receptor antagonists
 - (e) Dopamine transporter blockers.
- (52) The symptoms of Parkinson's disease are associated with an excessive:
- (a) Inhibition of thalamo-cortical neurons.
 - (b) Excitation of thalamo-cortical neurons.
 - (c) Inhibition of subthalamic neurons.
 - (d) Dopaminergic transmission.
 - (e) Inhibition of the output structures of the basal ganglia.
- (53) An adrenergic agonist can be a
- (a) Noncatecholamine
 - (b) Catecholamine
 - (c) Sympathomimetic
 - (d) all of the above answers
 - (e) None of these answers.

- (54) Heroin was often included in many patient medications available in the latter part of the 19th century and early part of the 20th century, leading to dependence by many. Studies of addiction to heroin during this period indicated that the largest number dependent on heroin was found in:
- (a) Young males.
 - (b) Older males.
 - (c) Older females.
 - (d) Younger females.
 - (e) Equal use in males and females.
- (55) Although drug dependence exists without physical dependence, the severity of physical dependence, determined by withdrawal signs and symptoms, is most severe and dangerous to life with which of the following?
- (a) Alcohol
 - (b) Heroin
 - (c) Cocaine
 - (d) Hallucinogens such as PCP (angel dust)
 - (e) Amphetamine.
- (56) Clinical application of anticholinesterases is in the treatment of
- (a) postural hypertension
 - (b) hypertension
 - (c) glaucoma
 - (d) Nausea
 - (e) headache.
- (57) Most recent research has concluded that the critical neurotransmitter or neuropeptide and brain areas involved in the rewarding effects of abuse substances are:
- (a) Dopamine and the substantia nigra.
 - (b) Norepinephrine and the nucleus accumbens.
 - (c) Endorphins and the locus coeruleus.
 - (d) Dopamine and the nucleus accumbens.
 - (e) Dopamine and the hippocampus.
- (58) The following drug is a muscarinic receptor agonist
- (a) Pilocarpine
 - (b) neostigmine
 - (c) hyoscine
 - (d) carbachol
 - (e) atropine.
- (59) Benzodiazepines can be distinguished from barbiturates because of the following characteristics:
- (a) Benzodiazepines increase the duration of channel openings while barbiturates increase channel frequency. (b) Barbiturates have a high therapeutic index, directly open the GABAA receptor channel, and induce P450 enzymes.
 - (b) Overdose from benzodiazepines can be effectively treated by administration of the benzodiazepine antagonist, flumazenil, while there is no antidote for barbiturate overdose.

- (c) Benzodiazepines have a low therapeutic index, low abuse liability, and few drug interactions.
 - (d) Benzodiazepines and barbiturates have a high abuse liability.
 - (e) None of the above.
- (60) A major problem in the treatment of anxiety disorders is the development of tolerance to longterm treatment. Tolerance can be reduced by which therapeutic regimen?
- (a) The use of diazepam instead of alprazolam
 - (b) Combination therapy of a partial benzodiazepine modulator with a full modulator
 - (c) Scheduled interruptions in drug treatment
 - (d) Removal of drug therapy followed by treatment with barbiturates
 - (e) Use of short-acting benzodiazepines and partial modulators at the benzodiazepine site.
- (61) Transmission in the varicosity is
- (a) cholinergic
 - (b) noradrenergic
 - (c) neuromuscular
 - (d) neuroelectrical
 - (e) neuronal.
- (62) The majority of drugs being prescribed today for the treatment of anxiety disorders are:
- (a) Barbiturates and tranquilizers.
 - (b) Phenothiazines and benzodiazepines.
 - (c) Benzodiazepines and partial agonists acting at a receptor for serotonin.
 - (d) Benzodiazepines and serotonin reuptake inhibitors.
 - (e) Benzodiazepines and other anxiogenic drugs.
- (63) Ephedrine is used clinically to treat
- (a) headache
 - (b) nasal congestion
 - (c) anxiety disorders
 - (d) epilepsy
 - (e) depression.
- (64) The anxiolytic effect of benzodiazepines results from:
- (a) Their affinity for 5HT_{1A} receptors
 - (b) Their ability to decrease the EC₅₀ of GABA with respect to GABA_A receptor mediated chloride influx
 - (c) Their noncompetitive interaction with GABA at the GABAB receptor
 - (d) Their ability to increase the maximum inhibitory effect of GABA
 - (e) Their allosteric modulation of the GABA_A receptor indicated by a shift of the GABA concentration-response curve to the right.
- (65) The major mechanism of terminating the usual interaction of dopamine with its receptors in the CNS is:
- (a) Biotransformation by monoamine oxidase in the synapse.
 - (b) Uptake into glia by a transporter blocked by cocaine.
 - (c) Uptake by a postsynaptic membrane transporter coupled to Na-K ATPase.

- (d) Reuptake by an energy dependent, electroneutral, high affinity transport process that can transport amphetamine.
- (e) Reuptake by a unidirectional presynaptic transporter that can move dopamine into the presynaptic terminal but not carry it outward.
- (66) Glutamate is
- (a) an excitatory neurotransmitter
 - (b) an inhibitory neurotransmitter
 - (c) exogenous drug
 - (d) all of the above
 - (e) none of the above.
- (67) Which of the following correctly matches a CNS stimulant with its probable site of action:
- (a) Nicotine: agonist at G protein-coupled ion channel that is selective for anions
 - (b) Caffeine: antagonist at adenosine receptors
 - (c) Amphetamine: direct acting agonist at dopamine receptors
 - (d) Methylxanthines: antagonist at dopamine receptors
 - (e) Cocaine: presynaptic vesicular release of dopamine.
- (68) Which of the following most closely matches CNS stimulants with chemical class:
- (a) Nicotine: synthetic quaternary ammonium compound
 - (b) Caffeine: pyrimidine
 - (c) Cocaine: acetylcholine-like ester
 - (d) Amphetamine: catecholamine
 - (e) Nicotine: methylxanthine.
- (69) The abuse liability is greatest with:
- (a) Caffeine
 - (b) Cocaine
 - (c) Benzodiazepines
 - (d) Aspirin
 - (e) Marijuana.
- (70) Aspirin is preferred to morphine for treatment of pain, because it is LESS likely to cause all of the following, EXCEPT:
- (a) Constipation.
 - (b) Peptic ulcer and bleeding.
 - (c) Sedation.
 - (d) Tolerance.
 - (e) Symptoms on withdrawal because of physical dependence.

Good Luck

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