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XQUIZ

جامعة بابل - كلية الصيدلة - دُفعة 13

PHARMACOLOGY CHAPTER 4
Cholinergic Agonists

نسألكم الدعاء لكل شخص شارك في اعداد هذا الملف

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بسم الله الرحمن الرحيم

Q1- Which neurotransmitter is used by preganglionic fibers terminating in the adrenal medulla, autonomic ganglia (both parasympathetic and sympathetic), and postganglionic fibers of the parasympathetic division?

a) Norepinephrine b) Dopamine c) Acetylcholine d) Serotonin

Answer:C

Q2- Which division of the autonomic nervous system uses acetylcholine as the neurotransmitter for the postganglionic fibers of sweat glands?

a) Sympathetic division b) Parasympathetic division
c) Enteric division d) Somatic division

Answer: a

Q3- How many steps are involved in neurotransmission at cholinergic neurons?

a) 3 b) 4 c) 5 d) 6

Answer: d

Q4- What is the role of cholinergic neurons in the central nervous system (CNS)?

a) Synthesizing norepinephrine b) Controlling voluntary muscle movements
c) Regulating body temperature d) Maintaining balance and coordination

Answer: b

Q5- What happens to acetylcholine after it is released into the synaptic cleft?

a) It is reabsorbed by the presynaptic neuron for recycling.
b) b) It is degraded by enzymes in the synaptic cleft.
c) It is taken up by neighboring glial cells.
d) It is transported to the postsynaptic neuron for binding.

Answer: b

Q6-Which neurotransmitter is responsible for binding to receptors located on nerves or effector organs in cholinergic neurotransmission?

a) Dopamine b) Serotonin c) Acetylcholine d) Norepinephrine

Answer: c

Q7-. What is the rate-limiting step in the synthesis of acetylcholine (ACh)?
a) Transport of choline into the neuron b) Conversion of choline to ACh
c) Packaging of ACh into vesicles d) Release of ACh into the synaptic cleft

Answer: a

8-. Which drug inhibits the energy-dependent carrier system responsible for transporting choline into cholinergic neurons?
a) Botulinum toxin b) Black widow spider venom
c) Hemicholinium d) Acetyl coenzyme A (CoA)

Answer: c

Q9-. What is stored along with acetylcholine (ACh) in presynaptic vesicles?
a) Glutamate b) Dopamin c) Adenosine triphosphate (ATP) d) Serotonin

Answer: c

Q10-. Which event triggers the release of acetylcholine (ACh) from presynaptic vesicles into the synaptic cleft?
a) Opening of voltage-sensitive sodium channels b) Opening of voltage-sensitive calcium channels
c) Inhibition of choline acetyltransferase d) Fusion of synaptic vesicles with the cell membrane

Answer: b

Q11-. Which toxin blocks the release of acetylcholine (ACh) into the synaptic cleft?
a) Botulinum toxin b) Black widow spider venom
c) Hemicholinium d) Acetyl coenzyme A (CoA)

Answer: a

Q12-What happens after acetylcholine (ACh) binds to postsynaptic receptors on the target cell?
a) ACh is degraded by acetylcholinesterase (AChE)
b) A nerve impulse is initiated in a postganglionic fiber
c) Specific enzymes in effector cells are activated
d) ACh is transported back into the neuron

Answer: c

Q13-. How is acetylcholine (ACh) terminated in the synaptic cleft?
a) By binding to presynaptic receptors b) By conversion into adenosine triphosphate (ATP)
c) By degradation via acetylcholinesterase (AChE) d) By recycling back into the synaptic vesicles

Answer: c

Q14-What is the role of acetylcholinesterase (AChE) in the synaptic cleft?
a) To transport ACh back into the neuron
b) To convert ACh into choline and acetate
c) To initiate nerve impulses in postganglionic fibers
d) To activate specific enzymes in effector cells

Answer: b

Q15-. How is choline recycled back into the neuron for the synthesis of acetylcholine (ACh)?
a) By binding to presynaptic receptors
b) By conversion into adenosine triphosphate (ATP)
c) By degradation via acetylcholinesterase (AChE)
d) By uptake through a sodium-coupled, high-affinity uptake system

Answer: d

Q16-Which type of receptors do muscarine and acetylcholine primarily bind to?
a) Muscarinic receptors b) Nicotinic receptors
c) G protein-coupled receptors d) Metabotropic receptors

Answer: a

Q17-How many functionally characterized subclasses of muscarinic receptors are there?
a) One b) Two c) Three d) Five

Answer: c

Q18-Which of the following is NOT a location where muscarinic receptors are found?
a) Brain b) Exocrine gland c) Skeletal muscle d) Heart

Answer: c

Q19-Which G protein is activated when M1 or M3 muscarinic receptors are stimulated?
a) Gs b) Gi c) Gq d) GPCR

Answer: c

Q20-What is the second messenger produced as a result of activation of M1 or M3 muscarinic receptors?
a) Inositol-1,4,5-trisphosphate (IP3) and diacylglycerol (DAG)
b) Cyclic adenosine monophosphate (cAMP)
c) Nitric oxide (NO)
d) Dopamine

Answer: a

Q21-What is the effect of M2 muscarinic receptor activation on cardiac muscle?
a) Increase in heart rate and force of contraction
b) Decrease in heart rate and force of contraction
c) No effect on heart rate and force of contraction
d) Induces relaxation of cardiac muscle

Answer: b

Q22-Which of the following substances is recognized by nicotinic receptors?
a) Acetylcholine (ACh) b) Muscarine c) Pilocarpine d) Nicotine

Answer: d

Q23-What is the composition of the nicotinic receptor?
a) Three subunits b) Four subunits c) Five subunits d) Six subunits

Answer: c

Q24-How does binding of two ACh molecules to the nicotinic receptor affect the effector cell?
a) It causes hyperpolarization of the cell. b) It inhibits the entry of sodium ions.
c) It results in the depolarization of the cell. d) It has no effect on the cell.

Answer: c

Q25-Where are nicotinic receptors located in the body?
a) Central nervous system (CNS) and adrenal medulla
b) Autonomic ganglia and neuromuscular junction (NMJ)
c) Skeletal muscles and exocrine glands
d) Brain and smooth muscle

Answer: b

Q26-Which receptor type is selectively blocked by mecamylamine?
a) Ganglionic receptors b) Neuromuscular junction (NMJ) receptors
c) Muscarinic receptors d) Adrenal medulla receptors

Answer: a

Q27-Which receptor type is specifically blocked by atracurium?
a) Ganglionic receptors b) Neuromuscular junction (NMJ) receptors
c) Muscarinic receptors d) Adrenal medulla receptors

Answer: b

Q28-Which group of direct-acting cholinergic agonists includes acetylcholine and synthetic esters of choline?
a) Endogenous choline esters b) Naturally occurring alkaloids
c) Muscarinic agents d) Nicotinic agents

Answer: a

Q29-Which of the following is NOT a direct-acting cholinergic agonist?
a) Nicotine b) Pilocarpine c) Carbachol d) Atropine

Answer: d

Q30-Which type of receptors do the more therapeutically useful direct-acting cholinergic drugs (such as pilocarpine and bethanechol) preferentially bind to?
a) Muscarinic receptors b) Nicotinic receptors
c) G protein-coupled receptors d) Metabotropic receptors

Answer: a

Q31-What is the main reason for the limited clinical usefulness of direct-acting cholinergic agonists?

a) Their rapid inactivation by cholinesterases
b) Their lack of specificity in their actions
c) Their inability to penetrate membranes
d) Their short duration of action

Answer: b

Q32-What is the mechanism by which acetylcholine decreases blood pressure?

a) Direct vasoconstriction
b) Inhibition of nitric oxide production
c) Activation of M3 receptors on endothelial cells
d) Stimulation of protein kinase G production

Answer: c

Q33-Which of the following actions is NOT associated with acetylcholine?

a) Constriction of the pupillae sphincter muscle
b) Stimulation of gastric acid secretion
c) Bronchoconstriction
d) Relaxation of the detrusor muscle

Answer: d

Q34-Which of the following is true regarding the hydrolysis of bethanechol?

a) It is hydrolyzed by acetylcholinesterase (AChE).
b) It is not hydrolyzed by any esterases.
c) It is hydrolyzed by carbamic acid esterase.
d) It is hydrolyzed by other esterases.

Answer: d

Q35- What is the major site of action of bethanechol

a) Skeletal muscle
b) Cardiac muscle
c) Smooth musculature of the bladder and gastrointestinal (GI) tract
d) Autonomic ganglia

Answer: c

Q36-What is the duration of action of bethanechol

a) Less than 30 minutes
b) About 1 hour
c) 4-6 hours
d) More than 12 hour

Answer: b

Q37-What is the therapeutic application of bethanechol in urologic treatment
a) Treatment of hypertension
b) Stimulation of bladder relaxation
c) Treatment of obstructive urinary retention
d) Stimulation of the atonic bladder in nonobstructive urinary retention

Answer: d

Q38-What adverse effects are associated with bethanechol
Increased heart rate and blood pressure
b) Dry mouth and constipation
c) Blurred vision and mydriasis
d) Sweating, salivation, decreased blood pressure, and bronchospasm

Answer: d

Q39-What medication can be administered to overcome severe cardiovascular or bronchoconstrictor responses to bethanechol
Atropine sulfate b) Propranolol c) Epinephrine d) Diazepam

Answer: a

Q39-What type of actions does carbachol possess
a) Only muscarinic actions b) Only nicotinic actions
c) Muscarinic and nicotinic actions d) Adrenergic actions

Answer: c

Q40-What is carbachol's biotransformation rate compared to acetylcholine esterase (AChE)?
a) Carbachol is hydrolyzed by AChE at a faster rate.
b) Carbachol is not hydrolyzed by any esterases.
c) Carbachol is hydrolyzed by other esterases at a slower rate.
d) Carbachol is not hydrolyzed by any enzymes.

Answer: c

Q41-What is the main therapeutic use of carbachol?
a) Treatment of hypertension b) Stimulation of bladder relaxation
c) Treatment of obstructive urinary retention D) Treatment of glaucoma

Answer: d

Q42-What are the effects of carbachol when locally instilled into the eye?
a) Pupillary dilation and relaxation of the ciliary muscle
b) Miosis and constant contraction of the ciliary muscle
c) Blurred vision and dry eyes
d) Increased intraocular pressure and visual disturbances

Answer: b

Q43-Why are there minimal systemic side effects when carbachol is used ophthalmologically?
a) Carbachol has poor penetration into the systemic circulation.
b) Carbachol is rapidly hydrolyzed by AChE.
c) Carbachol is a highly selective muscarinic agonist.
d) Carbachol does not bind to nicotinic receptors.

Answer: a

Q44-Pilocarpine is primarily used in which field of medicine?
a) Cardiology b) Ophthalmology
c) Dermatology d) Gastroenterology

Answer: b

Q45-Which of the following is NOT a therapeutic use of pilocarpine?
a) Glaucoma b) Xerostomia c) Hypertension d) Reversing mydriasis

Answer: c

Q46-Pilocarpine is most effective in opening which part of the eye?
a) Lens b) Retina c) Trabecular meshwork d) Cornea

Answer: c

Q47-Which adverse effect is NOT associated with pilocarpine use
a) Blurred vision b) Night blindness c) Dry mouth d) Headache

Answer: c

Q48-What is the primary action of pilocarpine when applied topically to the eye
a) Dilates the pupils b) Relaxes the ciliary muscle
c) Stimulates tear production d) Increases intraocular pressure

Answer: c

Q49-Edrophonium is classified as a:

a) Direct-acting cholinergic agonist
b) Indirect-acting cholinergic agonist
c) Muscarinic receptor antagonist
d) Nicotinic receptor antagonist

Answer: b

Q50-What is the primary use of edrophonium?

a) Treatment of glaucoma
b) Management of hypertension
c) Diagnosis of myasthenia gravis
d) Relief of bronchospasm

Answer: c

Q51-How does edrophonium work?

a) It stimulates muscarinic receptors directly.
b) It inhibits the breakdown of acetylcholine.
c) It blocks nicotinic receptors at the neuromuscular junction.
d) It enhances the release of norepinephrine

Answer: b

Q52-What is the duration of action of edrophonium?

a) Several hours
b) 30-60 minutes
c) 10-20 minutes
d) Less than 5 minutes

Answer: c

Q53-Excess administration of edrophonium may lead to:

a) Hypertension
b) Bradycardia
c) Cholinergic crisis
d) Adrenergic blockade

Answer: c

Q54-Physostigmine primarily acts on which receptors in the autonomic nervous system?

a) Alpha-adrenergic receptors
b) Beta-adrenergic receptors
c) Muscarinic receptors
d) Nicotinic receptors

Answer: c

Q55-What is the primary therapeutic use of physostigmine?
a) Treatment of myasthenia gravis b) Reversal of nondepolarizing neuromuscular blockers
c) Management of Alzheimer's disease d) Treatment of glaucoma

Answer: b

Q56-Which of the following is a potential adverse effect of high doses of physostigmine?
a) Hypertension b) Tachycardia c) Convulsions d) Hyperglycemia

Answer: c

Q57-Neostigmine differs from physostigmine in that it:
a) Has a longer duration of action b) Can enter the central nervous system
c) Is mainly used to treat glaucoma d) Has a quaternary nitrogen

Answer: d

Q58-Which group of drugs is primarily used to manage symptoms of myasthenia gravis?
a) Tacrine, donepezil, rivastigmine, and galantamine
b) Edrophonium and pyridostigmine
c) Physostigmine and neostigmine
d) Atropine and scopolamine

Answer: b

Q59-Echothiophate is an indirect-acting cholinergic agonist that acts by:
A. Binding reversibly to acetylcholinesterase (AChE)
B. Inhibiting the synthesis of acetylcholine (ACh)
C. Covalently binding to AChE and permanently inactivating it
D. Enhancing the release of ACh from nerve terminals

Answer: C

Q60-The process by which the phosphorylated enzyme slowly releases one of its ethyl groups, making it impossible for chemical reactivators to break the bond between the remaining drug and the enzyme, is called:
A. Aging B. Reactivation
C. Inhibition D. Phosphorylation

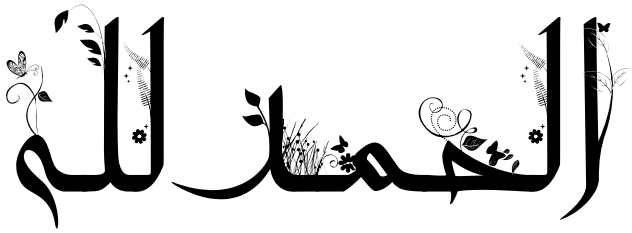
Answer: A

Q61-Therapeutically, echothiophate is primarily used for the treatment of:
A. Asthma B. Open-angle glaucoma C. Alzheimer's disease D. Myasthenia gravis

Answer: B

Q62-The main side effect associated with echothiophate is:
A. Hypertension B. Cataracts C. Gastrointestinal bleeding D. Cardiac arrhythmias

Answer: B



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