

AUTONOMIC NERVOUS SYSTEM

1. Acetylcholine:

- a) Is synthesized by the enzyme acetylcholine esterase
- b) Action in synapses is terminated by re-uptake of pre-synaptic neurons
- c) Is released by some postganglionic sympathetic neurons**
- d) Is destroyed by monoamine oxidase
- e) Reduces the heart rate by acting on nicotinic receptors in the SA node

2. Generalized sympathetic stimulation causes all the following *except*:

- a) Increases the heart rate
- b) Increases sweating
- c) Relaxes bronchial smooth muscles
- d) Tightens GIT sphincters
- e) Constriction of pupil**

3. The following actions of noradrenaline are mediated by stimulation of alpha-adrenergic receptors:

- a) Constriction of cutaneous blood vessels**
- b) Increase of myocardial contractility
- c) Dilation of arterioles to the viscera
- d) Relaxation of urinary bladder
- e) Dilation of systemic veins

4. Noreadrenaline is released by sympathetic nervous system at all the following *except*:

- a) Cutaneous blood vessels
- b) SA Node
- c) Sweat glands
- d) Cardiac muscles
- e) Renal nerves

5. Nicotinic Receptors are blocked by:

- a) Atropine
- b) Curare
- c) Suxmethonium
- d) Propranolol
- e) Acetylcholine esterase

6. Acetylcholine:

- a) Is blocked by propranolol
- b) Is blocked by curare in the autonomic ganglion
- c) Is the neurotransmitter at all sites that are blocked by atropine**
- d) Is secreted by postganglionic sympathetic to the heart
- e) Is degraded by the enzyme choline transferase

7. The sympathetic system:

- a) Has short postganglionic neurons
- b) Fibers are carried in the vagus nerve
- c) Produces nicotine at its nerve endings
- d) Has a thoraco-lumbar outflow from the spinal cord**
- e) Action is antagonized by atropine

8. The parasympathetic system:

- a) Has short preganglionic fibers
- b) Secretes dopamine
- c) Controls most of the movements and secretions of the gut**
- d) Brings increase in heart rate during exercise
- e) Action is blocked by Beta receptor blocker

9. The nicotinic cholinergic receptors are:

- a) Not inhibited by high concentrations of nicotine
- b) Inhibited by high concentrations of acetylcholine**
- c) Blocked by atropine
- d) Ligand-gated chloride channels
- e) Located in the cell nucleus

10. Cell bodies of preganglionic neurons of the sympathetic nervous system are found in:

- a) The dorsal root ganglion
- b) The sympathetic chain
- c) Collateral ganglia
- d) The dorsal horn cells of the spinal cord
- e) The lateral horn cells of the spinal cord

11. Collateral ganglia of the sympathetic nervous system include the:

- a) Adrenal medullary cells
- b) Coeliac ganglion
- c) Paravertebral ganglia
- d) The basal ganglia
- e) Nucleus of the tractus solitaries

12. The effects of parasympathetic stimulation include:

- a) Ejaculation
- b) Secretion of sweat
- c) Contraction of the rectum
- d) Constriction of gastrointestinal sphincters
- e) Dilation of the bronchioles

13. Adrenal medullary cells are stimulated by:

- a) Dopamine
- b) GABA
- c) Adrenaline
- d) Acetylcholine
- e) Nor-adrenaline

14. Dopamine is:

- a) Found in all autonomic ganglia
- b) An inhibitory transmitter
- c) An acetylcholine derivative
- d) Responsible for facilitating autonomic transmission
- e) Released by the interneurons of the parasympathetic ganglia

15. The termination of acetylcholine action is mainly due to:

- a) Reuptake by preganglionic neurons
- b) Diffusion from synaptic cleft
- c) Irreversible combination with cholinergic receptors
- d) Uptake by postsynaptic cell
- e) Cholinesterase in cholinergic synapses

16. Beta-1 adrenergic receptor stimulation causes:

- a) Coronary vasodilation
- b) Cardiac acceleration
- c) Bronchodilation
- d) Skin vasoconstriction
- e) Constriction of anal sphincter

17. Sweating is served by which of the following receptors?

- a) Nicotinic cholinergic receptors
- b) Alpha- adrenergic receptors**
- c) Beta- adrenergic receptors
- d) Muscarine cholinergic receptors
- e) Dopaminergic receptors

18. Blocking of the nicotinic ganglionic receptors in the ANS supplying the heart leads to:

- a) Inhibition of the sympathetic but not the parasympathetic
- b) Inhibition of the parasympathetic but not the sympathetic
- c) Inhibition of both sympathetic and parasympathetic**
- d) Decrease in the heart rate
- e) Decrease in the force of contraction

19. Regarding the sympathetic nervous system:

- a) Preganglionic fibers release noradrenalin
- b) Postganglionic fibers release noradrenalin**
- c) It is stimulated by food intake
- d) Release of acetylcholine by the pre-ganglionic fibers
- e) Has longer pre-ganglionic fibers than post-ganglionic fibers

20. Stimulation of the parasympathetic nervous system leads to:

- a) Constriction of pupils**
- b) Constriction of skin vessels
- c) Constriction of gastrointestinal sphincters
- d) Constriction of brain vessels
- e) Increased blood flow in coronary vessels

21. Muscarinic cholinergic receptors are found:

- a) On postganglionic sympathetic neurons
- b) On postganglionic parasympathetic neurons**
- c) In the sweat glands
- d) At the end-plate
- e) None of the above

22. Preganglionic sympathetic neurons differ from preganglionic parasympathetic neurons in that:

- a) They are shorter**
- b) They release acetylcholine
- c) They emerge from the lateral horn of the spinal cord
- d) They release noradrenaline
- e) They are myelinated

23. The action of acetylcholine on its receptors is terminated mainly by:

- a) Choline esterase**
- b) Reuptake into the terminal buttons
- c) Diffusion to the blood
- d) Pseudocholine esterase
- e) Endocytosis by the target tissue that bears its receptors

24. Sympathetic stimulation is expected to lead to:

- a) Constriction of the pupil
- b) Dilation of the bronchioles**
- c) Inhibition of sweating
- d) Venodilation
- e) Copious salivary secretion

25. Atropine will block all the following *except*:

- a) The action of the parasympathetic nervous system on the heart
- b) The action of the sympathetic nervous system on the sweat glands
- c) The action of the dilator sympathetic nervous system on the muscle blood vessels**
- d) The action of the parasympathetic nervous system on the gastric secretion
- e) The action of acetylcholine on skeletal muscles

26. Transmitters of the autonomic nervous system include:

- a) Acetylcholine at all postganglionic parasympathetic
- b) Dopamine in sympathetic ganglia
- c) Adrenaline in most sympathetic postganglionic neurons to the adrenal medulla
- d) Adrenalin and nor-adrenalin in preganglionic neurons to the adrenal medulla
- e) Dopamine in postganglionic sympathetic neurons

27. The sympathetic nerves supply:

- a) The external sphincters of the gastrointestinal & urinary tracts
- b) Smooth muscle of the constrictor pupillae
- c) Smooth muscle of the bronchioles
- d) Vasoconstrictor fibers to coronary vessels
- e) Vasodilator fibers to skin vessels

28. Which of the following is a characteristic of postganglionic parasympathetic neurons that make them different from postganglionic sympathetic neurons:

- a) They can be excited by dopamine
- b) Postganglionic parasympathetic nerve bodies are located in ganglia close to the spinal cord
- c) Most postganglionic parasympathetic nerves release the neurotransmitter acetylcholine
- d) Some postganglionic parasympathetic nerves release the neurotransmitter norepinephrine
- e) They are most active under conditions of stress, such as fight/flight

29. A selective beta adrenergic antagonist:

- a) Binds to and activates adrenergic receptors
- b) Does not inactivate all beta adrenergic receptors
- c) Prevents the binding of all beta adrenergic antagonists
- d) Is released from some postganglionic sympathetic nerve terminals
- e) May be released from the adrenal medulla

30. A drug that increases the heart rate from 70 to 100 beats per minute could be a:

- a) B1 adrenergic receptor agonist
- b) Cholinergic receptor antagonist
- c) Dopaminergic receptor agonist
- d) B2 adrenergic agonist
- e) Non-cholinergic, non-adrenergic agonist

31. Acetylcholine:

- a) Is blocked by Propranolol
- b) Is blocked by curare in the autonomic ganglion
- c) Is the neurotransmitter at all sites that are blocked by atropine
- d) Is secreted by postganglionic sympathetic to sweat glands
- e) Is degraded by the enzyme COMT

32. Sympathetic stimulation results in:

- a) Increased residual volume in the ventricles
- b) More rapid peristaltic waves
- c) Constriction of the internal anal sphincter
- d) Dilation of external urinary sphincter
- e) Contraction in bronchiolar smooth muscle

33. Muscarinic effects of acetylcholine can be inhibited by:

- a) Nicotine
- b) Muscarine
- c) Cholinesterase inhibitors
- d) Physostigmine
- e) Atropine

34. Tachycardia due to sympathetic stimulation is mediated by:

- a) B1 adrenergic receptors
- b) B2 adrenergic receptors
- c) Alpha adrenergic receptors
- d) Both Alpha and Beta receptors
- e) Nicotinic receptors