University of Buea

Faculty of Health Sciences

MED804

(GENERAL ENDOCRINOLOGY)

Exam (2007-2008)

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question. Each correct answer is ½ mark.

1. Which statement(s) regarding endocrine glands is/are incorrect?
   a. they produce hormones.
   b. they secrete their products into the blood.
   c. they are comprised of epithelial tissue.
   d. they are all controlled by the nervous system.
   e. they are ductless.

2. Neurosecretory neurons
   a. release neurotransmitters.
   b. release hormones.
   c. are unable to conduct action potentials, unlike ordinary neurons.
   d. Both release neurotransmitters and are unable to conduct action potentials, unlike ordinary neurons.
   e. Both release hormones and are unable to conduct action potentials, unlike ordinary neurons.

3. The specificity of hormones is due to
   a. specialized hormone secretion.
   b. molecular rearrangement at the site of action.
   c. specific binding of hormones to plasma proteins.
   d. specialization of target-cell receptors.
   e. discrete inactivation of hormones by the liver or kidneys.

4. Hormones
   a. are all of similar chemical composition.
   b. combine with specific receptors on the target cell's surface or inside the target cell.
   c. are secreted at a constant rate.
   d. all act by activating adenylate cyclase, which transforms ATP into cyclic AMP.
   e. All of these answers.

5. All hormones
   a. are regulated by the hypothalamus.
   b. initiate synthesis of new proteins.
   c. are secreted by endocrine glands through ducts into the blood.
   d. must combine with specific receptors on the target cells in order to exert their effects.
   e. are produced in a gland and target cells in different tissues.

6. Which of the following is true about hormones?
   a. are released from exocrine glands.
   b. interact with receptors at target-cell sites.
   c. are synthesized in the lymph nodes.
   d. interact with receptors in the blood.
   e. are all similar chemically.
7. Which of the following statements concerning hormones is incorrect?
   a. a single endocrine gland may produce multiple hormones.
   b. a single target cell may be influenced by more than one hormone.
   c. a single hormone can influence only one type of target cell.
   d. an endocrine organ may exert nonendocrine functions in addition to secreting hormones.
   e. the same hormone may be secreted by more than one endocrine gland.

8. Select the incorrect statement about peptide hormones.
   a. they include adrenal cortex hormones.
   b. insulin is an example.
   c. they are stored within secretory granules in the cell.
   d. they are secreted from endocrine glands.
   e. they must bind to membrane receptors to invoke their actions.

9. Which statement regarding tropic hormones is incorrect?
   a. they may stimulate the secretion of other hormones.
   b. they target other glands.
   c. they are all produced in the anterior pituitary.
   d. Both (a) and (b) above.
   e. All these answers.

10. Which of the following is not a function of the endocrine system?
    a. maintenance of blood sugar levels.
    b. regulation of metabolic activity and H₂O and electrolyte balance.
    c. promotion of growth and development
    d. transduction of external stimuli.
    e. helping the body cope with stressful situations.

11. Which of the following is not controlled at least in part by hormones?
    a. homeostasis.
    b. organic metabolism.
    c. rapid interactions with the external environment.
    d. H₂O and electrolyte balance.
    e. adaptation to stress.

12. Tropic hormones
    a. are produced by the posterior pituitary.
    b. are secreted only by the hypothalamus.
    c. primarily regulate hormone secretion by certain other endocrine glands.
    d. all have nontropic functions, too.
    e. are the hormones that stimulate athletes to win trophies.

13. Hormones are classified into the following three types:
    a. amines, peptides, and steroids.
    b. amines, steroids, and phospholipids
    c. amines, phospholipids, and steroids.
    d. amines, free fatty acids, and peptides.
    e. free fatty acids, peptides, and steroids.

14. Amines
    a. consist of a chain of specific amino acids of varying length.
    b. are derived from the amino acid tyrosine.
    c. include the hormones secreted by the thyroid gland and adrenal medulla.
    d. Both (a) and (c) above.
    e. All of these answers.

15. Which of the classes of hormones are polar and, accordingly, hydrophilic and lipophobic?
    a. peptides
    b. catecholamines
    c. steroids
    d. Both peptides and catecholamines are correct.
e. All of these answers.

16. Which of the classes of hormones are synthesized by the endoplasmic reticulum-Golgi complex mechanism?
   a. peptides
   b. catecholamines
   c. steroids
   d. thyroid hormone
   e. Both peptides and catecholamines are correct.

17. Select the hormone that is not a tropic hormone.
   a. ACTH
   b. ADH
   c. ICSH
   d. LH
   e. TSH

18. Which class(s) of hormone(s) is not stored in the secretory cell after being synthesized?
   a. peptides.
   b. catecholamines.
   c. steroids.
   d. thyroid hormone.
   e. Both steroids and thyroid hormone are correct.

19. Which of the classes of hormones is released by exocytosis upon appropriate stimulation?
   a. peptides.
   b. catecholamines.
   c. steroids.
   d. thyroid hormone.
   e. Both (a) and (b) above.

20. The transport of lipid-soluble hormones in the blood is accomplished by
   a. loose binding with albumin.
   b. specific binding to plasma proteins.
   c. as HDLs.
   d. Both (a) and (b) above.
   e. Both (b) and (c) above.

21. Which of the following statements concerning peptide hormones is incorrect?
   a. Peptides are synthesized by the endoplasmic reticulum-Golgi complex system.
   b. Peptides circulate largely bound to plasma proteins.
   c. Peptides bind to surface receptors of their target cells.
   d. Peptides exert their effect largely by means of second-messenger systems.
   e. Peptides are released by exocytosis upon appropriate stimulation.

22. Steroids
   a. are lipophilic.
   b. are derived from cholesterol.
   c. initiate the synthesis of specific new proteins within their target cells.
   d. are lipophilic and derived from cholesterol.
   e. All of these answers.

23. Lipophilic hormones
   a. include steroids and thyroid hormone.
   b. bind with receptors located inside their target cells.
   c. activate second-messenger systems within their target cells.
   d. Both (a) and (b) above.
   e. All of these answers.

24. Which of the classe(s) of hormones acts by means of a second-messenger system?
   a. proteins.
   b. catecholamines.
c. steroids.
d. thyroid hormone.
e. Both (a) and (b) above.

25. Which of the classes of hormones triggers the synthesis of new intracellular proteins within the target cell?
   a. peptides.
   b. catecholamines.
   c. steroids.
   d. thyroid hormone.
   e. Both steroids and thyroid hormone are correct.

26. The most common second messenger used by hydrophilic hormones is
   a. calcium.
   b. cyclic AMP.
   c. chromatin.
   d. messenger RNA.
   e. plasma proteins.

27. Which of the following is not associated with the postreceptor events of hydrophilic hormones?
   a. cyclic AMP.
   b. protein kinase.
   c. adenylyl cyclase.
   d. chromatin.
   e. phosphorylated enzymes.

28. Estrogens, testosterone, cortisol, and aldosterone are all derived from what molecular precursor?
   a. DHEA.
   b. cholesterol.
   c. UDP-glucose.
   d. thyroglobulin.
   e. epinephrine.

29. Select the incorrect statement about the postreceptor events of hydrophilic hormones.
   a. Adenylyl cyclase forms cyclic AMP.
   b. Cyclic AMP is a secondary messenger.
   c. Some hydrophilic hormones use Ca ions as a secondary messenger.
   d. Steroid hormones use this kind of hormone mechanism.
   e. The hydrophilic hormone binds to a membrane receptor.

30. In the second-messenger
   a. a small amount of one hormone (the second messenger) is required to release another.
   b. a tropic hormone (the first messenger) stimulates secretion of another hormone (the second messenger).
   c. the hormone first binds to a specific surface receptor, whereupon the hormone-receptor complex moves into the cell to combine with a specific intracellular receptor.
   d. releasing hormones (the first messenger) from the hypothalamus regulate many anterior pituitary hormones (the second messenger).
   e. a hormone (the first messenger) binds to surface receptors activating adenylyl cyclase, catalyzing cAMP formation.

31. Which of the following hormone types does not require membrane receptors to invoke cell responses?
   a. peptides
   b. catecholamines
   c. steroids
   d. thyroid hormone
   e. Both (c) and (d) above.
32. The effective plasma concentration of a hormone can be influenced by the hormone's
   a. rate of excretion.
   b. extent of binding to plasma proteins.
   c. rate of metabolic inactivation.
   d. rate of secretion.
   e. All of these answers.

33. The effective plasma concentration of a hormone is normally regulated by appropriate
   adjustments in the hormone's
   a. rate of excretion.
   b. extent of binding to plasma proteins.
   c. rate of metabolic inactivation.
   d. rate of secretion.
   e. rate of binding with target-cell receptors.

34. Select the correct statement about TSH.
   a. A buildup of the thyroid hormone stimulates its production by negative feedback.
   b. It is secreted by the thyroid gland.
   c. It is stored in the posterior pituitary.
   d. It stimulates the thyroid gland.
   e. Its activity is unrelated to a set point.

35. Lipophilic hormones must interact with which of the following prior to gene activation?
   a. membrane receptors.
   b. molecular chaperones.
   c. hormone response elements.
   d. Both (a) and (b) above.
   e. Both (b) and (c) above.

36. Which characteristic below is not shared by both lipophilic and hydrophilic hormones?
   a. amplification of hormone actions in the target cell.
   b. transport via plasma proteins.
   c. regulation of metabolic reactions.
   d. initiation of second messenger systems.
   e. Both (b) and (d) above.

37. Which of the following situations represents negative feedback?
   a. when hormone A stimulates hormone B, hormone B inhibits hormone C.
   b. when hormone A inhibits hormone B, hormone B inhibits hormone A.
   c. when hormone A stimulates hormone B, hormone B inhibits hormone A.
   d. when hormone A inhibits hormone B, hormone B inhibits hormone C.
   e. when hormone A stimulates hormone B, hormone B stimulates hormone A.

38. In the process of negative feedback,
   a. TSH inhibits thyroid hormone secretion by the thyroid gland.
   b. thyroid hormone inhibits TSH secretion by the anterior pituitary.
   c. thyroid hormone directly inhibits further thyroid hormone secretion by the thyroid gland.
   d. TRH inhibits TSH secretion by the anterior pituitary.

39. Which of the following statements concerning control of hormone secretion is not correct?
   a. normally the effective plasma concentration of a hormone is regulated by appropriate
      adjustments in the rate of its secretion.
   b. in order to maintain homeostasis, the rate of hormone secretion remains constant.
   c. all hormones are regulated with negative feedback controls.
   d. neuroendocrine reflexes produce a sudden increase in hormone secretion in response to a
      specific, usually external, stimulus.
   e. all hormones are regulated by other hormones.

40. Diurnal rhythms
   a. are inherent cyclical peaks and ebbs of hormone secretion that are a function of time and
      are entrained to the 24-hour light-dark cycle.
b. are important in maintaining hormone levels at a relatively constant set point no matter the time of day.
c. occur only with cortisol secretion.
d. Both (a) and (c) above.
e. None of these answers.

41. Permissiveness of hormones refers to the fact that
a. hormones permit cellular processes to occur.
b. hormones permit their target organs to function at the optimal rate.
c. in some instances an adequate amount of one hormone must be present for the full exertion of another hormone's effect, even though the first hormone itself does not directly elicit the response.
d. the nervous system through numerous neuroendocrine relationships permits the endocrine system to function.
e. the tropic hormones permit other endocrine glands to secrete their hormones.

42. With regards to circadian rhythms:
a. the hypothalamus' supraoptic nucleus maintains them.
b. The suprachiasmatic nucleus is responsible for generating them.
c. They are brought about by fluctuating levels of clock proteins.
d. Both (a) and (b) above.
e. Both (a) and (c) above.

43. Endocrine disorders resulting in too little hormone activity may stem from all of the following except:
a. lack of target cell receptors.
b. hyposecretion.
c. reduced plasma protein binding.
d. increased removal from blood.
e. genetic mutations.

44. Synergism occurs when
a. one hormone induces the loss of another hormone's receptors.
b. the actions of several hormones are complementary, and their combined effect is greater than the sum of their separate effects.
c. one hormone must be present in adequate amounts for the full exertion of another hormone's effect, even though the first hormone does not directly elicit the response.
d. one hormone increases the number of target-tissue receptors for another hormone.
e. the number of target tissue receptors for a hormone is reduced as a direct consequence of the hormone's effect on its own receptors.

45. Too little activity of a particular hormone can arise from
a. an abnormality within the endocrine gland that produces this hormone.
b. a deficiency of this hormone's tropic hormone.
c. an inborn lack of target-cell receptors for this hormone.
d. Both (a) and (b) above.
e. All of these answers.

46. The posterior pituitary
a. secretes ADH.
b. stores anterior pituitary hormones.
c. stores ACTH and LH.
d. secretes vasopressin and oxytocin into the hypothalamo-hypophyseal portal system.
e. None of these answers.

47. The posterior pituitary
a. is composed of nervous tissue.
b. stores anterior pituitary hormones, which are released into the blood upon hypothalamic stimulation.
c. synthesizes and secretes vasopressin and oxytocin.
48. Which of the following has a direct anatomical connection to the hypothalamus?
   a. adrenal gland
   b. posterior lobe of the pituitary
   c. thyroid gland
   d. parathyroid gland
   e. None of these answers.

49. Which of the following is a neurohormone?
   a. vasopressin
   b. thyroid hormone
   c. growth hormone
   d. cortisol
   e. luteinizing hormone

50. Which secretes insulin and glucagon?
   a. posterior pituitary
   b. liver
   c. pancreas
   d. stomach
   e. adrenal medulla

Good Luck

Dr. Salah A. Martin
General Endocrinology
Answer Section

MULTIPLE CHOICE

1. D
2. B
3. D
4. B
5. E
6. B
7. C
8. A
9. D
10. D
11. C
12. C
13. A
14. E
15. D
16. A
17. B
18. C
19. E
20. D
21. B
22. E
23. D
24. B
25. E
26. B
27. D
28. B
29. D
30. E
31. E
32. E
33. D
34. D
35. E
36. E
37. C
38. B
39. B
40. A
41. C
42. D
43. C
44. B
45. E
46. A
47. A
48. B
49. A
50. C