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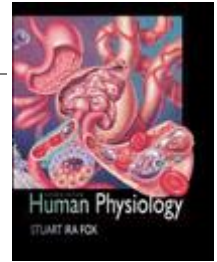
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Human Physiology, 7/e
 Stuart I Fox, Pierce College

Endocrine Glands: Secretion and Action of Hormones




Results Reporter

Out of 47 questions, you answered 10 correctly, for a final grade of 21%.

10 correct (21%) 
 37 incorrect (79%) 
 0 unanswered (0%)


Please answer all questions

Your Results:

The correct answer for each question is indicated by a .

1 INCORRECT


Which of the following general chemical categories is not represented by a group of hormones? (p. 287)

- (A) catecholamines (epinephrine and norepinephrine)
- (B) polypeptides and glycoproteins
-  (C) nucleic acids
- (D) steroids

Feedback: Incorrect: Catecholamines are secreted from the adrenal medulla. (p. 287)

2 INCORRECT


Which of the following does not accurately describe the steroid hormones? (p. 287)

- (A) Steroid hormones are derived from cholesterol molecules as a raw material.
- (B) Steroid hormones are lipophilic, lipid-like molecules not soluble in water.
-  (C) Steroid hormones include the prostaglandins.
- (D) Steroid hormones include the sex hormones and corticosteroids.

Feedback: Incorrect: All steroid hormones are derived from cholesterol. (p. 287)

3 CORRECT


Which hormones are secreted by the adrenal cortex? (p. 287)

-  (A) corticosteroids: aldosterone and cortisol among others
- (B) thyroxine
- (C) epinephrine and norepinephrine catecholamines
- (D) ADH and oxytocin

Feedback: Correct: The corticoids are secreted from the adrenal cortex. (p. 287)

4 CORRECT

Which of the following hormones contain the element iodine? (p. 289)

-  (A) triiodothyronine (T₃) and tetraiodothyronine (T₄)
- (B) catecholamines (epinephrine and norepinephrine)
- (C) sex steroids
- (D) corticosteroids

Feedback: Correct: The thyroid hormones contain iodine. (p. 289)

- 5 INCORRECT** The hormones that are small, nonpolar and can be taken orally, yet are not steroids are (p. 288)
- A) prostaglandins**
 - B) estrogen and progesterone**
 - C) insulin and glucagon**
 - D) thyroid hormones (T₃ and T₄)**

Feedback: Incorrect: Prostaglandins are not considered to be true hormones. (p. 316)

- 6 INCORRECT** Which statement about prohormones is false? Prohormones (p. 289)
- A) are often derived from prehormones**
 - B) include proinsulin from the endocrine beta cells of the pancreas**
 - C) are usually more active than the final hormones themselves**
 - D) are usually longer chained molecules than those of the final hormones**

Feedback: Incorrect: Many hormones undergo multiple processing steps initially being synthesized as prehormones. (p. 289)

- 7 INCORRECT** Whether a molecule acts as a neurotransmitter or a hormone, which statement about physiological regulation by these molecules is false? (p. 290)
- A) Target cells must have specific receptor proteins with which these molecules combine.**
 - B) When these molecules bind to target cells, specific sequences of changes must occur.**
 - C) There must be an "off-switch" that will stop the induced changes.**
 - D) Second messengers will always be involved in the response of the target cell**

Feedback: Incorrect: Target cells lacking receptors for the neurotransmitter or hormone are unable to respond to the signal. (p. 290)

- 8 INCORRECT** Which of the following does not describe the synergistic effects of hormones? (p. 290)
- A) two or more hormones working together to produce a particular result**
 - B) effects that may be additive or complementary**
 - C) effects that enhance the activity of a second hormone at a target**
 - D) the action of epinephrine and norepinephrine on the heart rate**

Feedback: Incorrect: Synergistic effects occur when multiple hormones interact to produce a given response in a target cell. (p. 290)

- 9 CORRECT** Between which of the following hormone pairs is the interaction between hormones not an example of the permissive effect of a first hormone for a second hormone? (p. 290)
- A) estrogen for prolactin on the mammary glands during pregnancy**
 - B) parathyroid hormone (PTH) for vitamin D₃ on blood Ca²⁺ levels**
 - C) estrogen for progesterone on the uterus**
 - D) glucocorticoids for catecholamine actions**

Feedback: Correct: Estrogen inhibits the secretion of prolactin during pregnancy. (p 290)

10 INCORRECT The half-life of most hormones ranges from (p. 291)

- A) seconds to minutes
- B) minutes to hours
- C) hours to days
- D) days to weeks

Feedback: Incorrect: Very few hormones have half-lives less than minutes. (p. 291)

11 CORRECT The pulsatile (noncontinuous) secretion of hormones (p. 291)

- A) describes how many polypeptide and glycoprotein hormones are released
- B) is needed to prevent upregulation of target cells
- C) describes the use of anabolic steroids (synthetic androgens) by athletes
- D) prolongs the half-life of a given hormone

Feedback: Correct: The release of these hormones is not constant and requires specific signals be given to the secreting cells. (p. 291)

12 INCORRECT The receptors for steroid hormones are found here. (p. 292)

- A) receptor proteins within the nucleus of the target cell
- B) receptor proteins within the cytoplasm of the target cell
- C) receptor proteins on the outer surface of the target cell membrane

Feedback: Incorrect: Receptors for steroid hormones are most often found in the cytoplasm. (p. 292)

13 CORRECT The receptors for thyroid hormones are found here. (p. 292)

- A) receptor proteins within the nucleus of the target cell
- B) receptor proteins within the cytoplasm of the target cell
- C) receptor proteins on the outer surface of the target cell membrane

Feedback: Correct: Thyroid hormones are hydrophobic and can pass through the cell membrane and into the nucleus where the receptors are located. (p. 292)

14 INCORRECT The receptors for catecholamine and polypeptide hormones are found here. (p. 292)

- A) receptor proteins within the nucleus of the target cell
- B) receptor proteins within the cytoplasm of the target cell
- C) receptor proteins on the outer surface of the target cell membrane

Feedback: Incorrect: These hormones are not lipid-soluble and cannot pass through the plasma membrane to bind to receptors in the nucleus. (p. 292)

15 CORRECT Which statement about thyroxine is false? (p. 293)

- A) It is the major hormone secreted by the thyroid gland; also known as triiodothyronine, or T₃.
- B) About 99.96% of thyroxine is attached to carrier proteins in the plasma and the rest is free.
- C) Its carrier protein in the blood is named thyroxine-binding globulin (TBG) and has a high affinity for thyroxine.
- D) It is not the active thyroid hormone that acts within the target cells.

Feedback: Correct: While thyroxine is the major hormone secreted by the thyroid gland it is also known as tetraiodothyronine or T₄. (p. 293)

16 INCORRECT

The membrane enzyme that is activated by G-protein subunits to catalyze the synthesis of cAMP as the second messenger of target cells is (p. 295)

- A) protein kinase
- B) phosphodiesterase
- C) adenylyate cyclase

Feedback: Incorrect: Protein kinase is activated by cAMP. (p. 295)

17 CORRECT

The normally inactive enzyme that becomes active, catalyzing the phosphorylation of proteins, when newly formed cAMP binds to it, is known as (p. 295)

- A) protein kinase
- B) phosphodiesterase
- C) adenylyate cyclase

Feedback: Correct: Protein kinase will be activated by cAMP and then phosphorylate proteins in the cell. (p. 295)

18 INCORRECT

The enzyme that inactivates the second messenger cAMP by hydrolyzing it into inactive fragments. (p. 295)

- A) protein kinase
- B) phosphodiesterase
- C) adenylyate cyclase

Feedback: Incorrect: Protein kinase will be activated by cAMP. (p. 295)

19 CORRECT

Which of the following does not describe the cytoplasmic protein, calmodulin? (p. 296)

- A) It binds to the alpha subunit of membrane G-proteins to produce effects.
- B) The ultimate function of this protein may be stimulated by the actions of phospholipase C.
- C) It is activated by Ca²⁺ entering the cytoplasm from the endoplasmic reticulum or from outside the cell.
- D) It activates specific protein kinase enzymes that phosphorylate other proteins to affect target cell activity.

Feedback: Correct: The α subunit of G-proteins dissociates when the hormone bind to the receptor. (p. 295)

20 INCORRECT

Which of the following is not part of the adenohipophysis or anterior pituitary gland? (p. 299)

- A) pars distalis
- B) pars nervosa
- C) pars tuberalis

Feedback: Incorrect: The adenohipophysis is comprised of the pars distalis and pars tuberalis. (p. 299)

21 INCORRECT

The hormone that stimulates the growth of ovarian follicles in females and the production of sperm in the testes of males, is (p. 300)

- A) growth hormone (GH, or somatotropin)
- B) thyroid stimulating hormone (TSH, or thyrotropin)
- C) adrenocorticotrop hormone (ACTH, or corticotropin)
- D) follicle-stimulating hormone (FSH, or folliculotropin)

Feedback: Incorrect: GH stimulates protein synthesis, lipolysis and increases in blood glucose. (p. 300)

- 22 INCORRECT** The hormone secreted in both males and females, that plays a supporting role in the regulation of the male reproductive system by the gonadotropin (FSH and LH) and acts on the kidneys to help regulate water and electrolyte balance (p. 300)
- (A) adrenocorticotrophic hormone (ACTH, or corticotropin)
 - (B) luteinizing hormone (LH, or luteotropin)
 - (C) prolactin (PRL)
 - (D) interstitial cell-stimulating hormone (ICSH)
- Feedback: Incorrect: ACTH stimulates the release of hormones from the adrenal cortex. (p. 300)**
- 23 INCORRECT** The anterior pituitary hormone associated with dwarfism, gigantism, pituitary cachexia, and acromegaly is (p. 301)
- (A) FSH
 - (B) GH
 - (C) ACTH
 - (D) TSH
- Feedback: Incorrect: FSH is associated with reproductive system disorders. (p. 300)**
- 24 INCORRECT** The supraoptic nuclei and paraventricular nuclei are significant clusters of cell bodies because they synthesize two very important hormones, called (p. 301)
- (A) LH and FSH
 - (B) GH and ACTH
 - (C) TSH and prolactin
 - (D) oxytocin and ADH
- Feedback: Incorrect: LH and FSH are synthesized by the anterior pituitary gland not the hypothalamus. (p. 300)**
- 25 INCORRECT** Which of the following is not a feature characteristic of the anterior pituitary? (p. 301)
- (A) It synthesizes and releases tropic hormones.
 - (B) It is controlled by releasing and inhibiting hormones secreted from the hypothalamus.
 - (C) It serves as the terminal end of the hypothalamo-hypophyseal tract.
 - (D) Its hormones may influence other endocrine glands, that, in turn, secrete other hormones.
- Feedback: Incorrect: The hormones secreted by the anterior pituitary gland support other endocrine glands and are considered tropic hormones. (p. 301)**
- 26 INCORRECT** The two inhibiting hormones from the hypothalamus are (p. 303)
- (A) GnRH and PIH
 - (B) TRH and CRH
 - (C) GnRH and GRH
 - (D) PIH and somatostatin
- Feedback: Incorrect: GnRH stimulates the release of LH and FSH while PIH inhibits prolactin secretion. (p. 303)**
- 27 INCORRECT** A rare, but classic positive feedback effect is demonstrated by (p. 304)
- (A) increased TSH production when absence of dietary iodine causes goiter.
 - (B) increased estradiol, causing the blood levels of LH to "surge" in females at ovulation.
 - (C) increased GnRH and FSH hormones following testes removal (castration) in males.
 - (D) increased ACTH from Addison's disease, causing increased cortisol secretion .

Feedback: Incorrect: The production of iodine deficiency goiter is due to a lack of negative feedback. (p. 304)

28 INCORRECT

Which of the statements about the adrenal cortex is false? (p. 305)

- A)** It is derived from mesoderm tissue in the embryo.
- B)** It is stimulated by the hormone ACTH secreted by the anterior pituitary gland.
- C)** It secretes the catecholamine hormones - mostly epinephrine.
- D)** It is divided into three zones - an outer, middle, and inner zone, that appear to have different functions.

Feedback: Incorrect: The mesoderm gives rise the adrenal cortex and the neural crest to the adrenal medulla. (p. 305)

29 INCORRECT

Which hormones are not secreted by the adrenal cortex? (p. 306)

- A)** aldosterone and other mineralocorticoids
- B)** sex steroids: weak androgens and some estrogens
- C)** hydrocortisone and other glucocorticoids
- D)** epinephrine and some norepinephrine catecholamines

Feedback: Incorrect: Both aldosterone and other mineralocorticoids are secreted by the adrenal cortex. (p. 306)

30 CORRECT

Which statement about aldosterone is false? (p. 306)

- A)** It is the most potent adrenal glucocorticoid hormone.
- B)** It is produced by the zona glomerulosa region of the adrenal cortex.
- C)** Its secretion is controlled by alterations in blood volume and electrolyte balance.
- D)** Its lack in Addison's disease may lead to electrolyte imbalance, dehydration, and death, if not treated.

Feedback: Correct: Aldosterone is a mineralocorticoid, not a glucocorticoid. (p. 306)

31 INCORRECT

Hans Selye's general adaptation syndrome (GAS) does not include (p. 308)

- A)** exhaustion, sickness, or death if adaptations or corrective changes aren't made
- B)** activation of the pituitary-adrenal axis causing an initial alarm reaction
- C)** the formation of a tumor of the adrenal medulla (pheochromocytoma) that secretes large amounts of epinephrine and norepinephrine
- D)** a stage of resistance or readjustment to the demands of the stressors

Feedback: Incorrect: Exhaustion and sickness are characteristics of the last stage of the GAS. (p. 308)

32 INCORRECT

Which function of glucocorticoids such as hydrocortisone, is best related to the suggestion that prolonged stress results in an increased incidence of cancer and other diseases? (p. 308)

- A)** They stimulate an increase in heart rate and in cardiac output.
- B)** They cause generalized vasoconstriction that elevates blood pressure.
- C)** They stimulate the secretion of aldosterone hormones that regulates blood volume and electrolyte balance.
- D)** They can inhibit the ability of the immune system to protect against disease.

Feedback: Incorrect: The increase in heart disease and cardiac output lead to heart disease, not cancer. (p. 308)

- 33 INCORRECT** Which statement about thyroid hormones is false? (p. 309)
- A**) Thyroxine is synthesized by simple cuboidal epithelial cells called follicular cells.
 - B**) Thyroxine is very soluble in water and therefore easily soluble in the bloodstream.
 - C**) Calcitonin is a hormone produced by parafollicular cells located outside the follicles.
 - D**) Thyroxine is ultimately formed from the amino acid, L-tyrosine.

Feedback: Incorrect: The cells of the thyroid follicle that synthesize and secrete hormones are cuboidal epithelial cells. (p. 309)

- 34 INCORRECT** Which statement about the parathyroid glands is false? (p. 312)
- A**) They usually include four small paired (superior and inferior) glands.
 - B**) They are embedded in the posterior surfaces of the lateral lobes of the thyroid gland.
 - C**) They secrete many hormones including parathyroid hormone (PTH), among others.
 - D**) PTH acts on tissues such as bone, kidney, and intestines to raise the levels of calcium in the blood.

Feedback: Incorrect: The parathyroid glands are small, paired glands located on the lateral lobes of the thyroid gland. (p: 312)

- 35 INCORRECT** Which statement about glucagon is false? (p. 313)
- A**) It is a hormone secreted by the alpha cells within the islets of Langerhans of the pancreas.
 - B**) It is a hormone that is secreted when blood glucose levels are low.
 - C**) As a hormone it stimulates both glycogen breakdown (glycogenolysis) and fat breakdown (lipolysis.)
 - D**) It is a hormone that is secreted after eating a meal.

Feedback: Incorrect: The pancreatic alpha cells secrete glucagon while the beta cells secrete insulin. (p. 313)

- 36 INCORRECT** Which statement about the disease, diabetes mellitus is false? (p. 314)
- A**) It is characterized by fasting hyperglycemia and the presence of glucose in the urine.
 - B**) Type I, or insulin-dependent diabetes is the more common form.
 - C**) Type II, or non-insulin-dependent diabetes is caused by decreased tissue sensitivity to the effects of insulin so that more is required for normal effect.
 - D**) Type I diabetes is caused by the destruction of beta cells that produce insulin.

Feedback: Incorrect: Diabetes mellitus occurs when the cells are unable to use glucose, causing glucose concentrations to rise in the blood and urine. (p. 314)

- 37 INCORRECT** The hormone insulin (p. 314)
- A**) is secreted by the alpha cells of the pancreas.
 - B**) promotes the entry of glucose and amino acids into tissue cells.
 - C**) promotes the breakdown of glycogen (glycogenolysis) and fat (lipolysis).
 - D**) levels fall immediately after a meal is eaten.

Feedback: Incorrect: The alpha cells of the pancreas secrete glucagons, the beta cells secrete insulin. (p. 313)

38 INCORRECT Which statement about melatonin is false? (p. 314)

- A)** It is secreted by the pineal gland located in the roof of the third ventricle.
- B)** Its secretion is highest in children aged one to five and decreases thereafter.
- C)** It may have an important role in the onset of puberty.
- D)** More is secreted in the daytime than at night.

Feedback: The main source of melanin synthesis and secretion is the pineal gland. (p. 314)

39 INCORRECT Which statement about the testes is false? (p. 315)

- A)** The seminiferous tubules produce sperm, the male gamete.
- B)** The interstitial cells (Leydig cells) secrete the primary androgen, estradiol-17 β .
- C)** Testosterone is needed for the development of the male sex accessory organs, that include the prostate, seminal vesicles, epididymis, and vas deferens.
- D)** Testosterone is required for the development of male secondary sexual characteristics.

Feedback: Incorrect: In the testes the interstitial cells produce testosterone and the seminiferous tubules are the site of spermatogenesis. (p. 316)

40 INCORRECT During the normal menstrual cycle in females (p. 316)

- A)** the hormone, progesterone is secreted in greatest amounts during the first half of the cycle.
- B)** many follicles within the ovary will undergo ovulation each month.
- C)** luteinizing hormone converts the empty follicle into a corpus luteum, a new structure which secretes both progesterone and estradiol-17 β
- D)** that critical event, ovulation, occurs at the end of each cycle

Feedback: Incorrect: Progesterone is secreted in the greatest in the second half of the cycle. (p. 316)

41 CORRECT Which hormone is not secreted by the endocrine tissues of the human placenta? (p. 316)

- A)** prolactin
- B)** estrogens
- C)** progesterone
- D)** human chorionic gonadotropin (hCG)

Feedback: Correct: Prolactin is secreted by the anterior pituitary gland. (p. 316)

42 INCORRECT Which of the following specific regulators belong to the group of molecules called lymphokines that are produced by lymphocytes (WBC) and are involved in specific immunity? (p. 317)

- A)** bradykinins
- B)** endothelins
- C)** neurotrophins
- D)** interleukins

Feedback: Incorrect: Bradykinins are produced by the endothelial cells of blood vessels and stimulate dilation of blood vessels. (p. 317)

- 43 INCORRECT** Which of the following autocrine regulatory molecules was previously known as endothelium-derived relaxation factor due to its action on the smooth muscle layer of blood vessels? (p. 317)
- (A) lymphokines
 - (B) nitric oxide
 - (C) bradykinin
 - (D) endothelin-1
- Feedback: Incorrect: Lymphokines are cytokines produced by lymphocytes. (p. 317)**
- 44 INCORRECT** Which statement about prostaglandins is false? (p. 318)
- (A) They are twenty-carbon-long fatty acids containing a five-membered carbon ring.
 - (B) They are derived from arachidonic acid released from phospholipids in the cell membrane.
 - (C) They are later converted into leukotrienes.
 - (D) They are produced in almost every organ and have been implicated in a wide variety of regulatory functions.
- Feedback: Incorrect: Regardless of final structure all prostaglandins contain a five-membered carbon ring and are 20 carbon fatty acids. (p. 318)**
- 45 INCORRECT** Prostaglandins (p. 318)
- (A) are produced by only a few very specific tissues and organs in the body.
 - (B) are involved in only a few very highly specialized regulatory functions.
 - (C) include those that are blood vessel vasoconstrictors and others that are vasodilators.
 - (D) always produce the same effects, even when acting on different tissues of the body.
- Feedback: Incorrect: Prostaglandins are produced by a wide variety of tissues and organs in the body. (p. 318)**
- 46 INCORRECT** Which regulatory function is not listed in the discussion of prostaglandin actions? (p. 318)
- (A) pain and fever control during the inflammatory response
 - (B) growth and development of skeletal muscles and long bones during growth spurts
 - (C) regulation of stomach secretions, intestinal motility, and fluid absorption in the gastrointestinal tract
 - (D) regulation of blood flow in the kidney and thus, some control of urine volume and content
- Feedback: One role of prostaglandins is to increase body temperature and stimulate the sensation of pain. (p. 318)**
- 47 INCORRECT** Aspirin and other nonsteroidal anti-inflammatory drugs are involved in many activities; however, they do not (p. 319)
- (A) produce their effects by specifically inhibiting the cyclo-oxygenase enzyme.
 - (B) produce some unwanted side effects, like gastric bleeding and prolonged clotting time.
 - (C) increase the risk of heart attacks and strokes by increasing the aggregation of platelets.
 - (D) reduce the synthesis of specific prostaglandin, such as prostacyclin.
- Feedback: Incorrect: These agents inhibit both isoforms of the cyclo-oxygenase enzyme. (p. 319)**

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