

INDIAN SCHOOL AL WADI AL KABIR



DEPARTMENT OF SCIENCE (2023 –2024)

CLASS: XI	SUBJECT: BIOLOGY	DATE OF COMPLETION: 11/02/2024
WORKSHEET WITH ANSWERS	TOPIC: CHEMICAL COORDINATION AND INTEGRATION	NOTE: A4 FILE FORMAT
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

1Mark Questions

Q1. Secretin and cholecystokinin are digestive hormones. They are secreted in

- a. esophagus
- b. ileum
- c. duodenum
- d. pyloric stomach

Q2. Oxytocin helps in

- a. ovulation
- b. lactation but not childbirth
- c. childbirth but not lactation
- d. lactation and childbirth both.

Q3. Secondary sexual characters develop in females because of:

- a. estrogen
- b. androgens
- c. absence of androgens
- d. absence of estrogens

Q4. Which of the following glands secreted the hormone melatonin?

- a. anterior pituitary gland
- b. melanocytes

- c. pineal gland
- d. suprachiasmatic nucleus of the hypothalamus

Q5. Glucocorticoids do not:

- a. Stimulate gluconeogenesis.
- b. cause lipolysis
- c. cause proteolysis
- d. stimulates cellular uptake and utilization of amino acids.

II : Assertion and reasoning:

- a) Assertion and Reason are true and Reason is the correct explanation of the Assertion.
- b) Assertion and Reason are true but Reason is not a correct explanation of the Assertion.
- c) Assertion is true but the Reason is false.
- d) Assertion and Reason are false.

Q.6. Assertion: Failure of secretion of somatotropin from an early age causes dwarfism in the patient.

Reason: Somatotropin hormone stimulates the body growth and elongation of long bones.

Q.7. Assertion: Failure of secretion of hormone vasopressin causes diabetes mellitus in the patient.

Reason: Vasopressin increases the volume of urine by increasing the reabsorption of water from the urine.

Q.8. Assertion: The person with diabetes insipidus feels thirsty.

Reason: A person with diabetes insipidus suffers from excess secretion of vasopressin.

Q.9. Assertion: Melatonin influences the menstrual cycle, pigmentation, and defense capability.

Reason: It plays an important role in the regulation of diurnal rhythm of our body.

Q.10. Assertion: Thyroid hormones promote physical growth and development of mental faculties.

Reason: Hypothyroidism in adults causes retarded sexual development.

2Mark Questions

Q.11. Define erythropoiesis. Name the hormone that triggers it.

Q.12. Which hormone aids in cell-mediated immunity?

Q.13. Which hormone is responsible for normal sleep cycle?

Q.14. Name the endocrine gland, which is present only in females?

Q.15. Which is the steroid that controls inflammatory responses? Name its source and its other functions.

3Mark Questions

Q.16. Why do old people have a weak immunity system?

Q.17. How does hypothyroidism affect the maturation and development of a growing baby, generally seen during pregnancy?

Q.18. Differentiate between hyperthyroidism and hypothyroidism.

4Mark Questions

Q.19. The thyroid gland is composed of two lobes which are located on either side of the trachea. Both the lobes are interconnected with a thin flap of connective tissue called isthmus. The thyroid gland is composed of follicles and stromal tissues. Each thyroid follicle is composed of follicular cells, enclosing a cavity. These follicular cells synthesise two hormones, tetraiodothyronine or thyroxine (T₄) and triiodothyronine (T₃). Iodine is essential for the normal rate of hormone synthesis in the thyroid. Deficiency of iodine in our diet results in hypothyroidism and enlargement of the thyroid gland, commonly called goitre. Hypothyroidism during pregnancy causes defective development and maturation of the growing baby leading to stunted growth (cretinism), mental retardation, low intelligence quotient, abnormal skin, deaf-mutism, etc. In adult women, hypothyroidism may cause menstrual cycle to become irregular. Due to cancer of the thyroid gland or due to development of nodules of the thyroid

glands, the rate of synthesis and secretion of the thyroid hormones is increased to abnormal high levels leading to a condition called hyperthyroidism which adversely affects the body physiology.

Exophthalmic goitre is a form of hyperthyroidism, characterised by enlargement of the thyroid gland, protrusion of the eyeballs, increased basal metabolic rate, and weight loss, also called Graves' disease. Thyroid hormones play an important role in the regulation of the basal metabolic rate. These hormones also support the process of red blood cell formation. Thyroid hormones control the metabolism of carbohydrates, proteins and fats. Maintenance of water and electrolyte balance is also influenced by thyroid hormones. Thyroid gland also secretes a protein hormone called thyrocalcitonin (TCT) which regulates the blood calcium levels.

a) _____ Protein hormone secreted by thyroid gland regulates the blood calcium levels along with PTH.

- a) thyromelatonin
- b) thyrocalcitonin
- c) thyrocalciumtonin
- d) thyrocarbotonin

b) cretinism is referred as,

- a) stunted growth due to deficiency of iodine
- b) stunted growth due to deficiency of thyroid hormones
- c) mental retardation due to deficiency of iodine
- d) deaf-mutism due to deficiency of iodine

c) Explain how both lobes of thyroid gland are interconnected?

d) Give the composition of thyroid follicle and their function?

5M Questions

Q.20. Explain why hypothalamus is a super master endocrine gland.

Q.21. What are the causes and symptoms of hormonal disorders?

Q.22. A milkman's cow refuses to give milk. On being fondled by the calf, the cow produced enough milk. Explain the significance of the endocrine gland and the pathway related to this response.

ANSWER KEY

1. d. pyloric stomach
2. d. lactation and childbirth both.
3. a. estrogen
4. c. pineal gland
5. c. cause proteolysis
6. a
7. d
8. c
9. b
10. b

11. The process of formation of RBC is known as erythropoietin. The peptide hormone erythropoietin produced from the juxtaglomerular cells of the kidney triggers the erythropoiesis.

12. Thymosins play a significant role in the differentiation and development of T-lymphocytes that provide cell-mediated immunity.

13. There are a variety of hormones, which are responsible for sleep-wake cycles. This hormone includes– cortisol, melatonin, prolactin and thyroid-stimulating hormone- TSH.

14. Estrogen, progesterone and testosterone are considered as a female sex hormone and are present only in females.

15. Glucocorticoids. They are secreted by the adrenal cortex. They trigger gluconeogenesis, proteolysis, and lipolysis and hinder the cellular uptake and utilization of amino acids.

16. The thymus gland is situated on the dorsal side of the heart and the aorta and is a lobular structure. Derived from the embryo's endoderm, the thymus produces the thymosin hormone that triggers the development of WBCs which produce immunity. In older individuals, the thymus degenerates thus causing a decreased thymosin secretion. Hence their immune system becomes weak.

17. During pregnancy, hypothyroidism causes defective maturation and development of the fetus, that induces a stunted growth, low Intelligence Quotient (IQ), mental retardation, deaf-mutism, abnormal skin, etc.

18. Hyperthyroidism is the over secretion of thyroid hormone and occurs due to the cancer of the thyroid gland whereas hypothyroidism is the low secretion of the thyroxine hormone.

19.

a) b

b) a

c) Thyroid gland is composed of two lobes these lobes are interconnected with a thin flap of connective tissue called isthmus.

d) Thyroid follicle is made up of follicular cells.

20. The hypothalamus controls an array of functions. It has many groups of neurosecretory cells known as nuclei that produce hormones. These hormones maintain the secretion and synthesis of pituitary hormones. The hormones produced by the hypothalamus are – the releasing hormones and the inhibiting hormones. The releasing hormones trigger the secretion of pituitary hormones and the inhibiting hormones hinder the secretions of the pituitary hormones. Through a portal circulatory system, the hormones arrive at the pituitary gland and check the functions of the anterior pituitary. Hypothalamus directly regulates the posterior pituitary. It also synthesizes two hormones – vasopressin and oxytocin which are further conveyed to the posterior pituitary.

21. Hormonal disorders or imbalance occurs when there is an under secretion or an oversecretion of respective hormones by the respective endocrine glands. There are several other environmental factors and medical conditions behind the cause of hormonal disorders in an individual and it varies with the age and sex. These factors include:

- Obesity,
- Cancers.
- Allergies.
- Poor diet.
- Infections.
- Benign tumours.
- Intake of oral steroids.
- Exposure to toxins, pollutants, and other chemicals.

The symptoms of a hormonal imbalance usually vary according to the type of hormones. The more common causes of hormonal imbalances are:

1. Fatigue.
2. Bloating.
3. Depression.
4. Headaches.
5. Puffy face.
6. Infertility.
7. Mood swings.
8. Blurred vision.
9. Sleep Disorders.
10. Increased thirst.
11. Reduced sex drive.
12. Excessive sweating.
13. Changes in appetite.

22. A neuroendocrine reflex is created when calf suckling occurs that causes an increase in the oxytocin from the neurohypophysis. In the hypothalamus, oxytocin is synthesized in specific nuclei, the paraventricular nucleus, and the supraoptic nucleus. Here the neurons produce the oxytocin precursor and bundle it into vesicles. The level of oxytocin in the blood gets concentrated within a minute or two after the stimulation which causes smooth muscle contraction of the udder causing milk to flow. An intra-udder hormone that functions like oxytocin would do a similar function. Following is a summarization. Suckling stimulus → Hypothalamus → Neurohypophysis → Oxytocin → Udder → Flow of milk.

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