

Chapter No. 22
Chemical Coordination
And Integration

Q. No. 1 write down function of following Hormones.

① Parathyroid Hormone :-

- The parathyroid gland secretes a peptide hormone called parathyroid hormone is regulated by the circulating levels of calcium ions.
- parathyroid hormones increase the Ca^{2+} level in the blood.
- It also acts on bone & stimulates the process of bone resorption.
- PTH also stimulates reabsorption of Ca^{2+} by the renal tubules & increase Ca^{2+} absorption from the digested food.
- Thus is a hypercalcemic hormone.
- i.e increase blood calcium level along with TCT.
- It plays significant role in calcium balance in the body.

② Thyroid Hormone :-

- Thyroid hormone play an important role in basal metabolic rate.
- These hormone also support process of red blood cell formation.
- Thyroid hormone controls metabolism of protein

carbohydrates & fats.

- The maintenance of water & electrolyte balance is also influenced by thyroid hormone.
- Thyroid gland secretes protein hormone called thyrocalcitonin which regulates blood calcium level.

③ Glucagon & Insulin :-

- The endocrine pancreas consist of Islet of Langerhans.
- The two main types of cells in the Islet of Langerhans are called α cells & β cells.
- The α cells secrete a hormone called glucagon.
- The β cells secrete a hormone called Insuline.
- The glucagon is a peptide hormone.
- It plays important role in maintaining a normal blood glucose level.
- The glucagon acts mainly on the liver cells & stimulates glycogenolysis resulting in an increased blood sugar.
- This hormone stimulates process of gluconeogenesis which contributes to hyperglycemia.
- Glucagon reduces the cellular glucose uptake & utilisation.
- The glucagon is hyperglycemic hormone.

Insulin :-

- Insuline is a peptide hormone.
- Its play major role in the regulation of glucose homeostasis.
- Insuline acts mainly on hepatocytes & adipocytes & enhances cellular glucose uptake & utilisation.

Follicles, appearance of female secondary sex characters
- Estrogen also regulate female sexual behavior.

Q. No. 2 write brief note on pituitary gland?

- pituitary gland is bony cavity called sella turcica & is attached to hypothalamus.
 - It divided into adenohypophysis & neurohypophysis.
 - The adenohypophysis consist of two portion - pars distalis & pars intermedia.
 - The pars distalis produces growth hormone (GH), prolactin (PRL), Thyroid stimulating hormone (TSH), Adrenocorticotropic hormone (ACTH), Leuteinizing Hormone (LH), Folicle Stimulating Hormone (FSH).
 - Neurohypophysis stores & release two hormone called oxytocin & vasopresin.
 - over secretion of GH stimulate abnormal growth of the body leading to gigantism & low secretion of GH results in stunted growth resulting in pituitary dwarfism.
 - Prolactin regulate the growth of mammary glands & formation of milk in them.
 - TSH stimulates the synthesis & secretion of thyroid hormone from the thyroid gland.
 - ACTH stimulate the synthesis & secretion of steroid hormone called glucocorticoids from the adrenal cortex.
 - LH, FSH stimulate gonadal activity & hence & called gonadotrophins.
- In male LH stimulate the synthesis & secretion of hormones called androgens from testis

- Insulin - also stimulates conversion of glucose level to glycogen in the target cells.
- The glucose homeostasis in blood is thus maintained jointly by the two - Insulin + glycogens.

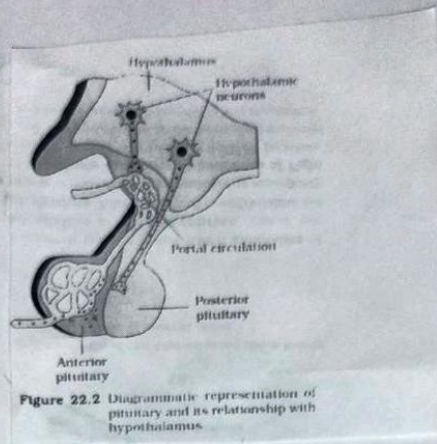
Androgens :

- The Leyding cells or interstitial cells, which are present in the intertubular spaces produce a group of hormones called androgens.
- Androgens regulate the development, maturation & function of male accessory sex organ like epididymis, vas deferens, seminal vesicles, prostate gland, & urethra etc.
- These hormones stimulate muscular growth, growth of facial & axillary hair, aggressiveness, low pitch of voice etc.
- Androgens play major role in the process of spermatogenesis.
- Androgens act on the central neural system & influence the male sexual behavior.
- These hormones produce anabolic effects on protein & carbohydrate metabolism.

Estrogen :

- ovary produces two groups of steroid hormone called estrogen & progesterone.
- Estrogen synthesized & secreted mainly by the growing ovarian follicles.
- Estrogen produce wide ranging actions such as stimulation of growth & activities of female secondary sex organ, development of growing, ovarian

- FSH stimulate growth + development of the ovarian follicles in female.



Q. No. 3 write down the disorders of thyroid gland.

- Thyroid gland composed follicles + stromal tissue.
- Each thyroid follicle is composed two hormone thyroxine (T_4) + triiodothyronine.
- Iodine is essential for normal rate of hormone synthesis in thyroid.
- Deficiency of Iodine in our diet results Hypothyroidism + Enlargement of thyroid gland. commonly called goitre.
- Hypothyroidism during pregnancy causes defective development + maturation of the growing baby. leading to stunted growth mental retardation low intelligence quotient, abnormal skin, deaf mutism etc.

- In adult women Hypothyroidism may cause menstrual cycle to become irregular.
- Hyperthyroidism is due to cancer of thyroid gland or due to development of nodules of the thyroid gland.
- Exophthalmic goiter is a form of Hyperthyroidism characterised by enlargement of thyroid gland, protrusion of the eyeballs, increased basal metabolic rate & weight loss called Graves disease.

1

The thyroid gland is a butterfly-shaped gland located in the neck. It is composed of two lobes joined by a narrow isthmus. The thyroid gland is responsible for the production and secretion of thyroid hormones, which are essential for the regulation of metabolism. The thyroid gland is also involved in the regulation of the body's temperature, heart rate, and growth.