

Definition:

The endocrine system is a control system of the body, which controls various functions of the human body through secretions known as hormones, secreted by the endocrine glands.

Endocrine Glands:

Endocrine glands are secretory tissues (glands) which secrete hormones directly into the blood stream. They are also called ductless glands. The study of endocrine glands is called endocrinology.

Important Endocrine Glands & Their Functions (secretions)

Following are the important endocrine glands of the human body.

- i) Pituitary Gland
- ii) Hypothalamus
- iii) Thymus
- iv) Pineal
- v) Thyroid
- vi) Parathyroid
- vii) Adrenal
- viii) Pancreas
- ix) Testes
- x) Ovaries

Pituitary Gland:

The pituitary gland is a small bean-shaped reddish gray organ, located near the hypothalamus (forebrain). It produces at least nine hormones which perform following functions:

Functions:

- Responsible for normal skeletal growth, milk secretion in mammary glands.
- Controls normal functioning of thyroid and adrenal glands
- Stimulates the formation of the graffian follicles in the female ovary and development of spermatozoa in male.
- Stimulate the contraction of the uterine muscles during the final stage of pregnancy
- Control the amount of urine secreted by the kidney.

Hypothalamus

The hypothalamus is located immediately below the thalamus at the centre of the brain, and controls many automatic functions of the body.

Function:

The general functions of the hypothalamus are of extreme importance for the body, such as:

- Pituitary gland regulation
- Blood pressure regulation
- Hunger and salt cravings
- Feeding reflexes
- Thirst
- Body temperature regulation

Thymus:

The thymus gland, which is shaped like a pyramid, is a specialized organ of the human immune system. It is also one of the important glands in the human body. It is a pinkish gray colored organ that is situated in the upper thoracic region, under the sternum or the breast bone.

Function:

The thymus gland is very active, when the individual is a child. It plays a crucial role in developing and improving a child's immunity system. The main function of the thymus gland is to produce and process lymphocytes or T cells.

Pineal Gland:

The pineal gland is a pine cone shaped gland of the endocrine system. A structure of the diencephalon of the brain, the pineal gland produces several important hormones including melatonin.

Function:

The pineal gland is involved in several functions of the body including:

- Secretion of the Hormone Melatonin

- Regulation of Endocrine Functions
- Conversion of Nervous System Signals to Endocrine Signals
- Causes Feeling of Sleepiness
- Influences Sexual Development

Thyroid Gland:

The thyroid gland is paired organ located in upper region of the neck in front of windpipe. It produces the hormone thyroxin (T4), Triiodothyronine (T3) and calcitonin.

Functions:

- Plays an important role in regulating the body's metabolism
- The T4 and T3 hormones stimulate every tissue in the body to produce proteins and increase the amount of oxygen used by cells.
- The calcitonin hormone works together with the parathyroid hormone to regulate calcium levels in the body.

Parathyroid Gland:

The parathyroid glands are embedded in the thyroid gland.

Functions:

- Controls the concentration of calcium (Ca ion) and phosphorus (phosphate) in the blood.
- Stimulates the absorption of calcium and magnesium from the gut.
- Increases tubular reabsorption of calcium, magnesium and hydrogen ions.

Pancreas:

The pancreas is located deep in the abdomen, sandwiched between the stomach and the spine. It produces two important hormones which are insulin and glucagon.

Functions:

- Insulin and glucagon are especially important for the maintenance of blood sugar, as insulin lowers the blood sugar and glucagon increases the blood sugar according to the body's needs.

Adrenal Gland:

The adrenal gland curve over the top of each kidney in abdomen. The important hormones secreted by adrenal gland are adrenaline, Aldosterone hormone, and cortisol.

Function:

- Adrenal glands are responsible for secreting hormones essential for carrying out some important metabolic processes. Besides, they also help the body in dealing with physical and mental stress.

Ovaries:

It is not only a reproductive organ which produces gametes but also make many steroidal hormones. The important ovary hormone is estrogen.

Function:

- Ovary hormones are responsible for female characteristics e.g. sound, body, bones, hair etc.

Testes:

It is not only a reproductive organ in males but also performs endocrine functions. Important hormone of testes is androgens.

Function:

- Testes hormones are responsible for the development of male characteristics in male e.g. sound, bones, hairy body etc.