

HORMONES

- ✘ Hormones are molecules that act as intercellular messengers.
- ✘ These are produced by endocrine glands in the body and are poured directly in the blood stream which transports them to the site of action.

Polypeptides

Insulin
glucagon
somatotropin

FSH
LH
vasopressin

Oxytocin
thyrotropin
ACTH

Steroids

Estrogen
testosterone
cortisol

Aldosterone
corticosterone
Progesterone

Amino acid derivatives

Epinephrine
norepinephrine
dopamine

Thyroxine, T3 and T4
Melatonin
Serotonin

CHEMICAL NATURE

- × **Steroids**

- × e.g., estrogens and androgens;

- × **Poly peptides,**

- × e.g.-insulin and endorphins

- × **Amino acid derivatives-**

- × e.g -epinephrine and nor epinephrine.

FUNCTION OF HORMONES

- ✘ Hormones have several functions in the body.
- ✘ They help to maintain the balance of biological activities in the body.
- ✘ Different hormones have different functions

Hormone	Function
insulin	keeping the blood glucose level within the narrow limit
glucagon	tends to increase the glucose level in the blood.
Insulin & glucagon	The two hormones together regulate the glucose level in the blood
Epinephrine and norepinephrine	mediate responses to external stimuli.
Growth hormones and sex hormones	play role in growth and development.

THYROXINE

- ✘ **Thyroxine** produced in the thyroid gland is an iodinated derivative of amino acid **tyrosine**.
- ✘ Abnormally low level of thyroxine leads to **hypothyroidism** which is characterised by lethargy and obesity.
- ✘ Increased level of thyroxine causes **hyperthyroidism**.
- ✘ Low level of iodine in the diet may lead to hypothyroidism and enlargement of the thyroid gland.
- ✘ This condition is largely being controlled by adding sodium iodide to commercial table salt (“Iodised” salt).

STEROID HORMONES

- ✘ **Steroid hormones** are produced by adrenal cortex and gonads (**testes in male and ovaries in females**).
- ✘ Hormones released by the adrenal cortex play very important role in the functions of the body.
- ✘ For example glucocorticoids control the carbohydrate metabolism, modulate inflammatory reactions, and are involved in reactions to stress.
- ✘ The mineralocorticoids control the level of excretion of water and salt by the kidney.
- ✘ If adrenal cortex does not function properly then one of the results may be Addison's disease characterised by hypoglycemia, weakness and increased susceptibility to stress.
- ✘ The disease is fatal unless it is treated by gluco corticoids and mineralo corticoids.

SEX HORMONE

- ✘ Hormones released by gonads are responsible for development of secondary sex characters.
- ✘ **Testosterone** is the major sex hormone produced in males.
- ✘ It is responsible for development of secondary male characteristics (*deep voice, facial hair, general physical constitution*) &
- ✘ **estradiol** is the main female sex hormone.
- ✘ It is responsible for development of secondary female characteristics and participates in the control of menstrual cycle.
- ✘ **Progesterone** is responsible for preparing the uterus for implantation of fertilised egg.

ANTIOXIDANTS IN FOOD

- ✘ These are important and necessary food additives.
- ✘ These help in food preservation by retarding the action of oxygen on food.
- ✘ These are more reactive towards oxygen than the food material they are protecting.
- ✘ The two most familiar antioxidants are butylated hydroxyl toluene (BHT) and butylated hydroxy anisole (BHA).
- ✘ The addition of BHA to butter increases its shelf life from months to years.

- ✘ Some times BHT and BHA along with citric acid are added to produce more effect.
- ✘ Sulphur dioxide and sulphite are useful antioxidants for wine and beer, sugar syrups and cut pealed or dried fruits and vegetables.

✘ THANK YOU