

Gonads and its hormones

Ovaries and testes

- 2 serve 2 major functions
- ① produce germ cells
 - ② synthesize steroid sex hormones that are necessary for development and function of both male and female reproductive organs, child bearing and pregnancy.

Three types of sex hormones each with different functions

- 1/ Estrogen
- 2/ ~~Androgen~~ Progesterone (uterine preparation for pregnancy)
- 3/ Androgens. masculinizing effect

Estrogen.

main estrogen is estradiol produced in ovaries

main function is coordinate normal development of genitalia and breast

- During puberty, it promotes growth of uterus, breast, and vagina. determines the pattern of fat deposition and distribution in the body that results in typical female shape.

In adult women is regulating menstrual cycle, contributing to the hormonal regulation during pregnancy.

During menopause, estrogen production ceases leading to reduction of estrogen $\rightarrow$ sweating, hot flashes, increased irritability, anxiety, depression, osteoporosis.

Alcohol consumption has shown to inhibit this hormone.

Progestogens.

Ovaries produce progestogens during certain phase of menstrual cycle and in the placenta for most of pregnancy.

- It changes outlining in titular for pregnancy and stimulate the development of the mammary glands in the breasts in preparation for lactation.

Androgens.

- one is testosterone secreted from testes in small amount.
- has strong protein anabolic activity, promote protein generation leads to increased muscles.

→ In fetus helps to promote development of internal and external genitalia

→ Puberty, growth of sex organs, responsible for developmental characteristics like height, growth of facial pubic body hair, deepening of voice etc

→ Adult: serves to maintain masculine sexual potency as well as sperm production.

Testosterone levels decrease with age although drop is not drastic as the reduction is estrogen level during menopause.

Thyroid and its hormones.

— consist of 2 lobes.

① in front of wind pipe (trachea)

② below voice box (larynx)

— Gland produces 2 Structurally related hormones
 T_4 and T_3 .

— both collectively referred as thyroid hormone.

— T_4 constitutes 90% of hormone produced by the gland

T_3 is much more active hormone

Thyroid hormone in general serves to increase metabolism of almost all body tissues.

Thyroid hormone required for development of teeth, skin and hair follicles, as well as functioning of nervous, cardiovascular, and gastrointestinal systems.

- Thyroid gland produce calcitonin hormone which helps maintain level of calcium in ~~body~~ blood.

specifically lower level of calcium

Parathyroid hormones.

- 4 pea-sized bodies located behind the thyroid gland produce ~~PTH~~ PTH.

helps increase calcium level in the blood helping to maintain bone quality.

- PTH stimulates absorption of calcium from food
- low calcium level stimulates PTH and high level suppress it.

- Estrogen, glucocorticoids and growth hormone involve in regulating calcium levels in blood & body.

Pancreas

located in abdomen behind stomach

- serves 2 different functions
 - ① digestion food due to enzymes released by it
 - ② produce 2 hormones - insulin and glucagon. released in blood and play imp role in blood glucose regulation.

Insulin - lowers blood glucose level.

only blood sugar lowering hormone in body.

- promotes the formation of storage forms of energy

The release of insulin is controlled by various factors including blood glucose level.

Glucagon

increase blood glucose level.

- There should be balanced activities of insulin and glucagon essential for maintaining

blood sugar level.

- Imbalance can lead to diabetes and other disorders.

Pheromones

any chemical secreted to the outside by an organism

They are not secreted in the blood but are stored outside the body

can cause changes in physiology and behaviour

A sex pheromone is a substance used to attract mates from opposite sex in other words individual tries to encourage another individual of the opposite sex to mate or perform some other functions closely related to sexual reproduction

Hormones and pheromones influence each other

For example hormones regulate the development of an individual. Individual won't develop or produce pheromone due to hormones change as they have not entered right life cycle yet.