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B.Sc HONS Part-III Paper V

Topic: Write short Notes on:-

- ① corpus luteum
2. prolactin or Leuteotrophic or Lactogenic hormone (LTH)
3. Thyroid Stimulating hormone (TSH)
4. Hormones secreted by gastro-intestinal tract.

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4. Corpus luteum - It is formed in ovary after discharge of ovum from the follicles. Ruptured follicles are filled with blood which forms clot. The blood filled ruptured follicle is called corpus haemorrhagicum. The granulosa cells multiply and enlarge rapidly. The blood clot is replaced gradually by an yellow carotenoid substance called lutein pigment. Granulosa cells are now called lutein cells. The yellow pigments impart yellowish colouration to the corpus

haemorrhagicum which is now known as corpus luteum. Lutein cells develop a very extensive smooth endoplasmic reticulum which form large amount of female hormone progesterone and some estrogen. Some cells of theca interna also enlarge, incorporate in corpus luteum, from male hormone androgens which are converted into the female hormones by the granulosa cells. Blood Vessels of theca interna make corpus luteum highly vascularized.

The life span of corpus luteum depends on fate of the ovum. If ovum is fertilized and pregnancy starts then the corpus luteum persists for three to four months and even nine months. The progesterone secreted by it is essential for the maintenance of pregnancy in the first few months. The corpus luteum is no longer needed after the fourth month, as the placenta begin to secrete progesterone. If ovum is not fertilized, the corpus luteum lasts for about fourteen days. After then it degenerates into a mass of fibrous tissue called corpus albicans.

1. Prolactin or Leuteotrophic or Lactogenic hormone (LTH)—LTH is a hormone secreted by Pars distalis of Sdeno-hypophysis of Pituitary gland. It is secreted by acidophils. It is a protein composed of single polypeptide chain of 199 amino acids. Its structure is homologous to GH.

Function—LTH stimulates the production and secretion of milk along with completion of development of mammary gland during pregnancy.

Prolactin stimulates the development of corpus luteum and secretion of progesterone by the latter.

Prolactin induces parental care in male. In the birds like pigeon and doves. It promotes nesting behaviour and production of crop milk.

Prolactin secretion is inhibited by prolactin inhibiting factor produced by hypothalamus.

3. Thyroid stimulating hormone (TSH)—TSH is a hormone secreted by basophils of pars distalis part of Adenohypophysis. It is a glycoprotein of which mol. wt. is about 30,000. It consists of two subunits α & β polypeptide chains. α -chain has 92 amino acids and β -chain contains 1/2 amino acids. The two sub units are synthesized separately by separate structural genes, undergo post-translation modification and glycosylation separately and then conjugated.

TSH stimulates synthesis and secretion of Thyroxine at all stages i.e. iodine uptake, oxidation, organification, coupling and breakdown of thyroglobulin.

TSH stimulates lipolysis, glycolysis, TCA Cycle, phospholipid synthesis.

TSH increases DNA content, RNA and translation of proteins, cell size.

Regulation of Secretion—TSH secretion is regulated by thyroxine level in blood, low level promotes secretion but rise in blood level inhibits production.

TSH secretion is regular which shows slight circadian rhythm maximum at midnight and minimum during evening.

TRH (Thyrotropin releasing hormone) of hypothalamus promotes production while somatostatin of hypothalamus depresses production.

4 Hormones secreted by gastro-intestinal tract—Hormones secreted by mucosal membrane of different parts of alimentary canal are called as gastro-intestinal hormones. They control the secretion of various digestive juices and regularise the physiology of digestion. These hormones are :—

(i) Gastrin—Gastrin is secreted by gastrin cells of pyloric stomach after arrival of food into the stomach. Gastrin stimulates gastric glands for secretion of gastric juice.