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WRITE SHORT NOTES ON THE FOLLOWING:

1. Spermatogenesis
2. Testosterone

SPERMATOGENESIS

The term spermatogenesis comes from the GREEK sperma, meaning “seed” and from genesis, meaning “birth”, “origin”, “creation”. The origin and development of the sperm cells within the male reproductive organs, the testes. The testes are composed of numerous thin, tightly coiled tubules known as the seminiferous tubules; the sperm cells are produced within the walls of the tubules, also, are many randomly scattered cells, that function to support and nourish the immature sperm cells by giving them nutrients and blood products. As the young germ cells grow, the sertoli cells help to transport them from the outer surface of the seminiferous tubule to the central channel of the tubule.

It is the biological process of producing mature sperm cells and occur in the male gonad of a sexually reproducing organism, the undifferentiated male germ cells develop into spermatozoa by a series of events. In humans, spermatogenesis starts at puberty and continues throughout a lifetime. The entire process can take approximately 64 days.

STAGES OF SPERMATOGENESIS

These stages occur in the seminiferous tubules of the testis except for spermiation that ends up in the epididymis. It consists of;

1. Spermatocytogenesis
2. Spermatidogenesis
3. Spermiogenesis and spermiation

SPERMATOCYTOGENESIS

Spermatocytogenesis is the first stage of spermatogenesis. The spermatogonia in the basal lamina of the convoluted seminiferous tubule divide repeatedly by mitosis

producing identical spermatogonia. Others move into the adluminal compartment of the convoluted seminiferous tubule and enter the first meiotic division as primary spermatocyte. Both spermatogonia and primary spermatocytes are in diploid condition.

‘SPERMATIDOGENESIS

The next stages after spermatocytogenesis is the spermatidogenesis. Thus, it is the intermediate stage of spermatogenesis. The highlight of this stage is meiosis, a type of cell division comprised of two succeeding divisions: first meiotic division (meiosis I) and second meiotic division (meiosis II). At this stage, the primary spermatocyte with its DNA duplicated enters meiosis I to give rise to two haploid secondary spermatocytes which will immediately enter meiosis II to produce four genetically non-identical, haploid spermatids.

SPERMIOGENESIS AND SPERMATION

Spermiogenesis follows after spermatidogenesis. It is the stage of spermiogenesis wherein the spermatids become mature spermatozoa. The four phases of spermiogenesis are golgi phase, cap phase, tail phase, and maturation phase. After spermiogenesis, the non-motile spermatozoa will leave the seminiferous tubules to travel to the rete testis in the mediastinum testis, to the efferent ducts, and finally to the epididymis.

BIOLOGICAL IMPORTANCE

Spermatogenesis is a vital biological process. It is the means by which male gametes are produced. Through meiosis, it permits genetic recombination to increase genetic variations and thereby improve the gene pool, any disturbance or interference in this process could lead to reduced fertility among males.

TESTOSTERONE

Testosterone is the hormone responsible for the development of male sexual characteristics. Hormones are chemical messengers that trigger necessary changes in the body. Testosterone is to regulate a number of functions alongside sperm production. These include;

1. Sex drives
2. Bone mass

3. Fat distribution
4. Muscles size and strength
5. Red blood cell production

The testosterone belongs to a class of male hormones called androgens, which are sometimes called steroids or anabolic steroids. The testosterone is produced mainly in the testes with a small amount made in the adrenal glands. The brain hypothalamus and pituitary gland control testosterone production. There are two types which include;

Low testosterone and high testosterone

LOW TESTOSTERONE

Levels of testosterone decrease with age. Symptoms of low testosterone

- Reduced sex drive
- Erectile dysfunction or impotence
- Increased breast size
- Lowered sperm count
- Hot flashes
- Depression, irritability and inability to concentrate
- Shrunken and softened testes
- Loss of muscle mass or hair
- Bones becoming prone to fracture

HIGH TESTOSTERONE

High testosterone levels can cause problem in women including irregular menstrual cycles, increases in body hair and acne, and a deepening of the voice.