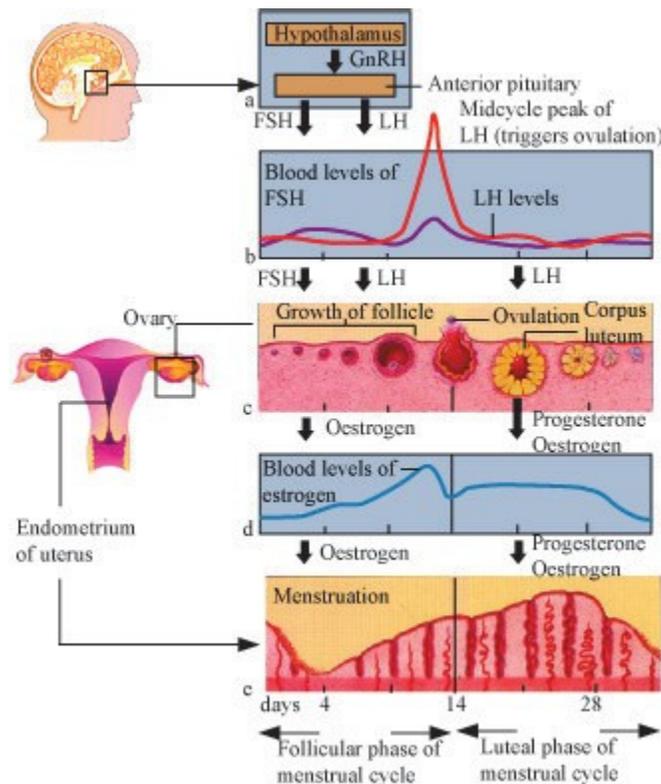


O P JINDAL SCHOOL, SAVITRI NAGAR
CLASS NOTES

CLASS: XII BIOLOGY

DATE: 18/04/2020

TOPIC: MENSTRUAL CYCLE



- Menstrual cycle is the reproductive cycle in all primates and begins at puberty (menarche).
- In human females, menstruation occurs once in 28 to 29 days. The cycle of events starting from one menstruation till the next one is called the **menstrual cycle**.
- During the middle of the menstrual cycle, one ovum is released (ovulation).
- The cycle starts with the **menstrual flow** (3 to 5 days), caused due to the breakdown of the endometrium of the uterus. Blood vessels in liquid state are discharged, but this occurs only when the ovum is not fertilised.

- It is followed by the **follicular phase**. In this phase, the primary follicles mature into the Graffian follicles. This causes the regeneration of the endometrium.

These changes are brought about by ovarian and pituitary hormones. In this phase, the release of gonadotropins (LH and FSH) increases. This causes follicular growth and the growing follicles produce oestrogen.

- The LH and FSH are at their peak in the middle of the cycle (14th day), and cause the rupture of the Graffian follicles to release ovum. This phase is called the **ovulatory phase**.
- The remains of the Graffian follicles get converted into the corpus luteum, which secretes progesterone for the maintenance of the endometrium.
- In the absence of fertilisation, the corpus luteum degenerates, thereby causing the disintegration of the endometrium and the start of a new cycle.
- In humans, the menstrual cycle ceases to operate at the age of 50 years. This phase is known as the **menopause**.

Fertilisation and Implantation

- During coitus, the semen is released into the vagina, passes through the cervix of the uterus and reaches the ampullary-isthmic junction of the fallopian tube.
- The ovum is also released into the junction for fertilisation to occur.
- The process of fusion of the sperm and the ovum is known as fertilisation.
- During fertilisation, the sperm induces changes in the **zona pellucida** and blocks the entry of other sperms. This ensures that only one sperm fertilises an ovum.
- The enzymatic secretions of the acrosomes help the sperm

enter the cytoplasm of the ovum.

- This causes the completion of meiotic division of the secondary oocyte, resulting in the formation of a haploid ovum (ootid) and a secondary polar body.
- Then, the haploid sperm nucleus fuses with the haploid nucleus of the ovum to form a diploid **zygote**.
- Mitosis starts as the zygote moves through the isthmus of the oviduct (cleavage) and forms 2, 4, 8, 16 daughter cells called **blastomeres**.
- The 8–16 cell embryo is called a **morula**, which continues to divide to form the **blastocyst**. The morula moves further into the uterus.
- The cells in the blastocyst are arranged into an outer **trophoblast** and an **inner cell mass**.
- The trophoblast gets attached to the uterine endometrium, and the process is called implantation. This leads to pregnancy.
- The inner cell mass gets differentiated to form the embryo.

➤ **This class notes is prepared from home.**