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FERTILIZATION

Discuss the factors facilitating the movement of sperm in the female reproductive tract.

Ans.

1. Antiperistalic contractions.
2. Prostaglandin.
3. Alkaline secetions.
4. Intracellular contraction.
5. Oestrogen and oxytosin.
6. Capacitation.

ALKALINE SECRETIONS

Alkaline secretion from the prostate gland into semen help create an alkaline environment in the acidic vagina to protect the sperm in the vagina.

ANTIPERISTALIC CONTRACTIONS

Movement f sperm through the uterus is facilitated by the **antiperistalic contractions** of uterine muscles. Uterine muscles are induced by oxytocin, which is secreted from posterior pituitary neroendrocrine reflex during sexual intercourse.

PROSTAGLANDIN

Prostaglandis causes myometeial contraction present in the semen and in the female reproductive tract facilitate myometril contractions to help the movement of sperm in the oviduct. Uterine contractions are also facilitated by **prostaglandin** (PHE_2) present in male seminal fluid. During fertilization, the sperm enters the ovum by penetrating the multiple layers of granulosa cells known as **corona radiate** present around the ovum. It is facilitated **hyaluronidase** and **proteolytic** enzymes present in the acrosome of the sperm. **Proteolytic** enzymes present in the acrosome of the sperm, diffuse through structures of the zona pellucida and inactivate the other sperms entering the ovum.

INTRACELLULAR ION CONCENTRATION

Change in cell volume which alters **intracellular ion concentration** can also contribute to sperm movement. Under the influence of estrogen the cervix secretes highly hydrated mucus, often exceeding 96% water in women, the extent of hydration is correlated with penetrability to sperm. Penetration movement of the sperm is enabled by a protein CatSper present in the tall portion of the sperm. It is a tunnel shaped protein and forms the ion channel for entry of calcium into the sperm cell.

OESTROGEN AND OXYTOSIN

Oestrogen and oxytocin help to assist myometrial contraction in other to facilitate the upward motility of sperm towards the oviduct. Oestrogen facilitate the production of watery mucus in the cervix during timing of ovulation to allow easy passage of sperm.

CAPACITAION

In the female reproductive tract sperm undergoes capacitation that occurs after the cell membrane becomes more fluid through the removal of cholesterol and proteins from the membrane in other to expose to zona pellucida binding. A change in the membrane potential that permits Ca^{2+} to enter the sperm via voltage gated mechanism to facilitate vesicle release for acrosomal reaction.