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**ASSIGNMENT ANSWER**

DISCUSS FACTORS FACILITATING THE MOVEMENT OF SPERM IN THE FEMALE REPRODUCTIVE TRACT

## **FACTORS FACILITATING THE MOVEMENT OF SPERM IN THE FEMALE REPRODUCTIVE TRACT**

The transport of sperm is dependent upon several factors. The sperm must be capable of propelling themselves through the environment of the female vagina and cervix. This environment, which is under cyclic hormonal control, must be favorable to admit the sperm without destroying them. Finally, the sperm must possess the capability of converting to a form that can penetrate the cell membrane of the egg (capacitation).

The complex process of sperm transport through the female reproductive tract begins at the time of ejaculation. Sperm transport within the female reproductive tract is a cooperative effort between the functional properties of the sperm and seminal fluid on the one hand and cyclic adaptations of the female reproductive tract that facilitate the transport of sperm toward the ovulated egg.

### **ENVIRONMENT FACTOR**

During coitus in the human, semen is deposited in the upper vagina close to the cervix. The normal environment of the vagina is inhospitable to the survival of sperm, principally because of its low pH (<5.0). Direct measurements have shown that within 8 seconds from the introduction of semen the pH of the upper vagina is raised from 4.3 to 7.2, creating an environment favorable for sperm motility.

### **COAGULATION OF HUMAN SEMEN THROUGH THE ACTIONS OF SEMOGELIN BY A MINUTE AFTER COITUS**

The coagulative function is incompletely understood, but it may play a role in keeping sperm near the cervical os. Thirty to 60 minutes after it coagulates, prostate-specific antigen (PSA), a proteolytic enzyme, degrades the coagulated semen. Within the semen and altered vaginal fluids, the sperm have begun to swim actively.

### **AVAILABILITY OF FRUCTOSE**

Fructose is a nutrient provided by the seminal vesicles, within the semen. Because of their paucity of cytoplasm, spermatozoa require an external energy source. Unusually for most cells, spermatozoa have a specific requirement for fructose rather than glucose, the more commonly utilized carbohydrate energy source.

### **CAPACITATION**

Capacitation is the penultimate step in the maturation of mammalian spermatozoa and

is required to render them competent to fertilize an oocyte. This step is a biochemical event; the sperm move normally and look mature prior to capacitation. Capacitation occurs after ejaculation, when the spermatozoa leave the vagina and enter the superior female reproductive tract. The uterus aids in the steps of capacitation by secreting sterol-binding albumin, lipoproteins, and proteolytic and glycosidasic enzymes such as heparin. One of the effects of capacitation is that it causes destabilisation of the acrosomal sperm head membrane which allows it to penetrate the outer layer of the egg, and chemical changes in the tail that allow a greater mobility in the sperm.