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**MATRIC NO:** 18/MHS01/333

**DEPARTMENT:** NURSING

**COURSE CODE:** PHS 212

**COURSE TITLE:** PHYSIOLOGY

**LEVEL:** 200

 **ASSIGNMENT**

**Briefly discuss the CYCLIC CHANGES in any two of the following:**

**a) CERVIX** (**b) VAGINA**         (**c) BREASTS**

 **CYCLIC CHANGES OF THE VAGINA**

Vaginal cytology was evaluated weekly over 12 months in 20 adult female Cynomolgus monkeys (Macaca fascicularis). After sacrifice of the animals the histology of the ovaries, uterus and vagina were studied in different phases of the menstrual cycle. The cytological examination of the vaginal smears showed that the superficial cells increased in number towards the middle of the cycle and the number of intermediate cells declined gradually. Parabasal cells were observed mainly at the beginning of the cycle; they disappeared towards the middle of the menstrual cycle. During the early follicular phase, the cells were moderately separated from each other, and during the second half of the proliferative or follicular phase, the superficial cells appeared clumped together. Leucocytes were usually absent except for at the beginning of the cycle and in the last few days of the late secretory or luteal phase. The maturation index of the vaginal smears can be considered as a tool for distinguishing the different phases of the menstrual cycle. The microscopic examination of the genital organs showed that during the proliferative or follicular phase of the cycle, which corresponds to the development of the ovarian follicles, the uterus showed growth of endometrial glands, stroma and endothelial cell proliferation with capillary sprouts. Shortly after ovulation and parallel to the formation of the corpora lutea, the endometrium enters the secretory or luteal phase, which is characterized by coiling of endometrial glands, glandular secretion and the differentiation of the spiral artery. The most striking changes in the vagina, is the marked basal cell proliferation and thickening of the stratum granulosum during the follicular phase of the menstrual cycle. The histological changes observed in the vagina demonstrated a good correlation with the observation on cytological examination of the smears. The present study demonstrated that the process of angiogenesis in the uterus during the different phases of the menstrual cycle is a multiple phenomenon involving proliferation, maturation and differentiation.

 **CYCLIC CHANGES OF THE CERVIX**

Papers surveying the fate of spermatozoa in the various regions of the woman's reproductive tract and correlating the cycle of mucus with other cyclic sexual phenomena led to a study on some practical problems associated with variations in cervical mucus. Samples were aspirated from the normal externalos of sterile, amenorrheic, pregnant, and menopausal women. Stilbestrol therapy definitely affected the character of cervical mucus in sterile and menopausal women changing it from acid and impenetrable to alkaline and readily penetrable. Upon discontinuation of stilbestrol, the mucus returned to an impenetrable acid. 14 cervical mucus specimens from pregnant women were observed. In all instances muc us was slightly penetrable but the pH varied from 4.5 to 7.5 making superfetation an unlikely possibility. 20 menopausal prestrogenic therapy patients had scant or moderate viscid or crumbly cervical mucus with a pH of 4.5. Mucus was impenetrable to semen in each case. Estrogen therapy noticeably altered the mucus. These observations indicate that determination of mucus responses will be more exact and simple than the vaginal smear technique.

**Explicate any one of the following:**

**1) Menstrual cycle**

**2) Hormonal regulation of the menstrual cycle**

 **MENSTRUAL CYCLE**

The **menstrual cycle** is the regular natural change that occurs in the [female reproductive system](https://en.wikipedia.org/wiki/Female_reproductive_system) (specifically the [uterus](https://en.wikipedia.org/wiki/Uterus) and [ovaries](https://en.wikipedia.org/wiki/Ovary)) that makes [pregnancy](https://en.wikipedia.org/wiki/Pregnancy) possible. The cycle is required for the production of [oocytes](https://en.wikipedia.org/wiki/Oocyte), and for the preparation of the uterus for pregnancy. The menstrual cycle occurs due to the rise and fall of [estrogen](https://en.wikipedia.org/wiki/Estrogen).This cycle results in the thickening of the lining of the uterus, and the growth of an [egg](https://en.wikipedia.org/wiki/Ovum), (which is required for pregnancy).The egg is released from an ovary around day fourteen in the cycle; the thickened lining of the uterus provides [nutrients](https://en.wikipedia.org/wiki/Nutrient) to an embryo after [implantation](https://en.wikipedia.org/wiki/Implantation_%28human_embryo%29). If pregnancy does not occur, the lining is released in what is known as [menstruation](https://en.wikipedia.org/wiki/Menstruation).

Up to 80% of women report having some symptoms during the one to two weeks prior to menstruation.Common symptoms include [acne](https://en.wikipedia.org/wiki/Acne_vulgaris), tender breasts, bloating, feeling tired, irritability and mood changes. These symptoms interfere with normal life and therefore qualify as [premenstrual syndrome](https://en.wikipedia.org/wiki/Premenstrual_syndrome) in 20 to 30% of women. In 3 to 8%, they are severe.

The first period usually begins between twelve and fifteen years of age, a point in time known as [menarche](https://en.wikipedia.org/wiki/Menarche). They may occasionally start as early as eight, and this onset may still be normal. The average age of the first period is generally later in the [developing world](https://en.wikipedia.org/wiki/Developing_world) and earlier in [developed world](https://en.wikipedia.org/wiki/Developed_world). The typical length of time between the first day of one period and the first day of the next is 21 to 45 days in young women and 21 to 35 days in adults (an average of 28 days). Menstruation stops occurring after [menopause](https://en.wikipedia.org/wiki/Menopause) which usually occurs between 45 and 55 years of age. Bleeding usually lasts around 3 to 7 days.

The menstrual cycle is governed by hormonal changes. These changes can be altered by using [hormonal birth control](https://en.wikipedia.org/wiki/Hormonal_birth_control) to prevent pregnancy. Each cycle can be divided into three phases based on events in the ovary (ovarian cycle) or in the uterus (uterine cycle). The ovarian cycle consists of the [follicular phase](https://en.wikipedia.org/wiki/Follicular_phase), [ovulation](https://en.wikipedia.org/wiki/Ovulation), and [luteal phase](https://en.wikipedia.org/wiki/Luteal_phase) whereas the uterine cycle is divided into [menstruation](https://en.wikipedia.org/wiki/Menstruation), proliferative phase, and secretory phase.

Stimulated by gradually increasing amounts of [estrogen](https://en.wikipedia.org/wiki/Estrogen) in the follicular phase, discharges of blood (menses) flow stop, and the [lining](https://en.wikipedia.org/wiki/Endometrium) of the uterus thickens. [Follicles](https://en.wikipedia.org/wiki/Ovarian_follicle) in the ovary begin developing under the influence of a complex interplay of hormones, and after several days one or occasionally two become dominant (non-dominant follicles shrink and die). Approximately mid-cycle, 24–36 hours after the [luteinizing hormone](https://en.wikipedia.org/wiki/Luteinizing_hormone) (LH) surges, the dominant follicle releases an [ovocyte](https://en.wikipedia.org/wiki/Ovocyte), in an event called ovulation. After ovulation, the ovocyte only lives for 24 hours or less without fertilization while the remains of the dominant follicle in the ovary become a [corpus luteum](https://en.wikipedia.org/wiki/Corpus_luteum); this body has a primary function of producing large amounts of [progesterone](https://en.wikipedia.org/wiki/Progesterone). Under the influence of progesterone, the [uterine lining](https://en.wikipedia.org/wiki/Endometrium) changes to prepare for potential [implantation](https://en.wikipedia.org/wiki/Implantation_%28human_embryo%29) of an embryo to establish a pregnancy. If implantation does not occur within approximately two weeks, the corpus luteum will involute, causing a sharp drop in levels of both progesterone and estrogen. The hormone drop causes the uterus to shed its lining in a process termed menstruation. Menstruation also occurs in closely related [primates](https://en.wikipedia.org/wiki/Primate) ([apes](https://en.wikipedia.org/wiki/Ape) and [monkeys](https://en.wikipedia.org/wiki/Monkeys)).