

A CONCEPTUAL STUDY ON PHYSIOLOGY OF FEMALE REPRODUCTIVE SYSTEM IN TERMS OF THEORY OF FIVE BASIC ELEMENTS (PANCHAMAHABHUTA SIDDANTHA)

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ABSTRACT

Background: Man is microcosm of the universe and so the five basic elements present in all matter also exists within each individual. **Aims & Objectives:** To critically analyze the *Panchabhauthik* organization of female reproductive system. **Methodology:** The *Bruhat Trayi* were scrutinized regarding the references of *Panchamahabhuta*. Followed by scrutiny of physiologico-anatomical aspects of the female reproductive system were studied from modern physiology books. Later, supportive correlation was done between *Ayurvedic* and modern views. **Conclusion:** The solid structures present in a female reproductive system are considered as the attributes of *Prithvi Mahabhuta*. The liquid portion present inside the cells lining the female reproductive system, secretions from cervix, vagina and other glands, fluid portion of menstrual fluid, nourishment by the lining cells of uterine tube and uterus provides to ovum/fertilized ovum are considered as the attributes of *Jala Mahabhuta*. The *Agni Mahabhuta* at the female reproductive system level can be considered as the various metabolic activities in the mitochondria of the cell linings of female reproductive tract, secretion like progesterone and estrogens (female sex hormones), inhibin, and relaxin. The process of movement of sperm from vagina to uterus, movement of various secretions from their respective organs, movement of menstrual fluid from uterus to vagina, movement of ovum from ovaries to uterus, process of cell division are the attributes of *Vayu Mahabhuta*. The space present inside various organs and channels present for the flow of secretions, sperm and ovum movement, menstrual flow can be attributed to *Akasha Mahabhuta*.

Keywords: *Panchamahabhuta*, female reproductive system, Physiology.

INTRODUCTION

The individual is an epitome of the universe. All the material & spiritual phenomenon of the universe are present in the individual. Similarly all those present in the individual are also contained in the universe. ^[1]

Man is microcosm of the universe and so the five basic elements present in all matter also exists within each individual. Thus out of the womb of the five elements, all matter is born. The five basic elements

exist in all matter. Water provides the classic example: - the solids of iced water are manifestation of the *Prithvi Mahabhuta* (earth principle). Latent heat in the ice (*Agni*) liquefies it, manifesting into *Jala Mahabhuta* (water principle). And then eventually it turns into steam expressing the *Vayu Mahabhuta* (air principle) the steam disappears into *Akasha* or space.^[2] *Bhuta* is that which is not born out of something, but out of which something is born. It is the material cause of substances in the world. When we say *Bhuta* we mean that subtle level of existence, where as *Mahabhuta* refers to gross level of existence.^[3] *Panchikarana* is the process through which invisible *Bhutas* combine with each other and form the visible *Mahabhutas* in such a way that all *Bhutas* are present together in each *Drisya Bhuta* in varying degrees of predominance. Thus in the physical world everything is a combination of *Pancha Mahabhutas* & we cannot see them independently.^[4]

Thus the five basic elements *Akasha, Vayu, Teja, Jala And Prithvi* are present in one substance. This proves that all five elements are present in all matter in the universe.^[5] Visualization of the identity of the individual with the universe paves the way for salvation. The body is described as the modified form of *Mahabhutas* hence the description of the identity of the individual & the universe relates to *Mahabhutic* composition only. The multitudes of the human features are ascribed to the proportion of different *Bhutas* each of different nature.

The organs of the female reproductive system include the ovaries (female gonads); the uterine (fallopian) tubes, or oviducts; the uterus; the vagina; and external organs, which are collectively called the vulva, or pudendum. The mammary glands are considered part of both the integumentary system and the female reproductive system. The ovaries, which are the female gonads, are paired glands that resemble unshelled almonds in size and shape; they are homologous to the testes. The ovaries produce (1) gametes, secondary oocytes that develop into mature ova (eggs) after fertilization, and (2) hormones, including progesterone and estrogens (the female sex hormones), inhibin, and relaxin. The uterine tubes are composed of three lay-

ers: mucosa, muscularis, and serosa. The mucosa consists of epithelium and lamina propria (areolar connective tissue). The epithelium contains ciliated simple columnar cells, which function as a “ciliary conveyor belt” to help move a fertilized ovum (or secondary oocyte) within the uterine tube toward the uterus, and nonciliated cells called peg cells, which have microvilli and secrete a fluid that provides nutrition for the ovum. The middle layer, the muscularis, is composed of an inner, thick, circular ring of smooth muscle and an outer, thin region of longitudinal smooth muscle. Peristaltic contractions of the muscularis and the ciliary action of the mucosa help move the oocyte or fertilized ovum toward the uterus. The outer layer of the uterine tubes is a serous membrane, the serosa. Local currents produced by movements of the fimbriae, which surround the ovary during ovulation, sweep the ovulated secondary oocyte from the pelvic cavity into the uterine tube. A sperm cell usually encounters and fertilizes a secondary oocyte in the ampulla of the uterine tube, although fertilization in the pelvic cavity is not uncommon. Fertilization can occur at any time up to about 24 hours after ovulation. The uterus (womb) serves as part of the pathway for sperm deposited in the vagina to reach the uterine tubes. It is also the site of implantation of a fertilized ovum, development of the fetus during pregnancy, and labor. During reproductive cycles when implantation does not occur, the uterus is the source of menstrual flow. The secretory cells of the mucosa of the cervix produce a secretion called cervical mucus, a mixture of water, glycoproteins, lipids, enzymes, and inorganic salts. During their reproductive years, females secrete 20–60 mL of cervical mucus per day. Cervical mucus is more hospitable to sperm at or near the time of ovulation because it is then less viscous and more alkaline (pH 8.5). At other times, more viscous mucus forms a cervical plug that physically impedes sperm penetration.

Functions of Female reproductive system can be enlisted as - The ovaries produce secondary oocytes and hormones, including progesterone and estrogens (female sex hormones), inhibin, and relaxin. The uterine tubes transport a secondary oocyte to the uterus

and normally are the sites where fertilization occurs. The uterus is the site of implantation of a fertilized ovum, development of the fetus during pregnancy, and labor. The vagina receives the penis during sexual intercourse and is a passageway for childbirth. The mammary glands synthesize, secrete, and eject milk for nourishment of the newborn.^[6]

AIMS & OBJECTIVES

To critically analyze the *Panchabhauthik* organization of female reproductive system

MATERIALS & METHODS

The *Bruhat Trayi* were scrutinised regarding the references for the *Guna* and *Karma* of the *Panchamahabhuta*. Later, physiologico-anatomical aspects of the female reproductive system were studied from modern physiology books. Later, supportive correlation was done between *Ayurvedic* and modern views to build valid and reliable hypothesis regarding the *Panchabhauthika* relation to the various physio-anatomical aspects of the female reproductive system

DISCUSSION

The individual *Mahabhutas* will be having *Bhavas*. The *Bhavas* of *Akasha Mahabhuta* is audition, auditory apparatus, lightness, minuteness, separation, face, neck and lips. The *Bhavas* of *Vayu Mahabhuta* are touch, touch senses, dryness, inspiration, tissue configuration, vitality, apana region, motor function of body. *Tejah Mahabhuta Bhavas* are vision, visual apparatus, splendor, pitta, digestive power and heat and growth of body. The *Bhavas Of Jala Mahabhuta* are taste, taste organ, coldness, softness, confluence, viscous, humidity, *kapha*, *meda*, *rakta*, *mamsa*, *shukra*. The *Bhavas* of *Pritvi Mahabhuta* are smell, olfactory organ, heaviness, stability and statuette.^[7]

The major function of *Prithvi Mahabhuta* is it improves the size by solidifying the body parts, *Jala Mahabhuta* confluences the body tissues, *Agni Mahabhuta* is responsible for metabolic activities, *Vayu Mahabhuta* divides and differentiates the cell and tissues, *Akasha Mahabhuta* increases the quantity by forming cavities. These result in complexity, de-

lightedness or richness, energy, movement, cavitations/perforations in the body.^[8]

The solid and tough structures present in a female reproductive system like ovaries (female gonads); the uterine (fallopian) tubes, or oviducts; the uterus; the vagina; and external organs can be considered as the attributes of *Prithvi Mahabhuta* at the female reproductive system level.

The liquid portion present inside the cells lining the female reproductive system i.e. intracellular fluid and also secretions from cervix, vagina and other glands can be considered as the attributes of *Jala Mahabhuta*. The fluid portion of menstrual fluid, nourishment by the lining cells of uterine tube and uterus provides to ovum/fertilized ovum can be also considered as the attributes of *Jala Mahabhuta* at the female reproductive system level.

The *Agni Mahabhuta* at the female reproductive system level can be considered as the various metabolic activities in the mitochondria of the cell linings of female reproductive tract, secretion like progesterone and estrogens (female sex hormones), inhibin, and relaxin can also be considered under *Agni Mahabhuta* attributes.

The process of movement of sperm from vagina to uterus can be considered as the function because of *Vayu Mahabhuta*. The movement of various secretions from their respective organs, movement of menstrual fluid from uterus to vagina, movement of ovum from ovaries to uterus can be considered under the influence of *Vayu Mahabhuta* since the movement is the function of *Vayu Mahabhuta*.

The process of cell division, Oogenesis can be considered as the function because of *Vayu Mahabhuta* since the function of *Vayu Mahabhuta* is differentiation. The space present inside various organs and various channels present for the secretions, sperm and ovum movement, menstrual fluid to flow can be attributed to *Akasha Mahabhuta*.

CONCLUSION

The solid structures present in a female reproductive system are considered as the attributes of *Prithvi Mahabhuta*. The liquid portion present inside the cells lining the female reproductive system, secretions from cervix, vagina and other glands, fluid portion of menstrual fluid, nourishment by the lining cells of uterine tube and uterus provides to ovum/fertilized ovum are considered as the attributes of *Jala Mahabhuta*. The various metabolic activities in the mitochondria of the cell linings of female reproductive tract, secretion like progesterone and estrogens (female sex hormones), inhibin, and relaxin can be considered under *Agni Mahabhuta* attributes. The process of movement of sperm from vagina to uterus, movement of various secretions from their respective organs, movement of menstrual fluid from uterus to vagina, movement of ovum from ovaries to uterus, process of cell division - Oogenesis are the attributes of *Vayu Mahabhuta*. The space present inside various organs and various channels present for the secretions, sperm and ovum movement, menstrual fluid to flow can be attributed to *Akasha Mahabhuta*.

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