



## Review Article

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### A REVIEW ON THE CIRCADIAN RHYTHM OF TRIDOSHA IN THE MENSTRUAL CYCLE (ARTAVACHAKRA)

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#### ABSTRACT

In Ayurveda, menstruation is referred to as artava, an upadhatu formed during rasa dhatu formation. It usually begins at the age of twelve (Rajapravritti kala) and ends at the age of fifty (Rajonivritti kala) in women. The menstrual cycle is a cyclical bleeding that occurs every month for three to five days in reproductive-age women. The artavachakra is divided into three phases: ritu kala, rajavyateeta kala, and rajasrava kala, which correspond to menstrual bleeding, the proliferative phase, and the secretory phase of the menstrual cycle. These three phases are controlled by the three doshas, and any imbalance in them may lead to menstrual abnormalities. The equilibrium of the three doshas results in a regular menstrual cycle. The aggregation or vridhhi of Kapha, Pitta, and Vata occur in ritu kala, ritavyateeta kala and rajasrava kala, respectively, along with the chaya and shamana of other doshas.

**Keywords:** Artavachakra, Rajasrava Kala, Rajavyateeta Kala, Ritu Kala, Menstrual Cycle

#### INTRODUCTION

Ayurveda is a traditional medical system that originated in India. As per Ayurvedic classics, the physical foundations of the body are dosha, dhatus and malas<sup>1</sup>. Among them, doshas are the three fundamental energies that govern the function of bodies at the physical and emotional level<sup>2</sup>. Ayurveda is based on the tridosha theory, and their normal balanced state may lead to health while their imbalanced state proceeds to diseases<sup>3</sup>. These three doshas maintain the integrity of the organism by creating, assimilating, and diffusing strength, in the same way as the moon, sun, and air maintain the integrity of the macrocosm<sup>4</sup>.

Biological rhythm is an integral part of everyday life for most organisms. It is a periodic occurrence of specific physiological changes in living organisms, a cyclic pattern of physical, mental or emotional activity that occurs in a person's life. The biological rhythm regulates the most important functions, including performance, behaviour, sleep and hormones. Based on the length of a single cycle, it is divided into three main categories: circadian, infradian, and ultradian. In infradian rhythms, oscillations are longer than 24 hours but shorter than one year, like the menstrual cycle in humans and the oestrous cycle in animals.

Ayurveda classics explain the biological rhythm of tridosha. The impact of dosha on various stages of life, day and night, has been presented as a biological rhythm. Doshic rhythms are the internal timetable of every single element in the body.

#### ARTAVA

In Ayurveda, the term artava is used to refer to menstruation. The word artava is derived from 'Ritau bhavam artavam'. Ritu means particular time, and bhavam means occurrence. The whole term denotes a substance of the body that flows out at a specific time or period. The other term used for artava is rajah is a substance which stains the vagina. Since the purity of raja is also tested by its staining. The terms used for artava in different contexts according to their significance are shonit, asrik, raja, rakta, lohita, rudhira, and pushpa. It has many meanings, such as ovum, menstruation, menstrual blood, or fluid.

Artava is slightly dark blood with an altered smell, which is expelled from the genital tract by Vayu<sup>6</sup>. Regular menstrual bleeding is an indication of regularity of all the events in the cycle. So, artava has been used to denote both internal and external events. The ovum formed internally is called antar artava, and the externally visible menstrual bleeding is called bahya artava. Based on the different stages of women's lives, artava has occurred in various conditions. Acharya Chakrapani states that during the initial formation of artava, it is soumya in nature, as it is formed from rasa as upadhatu during the transformation of dhatu. During excretion, it changes to agneya. This is due to the involvement of doshas in it. Tejas converts parthiva dravya into dhuma, ikshu rasa is Kaphakara, but after fermentation, it becomes tridoshakar<sup>7</sup>.

The formation of raja starts from the age of 12 years<sup>8</sup> or 16 years<sup>9</sup> and lasts up to 50 years. The duration of menstrual bleeding by different Acharyas is given in the table 2. The quantity of normal artava (menstruation) is 4 anjali<sup>10</sup> (One anjali is equal to the

quantity that can be filled in a space formed from joining one's palms together). "Na atibahula na atialpa matra" by Charaka Acharya regarding artavamatra (quantity of menstrual bleeding).

**Table 1: Duration of menstrual bleeding**

Acharya	Duration
Vagbhata / Bhavamisra	3 days
Charaka	5 days
Haritha/Bela	7days

Menstrual fluid looks like abrus fruit, red lotus flower, Indragopa insect or colour of rabbit blood or solution of lac insect<sup>11</sup>. The blood does not stain cloth; it has a honey odour. The fluid is consistent without sliminess and without causing burning sensation and pain, with moderate quantity lasting for an average of three to five days<sup>12</sup>, due to the different prakriti and vitiated dosha responsible for the difference in the colour of artava.

Acharya Vagbhata explained that flowers and fruits don't come up in young and aged plants, as in bud and decaying flowers or fruit; the fragrance is not explicit. Similarly, raja (menstrual flow) and stanya (milk) are not visible in females before twelve and after fifty years. As fruit within the flower cannot be seen as very small and the fire within the wood cannot be noticed without specific effort, shonita requires appropriate time and effort for their gross appearance<sup>13</sup>.

Acharya Sushruta, while describing the formation of the placenta, say that due to obstruction to orifices of artavavaha srotas by the fetus, the artava goes upwards, accumulates and forms the placenta. The remaining artava moves further upwards and helps develop the breast, leading to dark pigmentation of areola and lips<sup>14</sup>.

**Artavachakra/ Rituchakra**

Artavachakra is the name given to the female menstrual cycle in Ayurveda. The word "Chakra" signifies its cyclical and rhythmic pattern, which appears at regular intervals. In the reproductive stage of a woman's life, after attaining rajapravritti, a regular menstrual cycle occurs up to rajonivritti kala, which is termed as rituchakra. A single rituchakra covers a period of one chandramasa (28 days), and it has been divided into three phases.

1. Rajahsrava kala: In Rajasrava ala, the raja, which accumulated in the uterus during the previous fertility period, is eliminated. The Raja, which is accumulated in the uterus after ritu kala, is termed as purana rajas. This accumulated raja is eliminated from the uterus during Rajasrava kala<sup>15</sup>.
2. Ritukala: Ritukala is defined as the period most suitable for achieving conception. It is also called as fertile period and is mainly 12-16 days from the 1<sup>st</sup> day of menses<sup>16</sup>.

**Table 2: The duration of Ritukala by different Acharyas**

Acharyas	Duration of Ritu Kala
Charaka, Sushruta, Vagbhata, and Kashyapa	12 days
Bhavaprakasa, Harita and Videha	16 days

Based on the caste system, Bhavamisra and Kasyapa illustrated further classification for Ritu Kala<sup>17</sup>.

**Table 3: Duration of ritukala according to Varna Paddhati**

Varna Paddhati (Caste system)	Kasyapa	Bhavamisra
Brahmana	12 days	12 nights
Kshatriya	11 days	10 nights
Vaisya	10 days	8 nights
Others/Kushdra	9 days	6 nights

3. Rituvyateeta kala: It is the period succeeding ritukala. Acharyas explained that as the lotus flower closes after sunset, similarly after ritukala, the woman's yoni gets constricted and does not accept Shukra or permit the entry of beeja into the garbasaya<sup>18</sup>.

**DISCUSSION**

Artava is used to denote both ovum and menstrual blood. The production of ovum and ovulation is essential for the formation of garbha. A regular menstrual cycle with an average blood loss indicates a coordinated function of the HPO axis, endometrial and ovarian changes, including ovulation. So, the antar artava is assessed by the features of bahya artava. Rituchakra is under the control of three doshas. The equilibrium of three doshas results in a regular menstrual cycle, and any imbalance in these results in abnormalities.

Ritukala indicates the most favourable for conception. The ovum is expelled from the ovary into the fallopian tube by ovulation. Ovulation is the time most favourable for conception. Sperm deposited in the genital tract during the ritukala is likely to fertilize the ovum and form a zygote. So, it is also called as garba grahanayogya kala (fertilization time). By Charaka Acharya, ritukala is the formation of nava raja after the expulsion of the purana raja. So, the formation of navaneeta raja indicates the regeneration and proliferation of the uterine endometrium and follicular phase of the ovary.

The prominent dosha that is involved in the ritukala is Kapha. Kapha dosha maintains the structural cohesion of the organism and controls the body fluids due to the dominance of Prithvi and Jala mahabhuta. The primary functions of Kapha dosha are snehana, bandhana, sthirata, and gauravata, which aid in regeneration and proliferation of the endometrium. During this phase, Kapha dosha reaches its maximum, leading to Kapha prakopa. In the latter half of the ritukala, the lining of the uterus proliferates to form a new layer of endometrial tissue (proliferative phase) and the ovarian follicles mature (the follicular phase), which are both mediated by Kapha dosha. The primary hormones responsible for ritukala are estradiol and follicular stimulating hormone, which causes the growth and development of the genital organs. Chaya of Pitta dosha also occur in the latter half of the ritukala<sup>19</sup>. Vatha is at its normal level, indicating Vata samana avastha. Kapha always acts through rasa. Rasa is described as plasma, including the interstitial fluid and the lymph. The role of plasma in the proliferation of endometrium is obvious. So, the role of Kapha through rasa can be easy. During ritukala, the sheeta guna of Kapha dosha causes a drop in the basal body temperature.

Rituvyateeta kala is the period succeeding ritu kala. After ovulation, secretory changes dominate the uterus, and luteal changes occur in the ovary. The thickened cervical mucus plug prevents the entry of sperms into the genital tract, reducing the chance of fertilization. This period has been compared to the closing of the lotus at the end of the day. The yoni does not desire or allow the entry of any more sperms. The final maturation of

the follicle, ovulation luteinization of the granulosa cells and secretory changes in the endometrium are mediated by Pitta. The formation of raja from rasa occurs during the phases of Kapha dominance, i.e., ritukala and the agneyatva of raja are obtained during the phase of Pitta dominance. The level of Pitta starts to increase at the end of ritukala and reaches a maximum during rituvyateeta kala. As Pitta prakopa occurs, the quality of Kapha dosha decreases until it reaches the level of Kapha samana. According to Ayurveda, Pitta is essential for the various secretions of the body. Thus, the glandular and vesicular changes in the endometrium during this phase are due to the action of Pitta dosha<sup>20</sup>.

During the secretory phase, along with Pitta dosha, qualities of Vata also increased, i.e., Vata chaya occurs along with Pitta prakopa. Due to the influence of the Pitta dosha, the body temperature rises in rituvyateetakala.

The term rajasravakala may refer to two phases of the menstrual cycle: ovulation and menstrual bleeding. Ovulation is the antar rajasrava kala, and menstrual bleeding refers to bahya rajasravakala. The process of ovulation, the release of the matured ovum into the fallopian tubules, occurs by the chala guna of Vata. The raja is expelled by the action of apana Vata every month. The neural connection of the HPO axis with the higher centres in the cortex can also be considered as the action of Vata<sup>21</sup>. Due to the sudden drop of estrogen and progesterone during menstrual bleeding, it refers to the Pitta samana condition. Along with the Vata kopa and Pitta samana, assimilation of Kapha dosha occurs in rajasravakala.

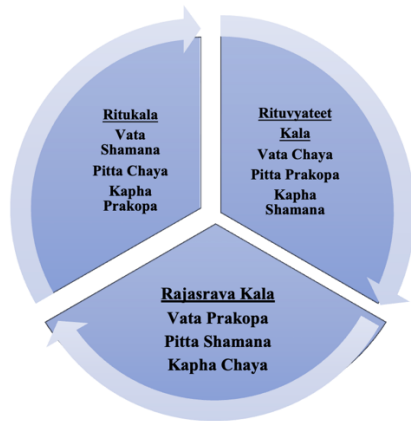


Figure 1: Biological rhythm of artavachakra

## CONCLUSION

Ayurveda classics widely explain the different aspects of menstrual physiology. Menstruation is governed by doshas; the right balance of these three doshas results in proper menstruation. The imbalance of these doshas causes abnormalities in the menstrual cycle. By the influence of doshas, rajasrava kala, ritukala and rituvyateeta kala occur in a cyclical-like biological rhythm. The chaya, prakopa and samana of doshas occurred rhythmically in artavachakra.

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