**Artava - A Potent Diagnostic Tool In Gynaecology**

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**ABSTRACT:**

*Artava* (Menstrual blood) is one of the *Upadhatus* (secondary tissue) of *rasa dhatu* (body tissue); which is used to define the menstrual blood or female sex hormones or ovum at different contexts. However, most commonly the term *Artava* (Menstrual flow) refers the menstrual blood. The color, texture, smell of menstrual blood picturises hormonal status of women. In classic texts, the variation in color, texture, smell of menstrual blood (*Artava*) and other associated factors are described in detail under the topic of *Artava Dushti* (menstrual disorder). The endometrium undergoes the great changes during endocrine cycle; thus, the menstrual blood may vary in color and texture which depends upon the factors such as health conditions, hormonal changes and pathological factors. Hence, *Artava* (visible menstrual blood) is an easy source and important diagnostic tool to make an approach towards diseases. Uterus disorders ranging from benign to malignant tumours as well as endometriosis can cause abnormal menstrual bleeding and are frequently diagnosed through endometrial biopsy. Yet the proteome of menstrual blood is an easily available non-invasive source of endometrial tissue. Classical texts explain types of menstrual disorders hearing *Artava Dushti* (menstrual disorder). They also describe in details color, texture, specific smell, amount and other associated features like type of pain in details in *Vata, Pitta* and *Kapha Dushti*. So, only by observing menstrual blood variation we can find out disease associated with it. Thus, study of *Artava* (menstrual blood) and *Artavadusti* (menstrual disorder). according to Ayurveda may be a major diagnostic tool for diagnosis of underlying gynaecological pathology in current gynecology scenario.

**Keywords:** *Artava, Menstrual blood, Artava Dushti, Panchendriya Pariksha, Proteomes.*
INTRODUCTION

Ayurveda is science of life. Its main motto is to maintain the healthy status of person along with to treat the sick. To diagnose the pathological conditions *Panchendriya Pariksha* (examination by five senses) is done. Especially in gynaecological pathologies Artava or menstrual blood is the potent indicator to underline pathology. It is the sole visible entity that is exhausted by the acharyas for diagnosis of various gynaecological diseases. Though the word Artava refers to menstruation or menstrual blood, ovum and ovarian hormones with reference to context in Ayurveda, yet under the heading of *Artava Dushti* only menstrual disorders have been described. In classics features of *Shudha Artava* (Pure menstrual blood) are also described i.e., color, texture, amount and duration of normal menstrual flow etc. The variation in normal color, texture, smell etc. of menstrual blood described in detail under the topic of *Artava Dushti* (menstrual disorder):

- **Vataja**
- **Pittaja**
- **Kaphaja**
- **Kunapgandhi** (smells like dead body)
- **Granthibhuta** (non/in-complete liquefaction)
- **Putipuya** (putrid and purulent)
- **Ksheena** (oligo zoospermia)
- **Mutrapurishgandhi** (smell like urine and faeces)

In Ayurvedic texts, the concept of *Tridosha* and *Panchmahabhuta* (five great elements) is applied. Everything is made up of *Panchmahabhuta. Artava* (menstrual blood) is also *Panchmahabhautik* (dominant *Mahabhuta* being *Tejas*). *Tridosha* in Ayurveda is *Vata, Pitta* and *Kapha*. Characteristics (Guna) of *Tridosha* are:

2. **Pitta**: *Ushna* (hot), *Tikshna* (sharp), *Drava* (liquid), *Amla* (sour), *Sara* (mobility), *Katu* (pungent)

The color and consistency of Artava (menstrual blood) changes according to vitiated *Dosha*. In ancient time, there were no such advanced laboratory techniques thus the examination of *Roga* and *Rogi* (Patient) was done of following types:
1. Dashvidha Pariksha (Ten-fold examination)
2. Ashtvidha Pariksha (8-fold examination)
3. Shadvidha Pariksha (6-fold examination)
4. Trividha Pariksha (3-fold examination)
5. Pariksha (examination) of Artava (menstrual blood) can be done with Shadvidha Pariksha (6-fold examination). Before examining the Dosha vitiated Artava (menstrual blood) we must know the characteristic of Shudha Artava (Pure menstrual blood). In Ayurveda characteristics of Shudha Artava (pure menstrual blood) are explained. At first, the colour of Shudha Artava (pure menstrual blood) according to different acharya

Gunapallala Sannibham - Blackish Red
Padma - Pinkish Red
Aalaktsannibham - Brownish Red
Indergopsankasm - Bright Red
Shasaka sruk Partimam - Red
Ishatkrushna - Slightly Blackish

Texture of Shudha Artava (menstrual blood) is Nipicha i.e. there is absence of clots and frothing and smell is Vigandh i.e there is no additional smell. In associated features, Shudh artava (pure menstrual blood) should be without Daha (burning) and Arti (pain). Classic texts explain types of menstrual disorder hearing Artava Dushti (menstrual disorder), where the various features of Dosha vitiated Artava (menstrual blood) other than Shudha Artava (pure menstrual blood) are mentioned.

In modern medical science the health of endometrium is being recognized as a critical factor in female fertility and proteomes and transcriptomes from endometrial biopsies at different stages of menstrual cycle have been studied for both diagnostic and therapeutic purpose, but it is an invasive method. In recent study, non-invasive source of endometrial tissue i.e., proteomes, was found in menstrual blood. Proteome is nothing but collection of proteins which is in menstrual blood in exposure to hormone stimulation of endometrium. Analyzing proteins is more difficult process because there are at least 20 different amino acids are needed that can make up a protein. Additionally, there is currently no known high output technology to make copies of a single protein. So proteins are studied indirectly, e.g., using computational methods and analysis of genomes. A study was conducted to define the menstrual blood proteomes by using different five methods. Middle day sample in liquid form and tampon form were collected from healthy female volunteers and stored in -80°C until processed. When analysed through five different methods, a total of 1061 proteins were identified of which 385 unique proteins were found in the menstrual blood when they compared to that of circulating blood and vaginal discharge. It was found that during different endometrial phases; proliferative, secretory and menstrual phase, specific types of proteomes were secreted indicating respective functions. It was known that during different uterine pathologies, there is change in biochemistry and cellular composition of endometrium shed in menstrual blood. Hence, the proteomes present in the menstrual blood could be an important diagnostic tool for determination of...
underlying pathology or physiology. There is change in menstrual blood specific proteomes and thus the color and texture of menstrual blood also changes. Under heading of Artava Dushti (menstrual disorder), we understand the changes in color and texture and smell of menstrual blood according to Dosha. According to ayurveda, Artava (menstrual blood) is visible and can be examined through panchendriya (five senses). The changes in Artava (menstrual blood) or menstrual blood according to different diseases of female genital tract are enumerated here.

**Vataj Artavadusti**\(^7,8\): In Vataja Artava Dushti, color of menstrual blood is of Vataj Vrana i.e., reddish, blackish red and dark violet and Artava (menstrual blood) becomes thin, dry, frothy and scattered (very small clots mixed with liquid substance) excretes slowly, irregularly with sound and pain; specially perforating or piercing type of pain.

**Vatiki Yonivyapada**\(^9\): It has symptoms like stiffness, roughness, pain, pricking sensation, sensation of creeping ants, etc. Local symptoms and other disorder of Vata. Other associated symptoms are like fatigue or lethargy etc. Also found. The menstruation appears with sound, is painful, frothy, thin and dry (absence of mucus). Chakrapani has explained that this type of bleeding per vaginum may occur during intermenstrual period. Susruta has described local symptoms only.

**Vataja Asrigdara**\(^10\): In Vataja Asrigdara, the discharged menstrual blood is also frothy, thin, rough, blackish or reddish or resembling washing of flower of Plasha in color; comes with or without pain. It is associated with severe pain in sacral, groin and cardiac region, flanks, back and pelvis. Susruta also mentioned its aftertaste as Kasaya (astringent), smells like iron and cold.

**Pittaj Artava Dushti**\(^7,8\): In it the color and pain of pitta is found. The Artava (menstrual blood) vitiated by pitta is yellowish or bluish in color, is free from unctuousness, smells like pus, fungus, blood or has putrid smell; the excreted blood is hot, associated with severe burning sensation and feeling of heat at the time of its excretion. Harita has defined the color resembling to the flower of Japa or saffron or blood and has added dysuria in the symptoms.

**Pittaja Yonivyapad**\(^9\): The vitiated Pitta reaches reproductive organs and produce burning sensation, suppurations associated with fever and heat. The menstrual blood becomes blue, yellow or black in color excess in amount, hot and smells like dead body. This type of vaginal bleeding occurs even during intermenstrual period or this disease resembles Pittaja Asrigdara.

**Paittika Asrigdara**\(^10\): The symptoms of menstrual blood in it are blue, yellow or blackish in color, hot, comes in profuse amount and associated with pain. It is associated with burning sensation, redness, thirst, mental confusion, fever and giddiness. Susruta and Vagbhata have mentioned that the blood vitiated by pitta becomes blue, green, blackish or resembles with the water mixed with smoke or Rasanjana or cow urine color has musty or fishy smell, being bitter (Katu) in taste is not liked but ants or flies,
Kaphaja Artava Dushti\(^7,8\):
Artava (menstrual blood) vitiated by Kapha is expelled as whitish or yellowish in color mixed with bone marrow like discharge is too much thick, slippery and unctuous in texture and settles down if put in the water. Harita has added retention of urine, stiffness or idleness, lethargy, drowsiness and sleepiness etc. Symptoms also.

Kaphaja Yonivyapad\(^8\):
In its symptoms like unctuousness, coldness, itching and dull pain in vagina is found. The women look anemic and discharges yellowish unctuous menstrual blood is the opinion of Charaka.

Kaphaja Asrigdara\(^9\):
In it the excreted menstrual blood is slimy, pale, heavy, unctuous, cold, mixed with mucus and thick is discharged with mild pain. Other symptoms such as vomiting, anorexia, nausea, dyspnoea and cough etc. Are also present.

Kunapagandhi Artavadusti (smells like dead body)\(^7,8\):
This Artavadusti (menstrual disorder), is caused by Rakta (blood). In this condition the amount of blood discharged during menstruation is more and red like fresh blood. It is also associated with heat and burning sensation etc. Features of Pitta.

Granthibhuta Artavadusti (non/in-complete liquefaction)\(^7,8\):
It is caused by vitiation of Vata with Sleshma and has association of other features of both the Doshas (pain due to Vata and unctuousness due to Kapha etc.)

Putipuya Artavadusti (putrid and purulent)\(^7,8\):
Putipuya or Puya Artavadusti (putrid and purulent) is caused by pitta with Kapha Dosas is the opinion of Susruta and Vagbhata 1, Vagbhata 2 says it to be due to Rakta (blood) with Pitta. This menstrual disorder is characterized with other features of Pitta and Kapha (burning sensation, fever and heat due to Pitta, heaviness etc. Due to Kapha)

Kshina Artavadusti (oligo zoospermia)\(^7,8\):
It is caused by Pitta with Vayu. In this condition menstruation is delayed, menstrual blood is scanty and associated with pain in vagina. It also has the features of Vata and Pitta both Dosas.

- Mutrapurisagandhi Artavadusti (smell like urine and faeces)\(^7,8\):
It is caused due to vitiation of all three Dosas so it has features of all the three Dosas.

Artavaksaya\(^8\):
In the event of deficiency or loss of Artava (menstrual blood), the menstruation does not appear in its appropriate time or is delayed, is scanty and does not last for three days. There is also pain in vagina. Chakrapani opines that this pain is due to aggravation of Vayu caused by loss of Artava (menstrual blood) which fills this region.

DISCUSSION
In Ayurveda, we can make a diagnostic approach by using Artava (menstrual blood) color, consistency, smell etc. According to vitiation of Dosha and diseases there are specific changes in menstrual blood. So, in ayurvedic perspective Artava Pariksha (menstrual blood examination) is done by
Panchindriya (five senses) and will became a very important tool in diagnostic and therapeutic purpose.

In this modern era, we can correlate Artavdusti (menstrual disorder) with different diseases on the basis of their most similar symptoms. According to the symptoms of Pittaja Artava Dusti it may be corelated with infections such as chronic pelvic Inflammatory disease, chlamydia trachomatis infection, trichomomas vaginitis, neoplasm etc. In a research study, Kaphaj Artavdusti is correlated with chronic endometritis, end cervicitis with oligomenorrhea. Kunapgandhi (smells like dead body) Artavadushti (menstrual disorder) be corelated with pyometra due to infection of genital organs and carcinoma, Granthi Artavadusti (non/in-complete liquefaction) with endometrial hyperplasia, Putipuya Artavadusti (putrid and purulent) with acute endometritis and carcinoma leading to pyometra, Ksheena Artavadusti (oligozoospermia) with oligomenorrhoa, Mutrapureeshagandhi Artavadusti with cervical carcinoma at 4th stage. Vataja yonivyapad with atrophic vaginitis and hypooestrinism, Pittaja Yonivyapad (gynecological disorder) with chronic inflammatory condition of female genital tract, Kaphaja Yonivyapd with Trichomonal or Monilial vulvo vaginitis, Saannipatiki Yonivyapad with chronic infective disorder of reproductive system.11

Table 1: Various Characteristics of Artava (menstrual disorders) in Different Diseases According to Pancheindriya Pariksha

<table>
<thead>
<tr>
<th>Sparsindriya pariksha (consistency)</th>
<th>Chakshuindriya pariksha (color)</th>
<th>Srotendriya pariksha (shabd a)</th>
<th>Rasindriya pariksha (Senses examinatio n)</th>
<th>Ghranindriya pariksha (smell)</th>
<th>Vedna (pain)</th>
<th>Other symptoms</th>
<th>Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frothy thin, rough, cold</td>
<td>Blackish or reddish or washing of flower palasa</td>
<td>- Kasaya (astringent)</td>
<td>Smells like iron</td>
<td>With or without pain (in sacral, cardiac, &amp; groin region)</td>
<td>Vataja asragdara</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin, dry, frothy, scattered</td>
<td>Aruna(red) Krishn(black) Violet black</td>
<td>- - -</td>
<td>Perforating or piercing type</td>
<td></td>
<td>Vataja Artava dusti</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin, dry (absence of mucosa), frothy</td>
<td>Aruna, Krishna, pinkish or blsckidh</td>
<td>With sound</td>
<td>-</td>
<td>Severe pain in groin region, flanks etc.</td>
<td>Numbness, roughness, Stiffness, sensation as if creeping of ants in yoni, fatigue, lethargy</td>
<td>Vatika yonivyapad</td>
<td></td>
</tr>
<tr>
<td>Scattered, frothy, non-unctuous</td>
<td>Light red, black, yellow or blue</td>
<td>- -</td>
<td>Purulent or putrid smell</td>
<td>May or may not be</td>
<td>Heat and burning sensation</td>
<td>KshinArta va</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Condition</th>
<th>Color, Consistency</th>
<th>Smell</th>
<th>Sensation</th>
<th>Symptoms</th>
<th>Dosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free from unctuousness</td>
<td>Yellowish or bluish</td>
<td>-</td>
<td>Burning sensation or</td>
<td>Fever, generalized heat, local suppuration</td>
<td>Pittaja artavdusti</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>feeling of heat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Artavasya</td>
<td>Visra Gandhi (like pus or putrid smell)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ushna</td>
<td>Blue, yellow or black in color</td>
<td>-</td>
<td>Like dead body</td>
<td>Fever, generalized heat, local suppuration</td>
<td>Pittaja yonivyapad</td>
</tr>
<tr>
<td>Hot, does not coagulates</td>
<td>Blue, yellow or blackish in color</td>
<td>-</td>
<td>Fishy smell</td>
<td>In profuse amount menstrual blood, thirst, mental confusion, fever</td>
<td></td>
</tr>
<tr>
<td>Too much thick, slippery or lubricous</td>
<td>Whitish or slightly yellowish</td>
<td>-</td>
<td>Pricking or burning sensation</td>
<td>Retention of urine, stiffness or idleness, lethargy, drowsiness and sleepiness</td>
<td>Kaphaj Artavadusti</td>
</tr>
<tr>
<td>Unctuous</td>
<td>Yellowish</td>
<td>-</td>
<td>Painless</td>
<td>Itching, excessive coldness and dull pain in yoni</td>
<td>Kaphja yonivyapad</td>
</tr>
<tr>
<td>Unctuous, unctuous, cold, thick</td>
<td>Pale</td>
<td>-</td>
<td>Smells like fat</td>
<td>Vomiting, anorexia, nausea, dyspnea</td>
<td>Kapaja asrigdara</td>
</tr>
<tr>
<td>Slimy</td>
<td>Yellow or resembling ghrita, bone</td>
<td>-</td>
<td>Foul smelling</td>
<td>Burning sensation</td>
<td>Kaphja Artavadusti</td>
</tr>
<tr>
<td></td>
<td>marrow or muscle fat</td>
<td></td>
<td></td>
<td>Fever, anemia</td>
<td></td>
</tr>
<tr>
<td>Unctuous</td>
<td>Whitish pale</td>
<td>-</td>
<td>Mild pain</td>
<td>Vomiting, anorexia, nausea, dyspnea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slimy</td>
<td>Yellow or bluish</td>
<td>-</td>
<td>Burning sensation and pain in yoni</td>
<td>Burning sensation</td>
<td>Sannipatik asrigdara</td>
</tr>
<tr>
<td>Thick, mucoid</td>
<td>Purulent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thick</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Red like fresh blood</td>
<td>Like Dead body</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Throat</td>
<td>Granthibhoot Artavadusti</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paripluta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kunaapa ndhi Artavadusti</td>
<td></td>
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</tbody>
</table>
Thus, menstrual blood proteomes are specific to hormonal cycle and there is presence of specific proteomes in specific diseases found. In modern research proteomes fascine (fscn1) found in cervical and ovarian cancer and tissue distribution of this proteomes in ovary. Normal function of this proteomes is providing rigidity, remodeling and cell migration. Protein wnt (wnt) found in menstrual blood is specifically found in endometrial cancer (55) in, its tissue distribution is endometrium and its normal function is to regulate proliferation and differentiation in endometrium. Following table shows the proteomes found in menstrual blood in specific diseases:

### Table 2: Various proteomes found in menstrual blood in a specific disease with normal function and tissue distribution

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Tissue Distribution</th>
<th>Function</th>
<th>Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Carcinoma</td>
<td>Placenta</td>
<td>Mediates Cell Growth Migration, Differentiation and Mmp-2 And 9</td>
<td>Epithetical Discoidin Domain Containing Receptor 1 (Ddr1)</td>
</tr>
<tr>
<td>Cervical, Ovarian Cancer</td>
<td>Ovary</td>
<td>Actin, Bundling Protein Provides Rigidity, Cytoskeleton, Remodeling and Cell Migration</td>
<td>Fascin (Fscn1)</td>
</tr>
<tr>
<td>Endometrial Cancer</td>
<td>Endometrium and Endometrial Hyperplasia and Carcinogenesis</td>
<td>Regulates Proliferation and Differentiation in Endometrium</td>
<td>Wnt (Wnt)</td>
</tr>
<tr>
<td>Endometriosis</td>
<td>Uterus, Placenta, Decidua, Cervix, Ovary</td>
<td>Apoptosis Intract With Tumor Necrosis Factor</td>
<td>Map Kinase Activating Death Domain Protein (Madd)</td>
</tr>
<tr>
<td></td>
<td>Late Secretory Endometrium</td>
<td>Apoptosis, Inflammation, Vascularization and Apoptosis</td>
<td>Tumor Necrosis Factor Receptor Superfamily Member 16 Tinfril Urocortin 3 (Ucn3)</td>
</tr>
</tbody>
</table>
CONCLUSION

Ayurveda has a vast region of research. There is more needful research is required in Artava pariksha (examination of menstrual disorders) to use it as a diagnostic tool or therapeutic tool. Artava (menstrual disorders) consistency, color, smell etc. Are different in different diseases. So, it is an easy source to make an approach in diagnosis of underline diseases.[14] Ayurveda has detailed description of Artava (menstrual disorders) according to panchindriya pariksha (examination of senses) but in modern era we have much more advanced techniques to study the changes in menstrual blood according to hormonal changes and we can study these Artava (menstrual disorders) changes in a different way in forms of proteomes by examining the visible menstrual blood or we can say it is molecular relation of color and texture change of menstrual blood which was examined in ancient times by indriya pariksha (examination of senses). So ayurvedic practitioner may concentrate to Artava (menstrual disorders) appearance and elaborate it in many ways. Many more studies are going on Artava pariksha (menstrual blood) and many more are required as this diagnostic field is still obscure. It may open the new arena for diagnosis in gynecology.

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