



RAKTA (BLOOD) VS RAJA (MENSTRUAL BLOOD): A CRITICAL ANALYSIS

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Abstract

The never-ending discussions about pros and cons of menstrual practices, restrictions and taboos highlights the difference between the blood and menstrual blood. Unlike medical science, the menstrual blood is also considered as impurity in religious and cultural context. Ayurveda describes blood as *Rakta dhatu* and menstrual blood - *Raja* or *artava* as *upadhatu*. The description of *dhatu*s are as the building blocks of the body whereas *upadhatu*s have different functions and considered as secondary tissue product. The current study is aimed to highlight the difference of blood and menstrual blood constitutively with similarities and dissimilarities. Literature regarding blood and menstrual blood from Ayurveda and contemporary science are reviewed and analysed. Menstrual blood or *Artava* is different from blood in terms of constituents and other properties. Identification of unique proteins and stem cells in menstrual blood has established the difference. Before rendering the menstrual restrictions and prohibitions are taboos, we require basic understanding of the difference of both. Further research on restricted life style during menstruation and its effect of menstrual blood and reproductive health are needed. Survey of male perspective of blood and menstrual blood is also presented here.

Keywords: *Artava*, Blood, *Dhatu*, *Rakta*, Menstruation, *Upadhatu*.

Introduction:

Impurity and poison were the terms used in culture and traditions for menstrual blood. The restrictions and taboos related with the menstrual practices were based on the same thought and also as menstrual blood being dirt and poisonous. This indicated a menstruating woman to be impure and hence a period of isolation with restricted domestic and other activities were laid in many cultures. Education and empowerment of women in the past few decades changed the view of menstruation and the thought changed from it being a menstrual blood to only blood. To shatter the silence, shame and stigma of menstruation many government and non government organizations, media and others came together in this campaign which involved considering menstrual blood as only blood. Along with such movements, researches on menstrual blood to be unique and special constituents of menstrual blood different from blood

continues to be studied. Ayurveda science describes both as different with specific origin and attributed functions of both.

Objectives: To understand and evaluate the difference between blood and menstrual blood according to Ayurveda and contemporary science.

Materials and Methods: The literature related with *Artava* and *Rakta* in Ayurveda classics is studied and analysed. Current researches on menstrual blood is collected online by accessing pubmed, academia and other platforms. Books related to menstrual blood were also explored. To understand the view of male on menstruation and blood, questionnaire with open and closed ended questions was circulated with focus group discussion and indepth interview of male volunteers.

Significance of Study:

Socio cultural beliefs related to menstrual practices are being criticized since centuries. The debate of menstrual blood being same as normal blood continues in the campaigns to end the period taboos whereas a thorough scientific understanding of both body fluids is necessary. The present study provides information and analysis of blood and menstrual blood from *Ayurveda* science and contemporary science aspects.

Observations :

The description of Blood and menstrual blood from *Ayurveda* classics is analysed as below.

Table 1: Review from Ayurveda science

Particulars	Blood	Menstrual blood
Synonyms	<i>Rakta, Shonita, Rudhira, Asrik, Kshataja, Lohita, Jeeva</i> ^{1,2}	<i>Artava, Raja, Pushpa, Asrik, Shonita, Rakta, Lohita</i> ³
Origin ⁴	Second <i>dhatu</i> amongst the <i>sapta dhatus</i> . Derived from <i>rasa dhatu</i> . <i>Dhatu</i> means body constituents which build the basic structure and carry various physiological functions. They work as body tissues, stabilize and sustain the body.	<i>Upadhatu</i> of first <i>dhatu</i> i.e. <i>Rasa dhatu</i> . <i>Upadhatu</i> are secondary tissue derived from <i>dhatus</i> . Origin of <i>Artava</i> is from <i>rasa dhatu</i> as an element produced upon action of <i>rasa dhatvagni</i> (metabolism process). <i>Artava</i> is the product of <i>rasa dhatu</i> which is excreted out of the female genitalia every month.
<i>Mahabhoota</i> dominance ⁴	Presence of all <i>mahabhoota</i> with <i>teja</i> dominance.	<i>Teja</i>
Location	<i>Rakta vaha srotas</i> , circulation in entire body. <i>Yakrit</i> (Liver) and <i>Pleeha</i> (Spleen) are considered to be	<i>Garbhashaya</i> (uterus), <i>Artava Vahini Dhamani</i> ⁶

	foundation of <i>Rakta vaha srotas</i> . ⁵	
Characteristics of <i>shuddha rakta</i> and <i>artava</i>	It is sweet, salty, unctuous, red in colour, heavy, <i>Asamhata</i> , smells typically. Pure blood can be likened to gold purified with fire, <i>indragopa</i> , red lotus, lac, fruit of <i>gunja</i> (<i>Abrus precatorius</i>) in colour. It is <i>anushna sheeta</i> (not too hot neither too cold). ⁴	Blackish red in colour. Various shades of red coloured menstrual fluid are described with the similes of fruit of <i>abrus precatorius</i> (<i>gunja</i> fruit), red lotus flower (pinkish red), <i>indragopaka</i> insect (dark red) [<i>Cha. Sam. chikitsa sthana</i> 30/226] colour of rabbit blood or solution of lac. Menstrual blood should not stain cloth is considered as normal. ⁷
Quantity	<i>Anjali pramana</i> of <i>rakta dhatu</i> is eight <i>anjali</i> . ⁴	The quantity of normal <i>artava</i> is four <i>anjali</i> . Neither too much nor too less in quantity is also described as normal. ⁷
Functions	Giving life and sustaining vitality (<i>jeevana</i>), enhancing complexion (<i>varna prasadana</i>), nourishing successor muscle tissue and other components (<i>mamsa dhatu poshana</i>) are the main functions of <i>rakta dhatu</i> . <i>Rakta dhatu</i> is base of living body; it looks after life. In the embryonic life, <i>rakta dhatu</i> plays important role in the formation of <i>yakrit</i> (liver), <i>pleeha</i> (spleen), <i>phuphphusa</i> (lungs), <i>unduka</i> (colon), <i>vrikka</i> (kidneys), <i>vrishana</i> (testis) and <i>hridaya</i> (heart) ⁴	For <i>garbha</i> formation and reproductive health. ⁷ During pregnancy, the obstruction of <i>artavavaha srotas</i> and its collection in uterus leads to formation of <i>apara</i> . During puerperal period, the absence of menstruation is for promoting lactation and formation of <i>stanya</i> .
Pathology (Variations in quantity)	Symptoms of decrease of <i>rakta</i> are roughness of skin, cracks, dullness, and dryness of skin. [<i>Cha. Sa. Sutra Sthana</i> 17/65]. In addition, craving for sour food, liking for cold substances, looseness of blood vessels is also observed. Reddish	Symptoms of increased <i>artava</i> are described as menstrual bleeding starts early, excessive bleeding. The women will be lethargic and weak, restless. Decreased <i>artava</i> symptoms are women will have irregular menstrual cycles, bleeding in less quantity and pain in vagina. ⁸

	discolouration of eyes and other body parts and fullness of veins are considered as the signs of increase of <i>rakta dhatu</i> . [Su. Sa. Sutra Sthana 15/10]. ⁴	
Diseases due to abnormalities	Due to increase in <i>rakta dhatu visarpa, pleeha vidradhi, kushtha, vatarakta, raktapitta, gulma, upakusha, kamala, vyanga, agninasha, sammoha</i> , red eyes, skin and urine with haemorrhage sometimes happens. ⁴	<i>Asrigdara, Ashta Artava Dushti, Vandhyatva</i> ⁹
Upadhatu	<i>Kandara and Sira</i> ⁴	<i>Artava</i> itself is an <i>upadhatu</i>
Mala	<i>Pitta</i> ⁴	Not described
Rakta Dhatu Sarata	Individuals who have <i>uttama rakta dhatu sarata</i> are endowed with following features:- ears, eyes, oral cavity, tongue, palms, soles, nails, forehead, penis; all these organs are of red colour. These organs are very lustrous, glossy. Such individuals are very attractive, handsome. They cannot sustain strenuous job or hot climate. They are endowed with intelligence, happiness and beauty. ⁴	Not described
Paricharya (Do's and Don't's)	Not described	Ayurveda describes disciplined life during 3 days of menstruation which is termed as <i>rajaswala paricharya</i> . The menstruating woman should observe chastity, avoid day time sleep, anointing, massaging, vigorous exercise, excess laughing and talking etc. The diet shall be light to digest with

		food items like rice, barley with small quantity of ghee and milk. ¹⁰
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Based on the literature review of blood and menstrual blood in books and research, following analysis according to contemporary science could be compiled.

Table II : Review from contemporary science

Particulars	Blood	Menstrual blood
Euphemism	Haem, Juice, Sanguin	Period, time, monthly, moon time
Definition	Body fluid in circulatory system for transport of oxygen, nutrients and metabolic waste products.	Cyclic and monthly physiological shedding of endometrium discharged for 3 to 7 days through vagina.
Constituents	Cells suspended in plasma. Plasma contains water, protein, glucose, minerals, ions, hormones. Suspended cells are RBC, WBC, Platelets.	Endometrial tissue, cervical mucus, vaginal secretions.
Colour	Arterial blood and capillary blood are bright red, as oxygen imparts a strong red color to the heme group. Deoxygenated blood is a darker shade of red; this is present in vein	Healthy period blood typically varies from bright red to dark brown or black throughout menstruation. Initially at beginning of menstruation it is pinkish, followed by bright red and dark red to blackish at the end of menstruation.
Oxygen	Highly oxygenated	Not highly oxygenated.
Other constituents	Important elements in plasma include albumin, coagulation factors, fibrinolytic proteins, antibodies, enzymes, hormones, glucose and fat particles. ¹¹	Fluidity of menstrual blood is caused by absence of fibrinogen and fibrin due to fibrinolytic activity of menstrual blood. ¹² Functionality of platelets in menstrual blood is different from venous blood in terms of failure to aggregate in response to stimuli and producing adequate cyclo-oxygenase products. ¹³
Proteins	Display of nearly 3700 chromatography separated proteins in blood plasma. ¹⁴	1061 proteins in menstrual blood where 385 proteins are unique in menstrual blood. ¹⁵ Also lacks thrombin, prothrombin and fibrinogen.
Stem cells	Blood stem cells are found in the peripheral blood called as hematopoietic stem cell. ¹⁶	Mesenchymal stem cells have been identified in menstrual blood which are highly regenerative in nature. Helpful in

		regenerative medicine and immune related diseases. ¹⁷
Toxins	Toxins only found in blood in metabolic disorders and other diseases.	The blood serum, saliva, sweat and milk of menstruating female contains a chemical which exhibits properties like oxy cholestrin and is termed as menotoxin. This menotoxin is phytotoxic and have effect on blood coagulation. ¹⁸

Perception of Male volunteers : First quantitative method was used to collect the data through survey. 121 respondents of age 20 to 81. Based on collected data, qualitative method through focus group discussion and in-depth interviews were conducted to understand the findings of quantitative data. Total 8 focus group discussions and 4 in depth interviews done. The transcript of interview and discussions was prepared. The study was conducted from January 2022 to December 2022.

Reliability of questionnaire was tested with Cronbach's Alpha test. The alpha score of 20 item questionnaire came to 0.63 which is acceptable. The questionnaire was then translated in vernacular language (Gujarati).

Ethical Clearance : PU No. PU/PIA/IEC/02/2021/016 dated 24/07/2021

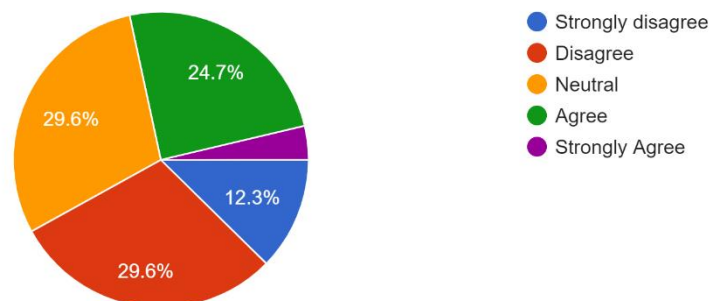
CTRI Registration : CTRI/2021/12/038623 dated 15/12/2021

In response to the question as menstrual blood being same as menstrual blood, maximum responses were towards negation and disagreeing about both being same 20 and 38, whereas 27 respondents remained neutral. When asked if they are not same then what is the difference, only 34 respondents answered this open ended question. The reply of many respondents was that it is '*Bagadvalu*' in Gujarati which means it contains waste. Some said it is '*Durgandhvalu*' in Gujarati which means smelly. Others mentioned it being more thick than normal blood. 3 respondents only claimed that they don't know because they have never seen it. As maximum respondents were graduates, few mentioned menstrual blood being shedding of endometrium, containing less blood cells, with presence of vaginal secretions. One of the respondents even responded as "Both are essentially the same blood but the color and consistency of menstrual blood varies due to presence of endometrial tissue in it." Menstrual

blood causes negative aura and is vitiated blood was also some of the responses.

It is the same as normal blood

81 responses



Discussion

To remove stigma surrounding menstruation and discard all kinds of menstrual etiquettes as taboos have been a topic of universal discussion since few decades. Shame, secrecy, embarrassment, and confusion with impurity as the major variables studied worldwide about menstruation. The discussion on reproductive biology involving menstruation as integral part is being done at lesser extent. The phenomenon is more looked as a chaos rather than understanding the scientific root. The significance of menstrual restrictions such as touching plants and isolation can be understood by action of menotoxin and pheromones. Ancient Greek and Roman physicians understood the medical powers of menstruation in healing many diseases. This healing power is substantiated by presence of stems cells found in menstrual blood. Presence of unique 385 proteins and different coagulation factors itself constitutively suggest the difference between blood and menstrual blood. Ayurveda specifically signifies the difference mentioning them under *Dhatu* and *Upadhatu* respectively. The functions and origins of both are dissimilar and hence *Rajaswala Paricharya* -a specific code of conduct is emphasized to prevent her reproductive health.¹⁹ The mixed response of male volunteers on survey of menstrual blood and blood being same signifies confusion. Knowledge about menstruation is gained by men through observation and listening to private discussion among female was the conclusion of a study conducted in three states of India.²⁰

Conclusion

The social code about menstruation traces the historical source to *Manusmriti* – ancient book on code of conduct. All social and cultural code of conduct highlights the menstrual blood being either evil or magical, powerful or polluting. The Ayurvedic regimen of *Rajaswala* or menstruating women is all about reproductive health. The scientific evidence of menstrual blood or *Raja* being different from blood or *Rakta* are systematically analysed in the present paper. Further studies on variations in menstrual blood amongst normal and pathological conditions is necessary.

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