



Role of Rakta and its significance in understanding diseases

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Abstract

Dhatu, one among the basic constituents composing the body, forms the foundation to structure, support and sustain life. *Rakta* one among them is responsible for the *utpatti*, *sthiti* and *pralaya* of the body. *Rakta* being *panchabhautika* in nature has extra qualities like *visrata*, *dravata*, *raga*, *spandana*, and *laghuta* representing each *mahabhuta*. It has an extensive range of functions to carry out within the body. The prime function of the *rakta dhatu* is *jeevana karma*, that which provides and supports life. Any disturbance to the normal state of the *rakta dhatu*, hampers these functions and cause various diseases related to its own *srotas* as well as the other *srotas*. Understanding the significance of *rakta* in various diseases is utmost important as that of understanding the status of *doshas* in any disease. When *ushna*, *sheeta*, *snigdha*, *ruksha*, and other treatments are ineffective, *rakta* plays a crucial role in the treating of a variety of illnesses by adopting various *raktamokshana* treatments. The ailment should be handled in these circumstances taking into account the disturbance in *rakta dhatu*. Thus, stating the significance of *rakta dhatu* in understanding various diseases.

Key words: *Rakta*, *Utpatti-Sthiti-Pralaya*, *Jeevana*.

Introduction:

Dhatu, one among the prime constituents comprising the body¹, functions to maintain the body in the state of equilibrium along with the other constituents i.e., *dosha* and *mala*. The term *Dhatu* means that which supports or holds the body. Any derangement or deviation from its normal state results in the manifestation of various diseases. *Dhatu*s and *malas*, having no independent capacity to vitiate themselves unlike *doshas*, instead gets vitiated by *doshas* and are hence called as *dushyas*. *Rakta*, the second *dushya* among the seven *dushyas* has a special quality of being *sarvavyapi* in the body which means it reaches to each and every part of the body. *Jeevana karma* being its main function², *rakta* helps in sustaining life. According to Ayurveda, *rakta* plays a pivotal role in creation, sustenance and destruction of any living organism. Also, blood which is being correlated to *rakta* in the contemporary science, is responsible for the maintenance and sustenance of life. Few

authors consider *rakta* as a fourth *dosha* due to its special *guna* and *karma*.³ As the concept of *rakta* is too broad, this article explores it on the basis of *utpatti*, *sthiti* and *laya* for a comprehensive understanding.⁴

Materials and Methods:

In the present study, *Brihatrayees* along with its commentaries, relevant data from other ayurvedic literature and dictionaries were referred to compile, organise, describe and analyse the content in the systematic manner.

Review of Literature:

Nirukti:

The word *Rakta* is derived from the Sanskrit term *Ranj dhatu – Rajyata Angamaneneti* which means that which imparts colour to the body.

Origin of Rakta:

Rakta originates from its previous *dhatu Rasa*. The *prasada bhaga* of the *rasa dhatu* when goes to the *yakrit* and *pleeha* attains *raga/* colour. The *rasa* attains this colour with the help of the *Ranjaka teja* present in the *yakrit* and *pleeha*⁵.

Synonyms of Rakta:

Various synonyms of *Rakta* will convey different meanings, depending on which one can understand what *karma* of the *rakta* can be taken in particular shloka. The synonyms of *Rakta* are as follows:

- *Shonita* – Red colour
- *Rudhira* – To withhold
- *Lohita* – that which heals
- *Asruk* – that which gushes in the vessels
- *Kshataja* – that which is born out of trauma

These are the synonyms which are commonly used in Ayurvedic literature.

As stated above, the concept of *rakta* is further discussed in relation to *utpatti*, *sthiti*, and *pralaya*.

- *Utpatti* – *Rakta utpatti* in *Garbha*, *Rakta Utpatti* from *rasa dhatu*, *Raktavaha Srotas*

- **Sthiti** – Functions of *Rakta*, *Panchabhautikatva* of *Rakta*, *Shuddha rakta lakshana*
- **Pralaya** – *Rakta pramana*, *Rakta Pradoshaja vikara*, *Vridddhi Kshaya lakshanas*, *Rakta dushti Karanas*, Treatment protocol.

A. Utpatti:

a. *Rakta utpatti* in *Garbha* –

All the *dhatu*s are present in minute form during the first month of conception and completely manifest and take shape over time. *Rakta* is present in micro form in first month itself⁶.

b. *Rakta utpatti* from *rasa dhatu* –

As *Dhatu utpatti* occurs from preceding *dhatu*s, in this case *rakta utpatti* is through the *rasa dhatu*. This is explained in the chart below.⁷

Figure 1 – *Rakta dhatu Utpatti*



c. *Raktavaha srotas*:

The origin of *raktavaha srotas* is *yakrit*, *pleeha*⁸ and *raktavahini dhamanis*.⁹ After explaining the origin of the *raktavaha srotas*, there is mentioning of sign and symptoms of *dushta rakta vaha srotas* and *viddha raktavaha srotas*.

Raktavaha srotodushti lakshanas are same as that of *raktapradoshaja vikaras* whereas *raktavaha sroto viddha lakshanas* are – brownish discoloration over body, fever, burning sensation, palour, bleeding, redness of eyes.

B. Sthiti:

The word *sthiti* means to maintain things in its own state of equilibrium. Here, *rakta* maintains various function of the body. Thus, responsible for the sustenance of life.

a. Functions of Rakta dhatu:

The functions of *Rakta* dhatu are as follows:

- *Jeevana* – that which provides life (primary function)
- It is responsible for strength, complexion and pleasant life.
- It is prana to all the living creatures.
- It nourishes *maamsa* dhatu.
- Responsible for the *kshaya* and *vridhhi* of all other dhatus.
- Sensation of touch.

b. Panchabhautikatva of Rakta:

According to acharya Sushruta, all the 5 *mahabhutas* contribute unique features to the *Rakta dhatu*. Those are: ¹⁰

Table 1 – Panchabhautika of Rakta dhatu

Features	Related <i>Panchamahabhuta</i>
<i>Visrata</i>	<i>Bhumi</i>
<i>Dravata</i>	<i>Ambu</i>
<i>Raga</i>	<i>Teja</i>
<i>Spandana</i>	<i>Vayu</i>
<i>Laghuta</i>	<i>Akasha</i>

c. Features of Pure Rakta:

The colour of pure *rakta* is similar to that of a firefly (*indragopa*), a crimson lotus (*padma*), a lac-resinous substance (*laksha*), and seeds of the *Abrus precatorius* Linn plant (*gunja*).¹¹ A person with pure blood has a

glowing skin, healthy sense organs, a positive outlook, healthy digestion and natural urges, and is strong, content, and happy.¹²

Acharya Sushruta also states the same features of pure *Rakta* as that of Acharya Charaka, but adds the feature that the pure *rakta* will be always flowing in the body without any obstruction.¹³ Acharya Vagbhata adds on few features that pure *rakta* is of *madhura* and *lavana rasa* and temperate in potency.¹⁴

C. Pralaya:

The literal meaning of the word *Pralaya* is destruction or any disturbances in the normal functioning of a particular entity. *Rakta* is the *dhatu* which is responsible for occurrence of various diseases in the human body.

a. *Rakta Pramana*:

Rakta pramana according to the ayurvedic classics is eight *Anjali*¹⁵ (approximately 1600ml). Hence, any disturbances in the quantity either excess or depleted can manifest certain symptoms in person.

b. *Rakta Kshaya Lakshana*:¹⁶

If the quantity of the *rakta* is depleted then the symptoms like craving towards sour food items, craving towards cold items, laxity in the blood vessels, dryness all over the body is observed.

c. *Rakta Vriddhi Lakshanas*:¹⁷

If the *rakta* quantity is increased then the diseases like *visarpa*, *pleeha*, *vidradhi*, *kushtha*, *vatarakta*, *raktapitta*, *gulma*, *upakusha*, *kamala*, *vyanga*, *agninasha*, *sammoha*, reddish discolouration of skin, eyes and urine.

d. *Rakta pradoshaja vikaras*:¹⁸

The *rakta pradoshaja vikaras* are *kushtha*, *visarpa*, *pidaka*, *raktapitta*, *asrugdara*, *mukhapaka*, *pleeha*, *vidradhi*, *neelika*, *tilakalaka*, *kamala*, *vyanga*, *dadru*, *shvitra*. In these diseases primarily the *Rakta dhatu* along with other doshas and dushyas are involved.

e. *Reasons for Rakta dushti*:¹⁹

Reasons of *Rakta dushti* can be classified into two: Dietary factors and Lifestyle factors.

Table 2 – Factors responsible for Rakta Dushti

Factors responsible for <i>Rakta Dushti</i>	
Dietary factors	Consumption of damaged or inappropriate food, beverages, or both, on a regular basis; overeating; acidic or pungent alcoholic beverages and any other similar drinks; too much salty and alkaline substances; <i>kulatha, masha, nishpava, tila taila, pindalu, mulaka and harita shakha</i> , meat of <i>Jalaja, anupa</i> and <i>bileshaya</i> animals; excessive intake of curd, whey, vinegar and other fermented liquids; consuming decomposed, putrified foods and <i>viruddha ahara</i> ; indigestion and taking meal before the previous meal is digested.
Lifestyle factors	Excessive sleeping during the day especially after intake of liquids, unctuous and heavy foods, excessive anger, excessive exposure to the sun and wind, suppression of natural urges like vomiting, too much of exertion, injury, heat and in the <i>Sharad rutu</i> .

f. Treatment protocol:²⁰

Rakta Dushti vikaras should be treated in the same way as *Raktapitta* and by giving *Virechana, Anuvasana basti*, and *rakta sravana*. The *Sandhana, Skandana, Pachana*, and *Dahana rakta stambhana upaya* should be followed in cases of excessive blood flow.

Discussion***Rakta* and its Karma:**

The word "*dhatu*" comes from the Sanskrit phrase "*dharanat dhatavaha*," which means "that which supports the body through its function of sustenance." The *Dhatus* support the *Shareera* in spite of getting vitiated. The *Rakta Dhatu* serves a vital role in maintaining life, which is known as *Jeevana karma*. *Rakta's dravatva* property allows it to spread throughout the body. *Rakta* will develop *gurutva* when their *dravatva* quality declines, which further reduce the flow in the body.

Quantity of *Rakta*:

According to Ayurveda, *Rakta* is equal to 8 *anjali* (approximately 1600ml). In contemporary science *rakta dhatu* is correlated to the blood tissue. The average person's body has 4-5 litres of blood. By comparing these

two numbers, it can be seen that *Rakta* and blood tissue cannot be completely compared. The combined volume of *Rakta, Rasa* (9 *anjali*, 1800 ml), and *Udaka* (10 *anjali*, 2000 ml) adds up to around 5400 ml. Therefore, the combination of *Rakta, Rasa* and *Ambu* in the human body and blood may be connected.

Etiological factors of *Rakta Dushti*:

The etiological factors stated in the classics can be considered in the modern period as alcohol, tobacco, aerated drinks, excessive salty food, fast food, excessive consumption of horse gram and its dishes, potatoes, radish salads, green leafy vegetables, sea food, chicken, rabbit meat, curds and dishes created out of it, vinegar, sauce, suppressing the need of vomiting, foods with opposite potency, stale food items, eating excessively, and sleeping excessively.

The *rakta dushti* is caused by a variety of occupations where workers are exposed to heat and sunrays, such as chefs, people who work in furnace-related sectors, construction engineers, sports, etc. It is also caused by occupations that need greater effort, such as coolies, packers and movers, etc. Additionally, rage might cause *rakta dushti*. Other etiological variables include harm, mishaps, and sunburn. Additionally, *sharad rutu* naturally contains *rakta dushti*. *Rakta dushti* due to the excess exposure to sunlight is because of the UVB rays and UVC rays present in the sunrays. UVB rays can only penetrate till the dermis whereas UVC can penetrate even more deeper and may be fatal. Prolong exposure to UVB rays causes skin rashes, capillary bleeding, burning sensation etc. whereas prolong exposure to UVC rays can causes fatal diseases like skin cancer, photokeratitis, cataract and permanent vision loss.²¹

***Rakta dushti* causes in current day life:**

Table 3 – *Rakta dushti* causes in current scenario

Causes mentioned in classics	Similar causes in current day scenario
<i>Pradushta bahu teekshna ushna madyairanyascha</i>	Alcohol, tobacco and other similar substances
<i>Atilavana kshara amla katu rasa dravyas</i>	Fast food, Chinese street food, aerated drinks, food with added taste maker
<i>Kulatha masha nishpava tila taila nishevana</i>	Dishes prepared out of horsegram,

	blackgram, flat beans, sesame oil intake
<i>Pindalu mulakadinam</i>	Potatoes, purple yam and other tubers, raddish
<i>Haritanam ca sarvashah</i>	All green leafy vegetables
<i>Jalajanupabailanam prasahanam</i>	Meats of animals like sea creatures, chicken, goat, rabbit, duck, etc.
<i>Dadhi amlamastu suktanam</i>	Curd and its related dishes, whey, vinegar.
<i>Surasauvira</i>	Beer, wine and other alcoholic beverages
<i>Chardi vega pratighata</i>	Controlling the urge of vomiting especially people while travelling.
<i>Virudhanam</i>	Foods like fish and milk, dishes where honey is heated, honey and ghee in equal quantity, heating curds, etc. foods which are opposite in potency.
<i>Upaklinna putinam bhakshanena ca</i>	Stale food especially in hotels, refrigerated previous day food items and eating next day.
<i>Bhuktva diva prasvapatam dravasnigdha guruni ca</i>	Eating heavy meal and sleeping excessively
<i>Shrama abhigata santapa</i>	Various occupations where there is exertion like masons, mechanics, coolie, etc., occupations where there is exposure to heat chef, glass factory workers, bakers, metal industry workers. Also, any type of accident or injury is a cause for rakta dushti.
<i>Ajeerna adhyashana</i>	Eating the next meal before the previous meal gets digested.
<i>Sharad kala svabhavat ca</i>	Natural tendency of Autumn season

Rakta Kshaya and Vruddhi:

Rakta being in liquid in nature, the volume of the *rakta dhatu* can decrease or increase. If the volume of *rakta dhatu* decreases extremely then the *jeevana karma* is hampered and sustenance of life is very difficult. Signs and symptoms of *Rakta kshaya* are the reserve point indicators showing that there is decrease in quantity of *rakta*.

On the other hand, when there is increase in the quantity of the *rakta dhatu* due to etiological factors which increases *dravatva* of *rakta* and *pitta*, causes diseases like *raktapitta*. In these conditions *rakta prasadana* and *rakta stambhaka dravyas* will not work, *raktamokshana* has to be the first line of treatment.

Various diseases caused by Rakta Dushti:**a. Grathita rakta:**

In *Grathita rakta* the *rakta* coagulates in the body which causes obstruction in the channels. In such conditions *mrudu kshara* along with honey is administered. In *raktapitta chikitsa*, in the context of *grathita rakta paravata shakriti*²² is mentioned which again is alkaline in nature. Also, while treating *arbuda*, in a condition where there is *grathita rakta*, *kshara prayoga* is mentioned which helps to dissolve the clotted *rakta* in the body, thus clearing the pathway of the *rakta*.²³

b. Raktaatisara:

Raktaatisara happens when the person afflicted with *pittaatisara* further consumes causes which increases *pitta*. Treatment protocol for this is *rakta stambhana*, *vedana sthapana*, *piccha basti*, *deepana* and *paachana*. *Raktastambhana* should be done in order to prevent excess loss of *rakta* and if the patient is weak and not to stop *dushta rakta* going out of the body.

The same protocol should be followed in *raktaarshas* along with *prakshalana* with *Madhuka* and *Panchavalka kashayas* and *Ghritamanda basti*.

c. Rakta Pradara:

Rakta pradara is caused when there is increase in the quantity of *Rakta* which enters *garbhashaya gata siras*, mixes with the *raja* present in *garbhashaya* and the *rakta srava* occurs. The treatment for this disease is same as *raktapitta*, *raktaatisara* and *raktaarshas*.

d. Atidagdha:

In the condition of *Atidagdha*, signs and symptoms mimic to the *raktakshaya lakshanas*. Treatment protocol which are cold in potency, *ghrita* mixed with the drugs like *tinduki* and should be treated on the basis of *pittaja visarpa*.

There are few conditions where the *raktamokshana* is the first line of treatment e.g., in case of snake bite, a tourniquet has to be applied and the blood has to be let out first. Also, in condition of *raktaja shiroroga* the primary line of treatment is *siravyadha* over the forehead.

Rakta basti in Jeevadaana vyapat:

One of the *vamana* and *virechana* complications is referred to as *jeevadana*, which is when the *jeeva rakta* is leaving the body. It is an emergency condition where the flow of *jeeva rakta* is to be ceased. *Rakta pana* and *Rakta basti* are used to cure in this case. For *rakta pana*, the *jeeva rakta* of animals such as cows, buffaloes or goats is collected and then given to the patient for drinking. The *rakta basti* is a possible alternative because *rakta pana* treatment appears to be exceedingly challenging.²⁴

In *rakta basti*, the *jeeva rakta* of above said animals is added with the *mrudita darbha* (*Desmotachya bipinnata*) and given as a Basti to the patient. Due to the same *guna* of animal blood and *rakta*, it helps in restoring the *Jeevarakta*, whereas *darbha* being *madhura* and *kashaya* helps in nourishing *rakta dhatu* and arresting the excess flow of *jeeva rakta*. *Darbha* also contains active ingredients as sesquiterpenoid cylindrene, which promotes blood circulation and has wound-healing properties.

Ghrita Dagdha nyaya:

There are only three *doshas* in all. Though the tridosha siddhanta is explained and accepted by all, some sources claim that the *rakta* is also regarded as the fourth *dosha*, although this is untrue. Due to their "vitiating" character, the *doshas* are only able to start and cause diseases, while the dhatus are only capable of "being vitiating by doshas." Because of this, the disease kinds include the *vataja*, *pittaja*, *kaphaja*, and *sannipataja* subtypes. However, it has been shown that several diseases have *raktaja* subtypes, and that these disorders also exist.

The *Ghrita-Dagdha Nyaya* responds to this query by defining a *Ghrita Dagdha* as, a person who has burns all over his body caused by heated ghee is not due to the ghee as such. The high temperature in the ghee is responsible for the burns all over the body.

Similar to this, the *raktaja vikaras* are not brought on by the *rakta* itself, but rather by the *vatadi doshas*, which have principally vitiated the *rakta*. Since *rakta* is not a *dosha* but a *dhatu* that gets vitiated by *dosha*, it is the *vatadi doshas* that, by their vitiating capacity, vitiated the *rakta*, finally leading to diseases located in the *rakta dhatu*, even if it appears that *rakta* has caused the ailment.²⁵

Conclusion

Dhatu does dharana of the *Shareera* irrespective of *dhatu* being in *kshaya*, *vrudhhi* or *dushti*. *Rakta* is responsible for the *Utpatti*, *sthiti* and *pralaya* of the human being. Through different synonyms of the *rakta* its functions are understood. *Jeevana karma* is the prime karma of *rakta* without which the sustenance of any organism cannot happen. *Dravatva* of *rakta* is must for the flow of *rakta* all over the body. On analysing the *gunas* of the *rakta*, when *laghu guna* of the *rakta* is lost and the *guru guna* is attained by the *rakta* then the *grathita rakta* is formed. In the *grathita rakta*, *paravata shakrit* is given as a line of treatment as it has alkaline in nature. *Mrudu kshara* is indicated in the *grathita rakta* in order to reduce its viscosity and dissolve the blood clot.

In *Aatyaayika* conditions, one should not focus on the underlying disease and focus on stopping the *jeevarakta*. In *jeevaadaana* the mentioning of the *rakta basti* has been told to cease and enhance *rakta* in the body. On analysing the qualities of *darbha* (ingredient in the *rakta basti*), we come to understand that through its *Madhura rasa* – it acts as *raktaprasadaka* and through its *Kashaya rasa* – it acts as *stambana* action.

In *atidagdha chikitsa*, there is mentioning of *sheetalopachara* as the *ushnaguna* of the *rakta* and *pitta* is predominant. In *sarpavisha* first line of treatment is to do *raktamokshana* of *visha dushta rakta* by applying the tourniquet 4 angula above the snake-bite, stating the importance of *rakta dhatu* in the spreading of disease. In *raktaja shiroroga*, the first line of treatment is *raktamokshana*. *Rakta* plays a prime role in the causation *netra vikaara*. Through the *ghrita dagdha nyaya* it is ruled out that *rakta* is not the fourth *dosha* rather it is one among *saptadhatus*.

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Conflicts of interest

There are no conflicts of interest.

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