

**PHYSIOLOGICAL AND PATHOLOGICAL CONSIDERATION OF RAKTADHATU AS
PER AYURVEDA AND MODERN SCIENCE****Dr. Manoj Pundlikrao Rathod***

Asst. Professor, Kriya Sharir Dept., MUPS Ayurved College, Risod. Dist: Washim, Maharashtra, India.

***Corresponding Author: Dr. Manoj Pundlikrao Rathod**

Asst. Professor, Kriya Sharir Dept., MUPS Ayurved College, Risod. Dist: Washim, Maharashtra, India.

Article Received on 07/06/2019

Article Revised on 28/06/2019

Article Accepted on 18/07/2019

ABSTRACT

Raktadhatu (Blood) is one of the important amongst the seven *Dhatu* in body. *Rudhiram*, *Shonitam*, *Lohitam* and *Astram* are synonyms of *Raktadhatu*. *Rasa Dhatu* contributes towards the formation of *Rakta Dhatu*, the nutrient substances transported by *Rasa Dhatu* acquired red coloured under the influence of *Ushma* of *Pitta*. Ayurveda described *Yakrit* and *Pleeha* as *Sthana* of *Rakta Dhatu*. *Rakta* is *Jala Mahabhut* predominance *Dhatu*. *Raktadhatu* support functioning of other *Dhatu*s and maintain the circulatory process of body. Abnormalities in *Raktadhatu* can lead pathological manifestations including weakness, infections and skin disorders, etc. *Rakta Dhatu* also considered as *Pranayatana* since it play important role towards the vital functioning of body. Considering these all aspect present article described physiological and pathological consideration of *Raktadhatu*.

KEYWORDS: Ayurveda, *Raktadhatu*, Blood, *Srotas*.**INTRODUCTION**

Raktadhatu is one of the most vital components of body; it provides nourishment to whole body and promotes growth & repair mechanism. It is state that the volume of *Raktadhatu* is 08 *Anjali* and red in coloured. *Raktavaha Srotas* is major *Sthana* of the *Raktadhatu* while liver & spleen are main organs which are associated with *Raktadhatu*. *Rasa* and *Rakta* described as plasma and elements of blood respectively that are found in circulatory stage.

It is believed that red colour of *Rasa Dhatu* produces by *Teja* and when it is produced in normal healthy conditions then termed as *Rakta*. *Rasa Dhatu* in the form of *Apya*; when reaches to *Yakrit* and *Pleeha* then it attains red colour of *Ranjaka Pitta*. It is also states that *Teja* of *Ahararasa* and *Pitta* along with *Ushma* imparts redness to *Rasa*. *Sthayi* and *Poshaka* are two types of *Rasa Dhatu*. *Poshaka Dhatu* circulates in through *Dhamani* and provides nourishment to *Sthayi Dhatu*.

Yakrit (liver) and *Pleeha* (spleen) are main roots of *Raktavaha Srotas* that further extends as blood vessels which supply to whole body. The formation of *Rakta Dhatu* mainly takes places in the liver and spleen. Liver and spleen are sites of *Raktadhara Kala* therefore these organs considered as *Raktashaya* that help to stored blood.

The constitutional Mahabhuta of Rakta are as follows

Odour of <i>Rakta</i> :	<i>Prithvi Mahabhuta</i>
Fluidity of <i>Rakta</i> :	<i>Jala Mahabhuta</i>
Red colour of <i>Rakta</i> :	<i>Agni Mahabhuta</i>
<i>Spandana</i> of <i>Rakta</i> :	<i>Vayu Mahabhuta</i>
<i>Laghuta</i> of <i>Rakta</i> :	<i>Akash Mahabhuta</i>

“Praninama Pranaha Shonitam Hiyanuvartate”**❖ Blood as “fluid of life”**

Blood carries all nutrients and oxygen (*Prana Vayu*) thus can be considered “life fluid”. These nutrients and *Prana Vayu* supplied through *Rasa Dhatu* provides *Tarpyat*, *Vardhayati* and *Dharayati*.

❖ Blood “fluid of growth”

Blood can also be considered as ‘fluid of growth’ since it supply hormones and absorbed foods to all tissues for their nourishment and growth.

❖ Blood as “fluid of health”

Blood can be considered as ‘fluid of health’ since it provides inherent immunity (*Rasatmaka Oja* and *Shonitarupi Oja*) and protects body against infectious diseases.

Rakta Dhatu Origin

The nutrient fraction of *Rasa Dhatu* resulted formation of *Rakta* in *Raktavaha Srotomoola*. *Rasa* which is in fluid form acquire red color due to action of *Ranjakaagni* as it reaches to liver and spleen. *Rasa Dhatu* provides all essential elements required for the synthesis of blood. As

per modern science haem, clotting factors and plasma proteins comes from liver. It is believed that during third to fifth month of intrauterine life synthesis of blood cells occurs in liver and spleen. *Raktavaha Dhamani* contributes towards *Raktavaha Srotamsi*. Haemopoietic system and *Raktavahi Dhamani* are major parts of *Raktavaha Srotasa*. Initially blood cells along with blood vessels formed from the blood islands during third week of intrauterine life as clusters of mesodermal cells in yolk sac. Precursor cells; haemangioblasts formed from blood Island and angioblasts from periphery part. Blood cells and vessels originated from same embryological source.

Ayurveda described *Sira* as *Updhatu* of *Rakta* while spleen described as root of *Raktavaha Srotasa* which develops as mesenchymal cells at dorsal mesogastrium. Further differentiated mesenchymal cells form lymphoblasts along with other blood forming cells. Ayurveda described that *Majja Dhatu* which is present in the cavities of large bone play vital role in the formation of *Rakta Dhatu*.

Rakta Dhatu Sthana

Rakta Dhatu found in all body parts and circulates through blood vessels from *Hridaya* to all other body parts, however following organs considered as main *Sthana* of *Rakta Dhatu*:

- *Yakrita*
- *Pliha*
- *Hridaya*
- *Raktadhara Kala*
- *Asrigdhara Kala*

General characteristics of Rakta Dhatu

The taste of *Rakta* is sweet and salty, unctuous, heavy and red in colour. It possesses characteristic odour, it occurs in fluid state, *Spandana* property of blood help to maintain normal circulatory process of body. *Laghuta* quality of blood maintains normal pressure of blood flow. It is generally not get clot inside the vessels due to its *Asamhata* quality. The *Avivarana* nature of blood does not allow it to stain the cloth; however impure blood can stains cloth permanently.

Physiological functioning of Rakta

Rakta Dhata nourishes other *Dhatu* and provides lustre to skin colour, *Rakta Dhatu* considered responsible for *Kshaya* and *Vridhhi* of other *Dhatu*s. The normal functioning of blood boosts strength, complexion and longevity. The inhaled air (*Prana*) reaches to different organs, tissues and cells through *Rakta Dhatu* to perform various physiological functions. *Prana* is not only provides energy to whole body but *Prana* is essential to keep one alive and *Rakta Dhatu* transport *Prana* thus normal physiological functioning of *Rakta Dhatu* is very important. *Rakta Dhatu* supplies nutrients to tissues; nourishes *Mamsa Dhatu*. *Rakta Dhatu* enhances *Oja*, provides inherent immunity and protects body from different diseases. *Raktadhatu* control functioning of

sense organs, help in process of digestion and maintain normal circulatory process of body.

As per modern science the formation and physiological transportation of blood can be described are as follows:

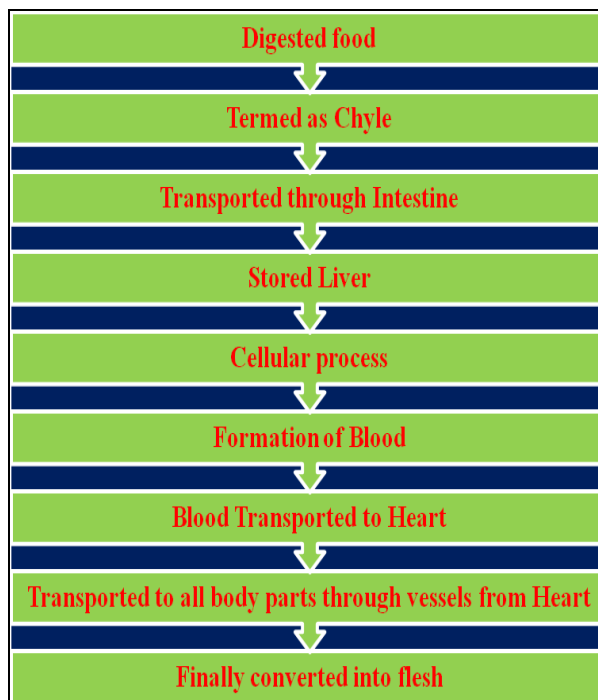


Figure 1: Formation and physiological transportation of blood.

Diseases Associated with Raktadhatu

Ayurveda described factors such as; *Kalasadmya*, *Deshasadmya* and *Oakasadmya* that can affects the quality of *Rakta Dhatu*. The various disorders related to *Rakta Dhatu* are as follows:

- ❖ *Vridhhi* means hyper state/increment of *Raktadhatu* is one of the common pathological states of blood abnormalities.
- ❖ *Kshya* means diminish state of *Raktadhatu* leading to *Pandu Roga*.
- ❖ Abnormalities in *Raktadhatu* can also lead pathological condition like; gout, haemorrhagic disease, skin infection, jaundice and gingivitis.
- ❖ Malnutrition can lead anemia, deficiency of *Raktadhatu* which can be characterized by dry skin. Lack of luster and complexion also observed during diminish state of *Rakta*
- ❖ *Majja Vridhhi (Rakta Gaurava)* can be characterized as heaviness in body.
- ❖ Vitiating of *Majja Dhatu* can lead *Majja Pradoshaja Vikara* resulting abnormal state of blood that can leads conditions like; *Murchha*, *Timira Darshana* and *Bhrama*.
- ❖ Microbial infectious also affect normal physiological state of *Rakta*.

CONCLUSION

As per literature review the *Rasa Dhatu* can be correlated with *Rakta Dhatu* which are *Drava* and circulated through vessels. *Vyana Vata* help in the distribution of *Rakta Dhatu* to all body parts through heart and blood vessels. *Rakta Dhatu* carries nutrients, nourishes tissues and provides *Oja*. The *Raktagni* produces *Rakta Dhatu* through the cellular process on *Rasa Dhatu*. *Rakta* nourishes *Mamsa Dhatu*, provide lustre to skin, supplies nutrients to whole body and boost immune system that protect body from infectious diseases. *Rakta Dhatu* not only maintain normal functioning of body but it is essential to keep individual alive.

Sutra sthana, chapter 11, verse no. 4, Chaukhambha Prakashan, Varanasi, edition: Reprint, 2010.

REFERENCES

1. Murthy Shrikantha K.R. editor, (reprint edition) Sushruta Samhita of Sushruta. Sutrasthana; Dosha dhatu mala kshaya vridhi Adhyaya: Chapter15, verse3. Varanasi: Choukhambha Orientalia, 2004; 97.
2. Ibidem (2). Charaka Samhita, Sutrasthana; Vidhishonitiya Adhyaya: Chapter 24, verse, 4: 351.
3. Sharma R.K., Das B, editor. (reprint edition) Charaka Samhita of Agnivesh Chikitsasthana; Grahanidoshaadhyaya: Chapter15, verse 36. Varanasi: Choukhambha Sanskrita Series office, 2008: 21.
4. K. Patwardhan, editor (reprint edition). Human physiology in Ayurveda, Cardiovascular system: Chapter, 6: 36.
5. SusrutaSamhita of MaharasiSusruta by Dr KavirajKunjalal Bhishagratra, prologue & edited by Dr Laxmidhar Dwivedi Volume I, SusrutSutra Sthana Chapter No 21 Verse no 2, page no 185, Chaukhambha Sanskrit series office Varanasi, second edition, 2002.
6. SusrutaSamhita of MaharasiSusruta by Dr KavirajKunjalalBhishagratra, prologue & edited by Dr LaxmidharDwivediVolume I, Susrut Sutra Sthana Chapter No 14 Verse no 4-5, page no 102, Chaukhambha Sanskrit series office Varanasi, second edition, 2002.
7. Agnivesh's CharakSamhita, Elaborated by Charak & Drdhabala based on Chakrapanidatta's Ayurved Dipika by Dr Karan Sharama & Vaidya Bhagwan Dash, volume I, Charak Sutra Sthana, chapter no 24 verse no 22, page no 407, published by Chaukhambha Sanskrit series office Varanasi, second edition, 1983.
8. Prof. K. R. Shrikantha Murthy; *Sushruta Samhita* english translation; *Sutra sthana* chapter 21, verse no. 4, Chaukhambha orientalia, Varanasi.
9. Dr. Ram Karan Sharma and Vaidya Bhagwan Dash; *Charaka Samhita* english translation; *Chikitsa sthana*, chapter 15, verse no.28, Chaukhambha Sanskrit series office, Varanasi, 1996.
10. Vagbhata, *Ashtanga hridayam*, edited with Vidiotini Hindi Commentary by Kaviraja Atrideva Gupta, Edited by Vaidya Yadunandana Upadhyaya,