Conceptual review on *Rakta Dhatu, Raktavahastrotas* and Red Blood Cells

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**ABSTRACT**

Ayurveda is an ancient medical science. In our ancient Samhitas the Tridosha, SaptaDhatu and Trimala concepts are described in detail. It is also mentioned that the Pitta is the Mala of RaktaDhatu and Yakrut and Pliha are mentioned as mulasthanas of RaktavahaStrotas. There is no existence of body without Vata, Pitta, Kapha and Rakta. Therefore Rakta is considered as fourth Dosha. So it is important to know the concept of Raktadhatu in Ayurveda as well as the concept of RBC in modern science in parallel. While diagnosing and making prognosis of any rakta pradoshaja vyadhi one can perform some R. B. Cs related investigations like in kamala serum bilirubin level may prove very helpful.

**KEYWORDS**

*Rakta Dhatumala-Pitta, Raktavahastrotas, Red Blood Cells*
INTRODUCTION

Ayurveda is an ancient system of medicine, dealing with some fundamental principles. The principle of Dosha-Dhatu-Malais one among them. RaktaDhatu is one among the seven dhatus in the human body performing the important karma Jivana. According to modern science RBC are the red cells present in the blood and the function and properties of RBC are very much similar to RaktaDhatu.

PittaDosha is one among the three Doshas in human body described in Ayurvedic text. There are five subtype of Pitta. Sushuruta called Pitta as Agni. Pachaka, Ranjak, Sadhak, Aalochak, Bharajak. Basically PittaDosha is responsible for various metabolisms which take place in human body. RaktaDhatu and Pittadosha having Ashraye-Ashriyesambandha. RaktaDhatu and pittadosha are very much associated with each other. As we know fire cooks food. There actually is an agni or metabolic mechanism in every cell of body and each subtype of PittaDosha is associated with their particular or specific metabolic function. These functions are very specific. Therefore the study of these two concepts is essential.

AIM

To study the concept of RaktaDhatu in Ayurveda and concept of RBC as per modern literature.

OBJECTIVES

1. To study the concept of RaktaDhatu in details.
2. To study the Physiology of RBC as per modern literature.
3. To find out the correlation between these two concepts.

MATERIALS AND METHODS

Classical books of Ayurveda and Modern literature.

RaktaDhatu and its metabolism in Ayurveda:

Rakta:

The word Rakta is originated from word “Raj Ranjane” meaning is to stain. If white cloth is stained with this Dhatu(tissue) will get red staining hence it is called as Rakta. The Rasa, which comes to liver, gets processed by Ranjakapita, gets the expected color due to its heat and is transformed into another entity called as Rakta.

According to dhatu poshan nyayas rakta dhatu is formed from rasa dahtu. The Ahara Rasa after its assimilation through intestines travels all the way from liver. In liver the
Rasa which comes in contact with RanjakaPitta gets converted into Rakta. Liver enzymes are necessary for blood cells formation or its maturation. So Ayurveda explains this as of Ranjakagni or RanjakaPitta function which is situated in Yakrit (liver)².

Rasa also means something which is continuously moving in body i.e., any continuously moving component in liquid form can be taken as Rasa Dhatu. So, Rasa includes all those which are continuously moving so blood also can be taken as Rasa Dhatu³.

Here Rasa means the product which is formed after the process of all digestive enzymes and bile which is absorbed through small and large intestine as a final product which nourishes each and every cell of body.

1. Synonyms of Raktadhatu(Blood) are Ruddhir, Asriga, Shonitam, Astram, Lohitam most of the indicates the red color.
2. In the metabolism of raktadhatupitta is produced in the form of mala.
3. Upadhatu of Raktadhatu-Kandara and Sira
4. PanchbhautikSangathan:
   All the entities of this universe is composed of Panchamahabhutas, however Raktadhatu is Tejand Jalapredominant in nature.

5. Color: It is like red hot gold, Indragopaand Gunjaphala⁴.
6. It is neither too thick nor too dilute⁵.
7. It is having MadhuraLavana-Rasa, somewhat sitaushna and having a color of red lotus and resembles the blood of sheep and rabbit⁶.
8. Total amount of Raktais eight Anjalis⁷.
9. RaktaDhatu is one among the seven dhatu in the body and it is basically formed in Raktavhasrotas.
10. Principle organ of Raktavhasrotas areYakrit(Liver) and pliha(Spleen)⁸., AcharyaSushruta added the Raktavaha Dhamini⁹.

Srotas is the inner transport system of the body. All the doshadhatu and mala are dependent on srotas for their formation, transport and destruction. Srotas serve as conduit through which Poshakdhatu and Mala are transported, as structure through the pores of which nutrient and waste product pass form the sthayidhatu. AcharyaCharaka has described 13 major gross strotasstimulating the main physiological system of human body.Chakrapani has described Mula as “Mulamitiprabhavasthanam” which means thatMula of a srotas is the anatomical seat of the respective srotas, the main part of
physiology of that *srotas*, the important place of manifestation of diseases. While taking an example of *Rakta pradoshaja vyadhi* in Ayurvedic samhitas *Kamala vyadhi* is described briefly. It is one among the *raktavha strotogata vyadhi*. The *lakshana* and *samprapti* of Kamala metioned in *ayurvedic* text is very much similar to Jaundice in modern medical science. Therefore *Kamala* can be correlated with jaundice. According to modern medical science after completing lifespan of 120day R.B.Cs gets destroyed and release haemoglobin into the plasma. Haemoglobin further divided into globin, iron and prophyrin part. The globin and iron molecules are reutilised in the formation of new haemoglobin molecule but pigmented part of prophyrin gets converted into green coloured biliverdin. In human body this biliverdin converts into bilirubin. When then destruction of R.B.Cs increases it will leads to the production of large amount of bilirubin and this condition is termed as hyperbilirubinemia or jaundice. While studying *lakshanas* in *Ayurvedic samhitas* it has already mentioned in reference to *Kamala*. In this way, this kind of approach in the *Ayurvedic* and modern can prove very useful while dealing with any *raktapradoshaja* or any other conditions.

**DISCUSSION**

1. The word *Rakta* is originated from word “*Raj Ranjane*” meaning is to stain. In modern science the Hemoglobin present in RBC gives red color to the Blood.

2. *Lohitam* is one of the synonyms of *Raktadhatu* while looking in the modern concept hemoglobin in RBC contains iron molecule.

3. Blood which travels throughout the body must have *Rasa* component and also *Rakta* component. Probably *Rasa* component can be comparable to blood plasma and its proteins whereas *Rakta* component comparable to blood cells i.e. RBCs, WBCs etc.

4. In the metabolism of *raktadhatu*, *pitta* is produced in the form of *mala*.

When iron is removed from heme, the non-iron portion of heme is converted to biliverdin, a green pigment, and then into bilirubin, a yellow-orange pigment. Bilirubin enters the blood and is transported to the liver. Within liver, bilirubin is secreted by liver cells into bile, which passes into small intestine and then into the large intestine.
CONCLUSION

Therefore the concept of *Pitta Dosha*, *Raktavaha Stotras* and RBC can give us an integral concept while investigating any *Raktavaha Strotogatvyadhi* or any *Pittajnanatmajvyadhi*.
REFERENCES


