



International Journal of Ayurveda and Pharmaceutical Chemistry



E ISSN 2350-0204
www.ijapc.com

Volume 7 Issue 1 2017



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*



Greentree Group

Received 24/05/17 Accepted 23/06/17 Published 10/07/17



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 *dhatu*s in the human body performing the important karma *Jivana*¹. 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 *RanjakaPitta*, 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 dhatu*. 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 Dhatu*³.

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, *Indragopa* and *Gunjaphala*⁴.

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 *Raktas* eight *Anjalis*⁷.

9. *RaktaDhatu* is one among the seven *dhatu* in the body and it is basically formed in *Raktavhasrotas*.

10. Principle organ of *Raktavahasrotas* are *Yakrit*(Liver) and *pliha*(Spleen)⁸., *AcharyaSushruta* added the *Raktavaha Dhamini*⁹.

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 *srotas* stimulating the main physiological system of human body. *Chakrapani* has described *Mula* as “*Mulamitiprabhavasthanam*” which means that *Mula* 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* mentioned 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 Stotas* and RBC can give us an integral concept while investigating any *Raktavaha Strotogatvyadhi* or any *Pittajnanatmajvyadhi*.



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