

## Review of ‘*Agnimandya*’ in ‘*Rakt Dhatu Kshaya*’ with Special Reference to Iron Deficiency Anaemia

Ganesh M. Adelkar\*<sup>1</sup>, Swarupa S. Mane<sup>2</sup>, Pratiksha Talwar<sup>3</sup>

1. HOD & Professor, Kriya Sharir Dept.
2. Assistant Professor, Rachana Sharir Dept.
3. Associate Professor, Kaychikitsa Dept.

Dr. J. J. Magdum Ayurved Medical College, Jaysingpur,  
Maharashtra, India - 416101

\*Corresponding author: [gadelkar80@gmail.com](mailto:gadelkar80@gmail.com)

### Abstract:

*Dosha, dhatu, mala* and *agni* are unique concepts of *Ayurveda*, which can be considered as the pillars of the body. Out of these all, *Agni* is an important component of the body considering its role in *sharirdharan* as well as in origin of diseases. *Charakacharya* has aptly stated that *mandagni* is the reason behind all *vyadhis*. This *vikruti* of *agni* can be found in *doshvikrutis* like *kaphavridhi*, *pittakshaya* or sometimes in *pittavridhi* also. Out of seven *dhatu*s, especially *rakt dhatu* is associated with maintenance of *agni* as well as *agnivikruti*. According to *Sushrutacharya*, *rakt dhatu kshaya* leads to *agnimandya*. Because of this correlation between *rakt dhatu* and *agni*, a detailed literary review is made to find out possible reasons for *agnimandya* in *rakt dhatu kshaya*. *Rakt kshaya* can be compared with anemia, especially, iron deficiency anemia. Hence, physiological as well as pathological views were also taken into account. After the detailed

study and association of the findings, it was concluded that *pittakshaya* associated with *raktkshaya* can be considered as the possible cause of this. Also, from the physiological and pathological view, it was concluded that less production of thyroid hormones and less secretion of *ghrelin* are the possible reasons of low digestive power in iron deficiency anemia.

### Introduction:

*Ayurveda* is a medical science which has holistic approach while treating the patients. It has gotten its own peculiar basic principles, which are unchanged right since the origin of *Ayurveda*. In *Ayurveda*, health is described as balanced state of *dosha, dhatu, mala* and *agni* along with *prasanna atma, indriyas* and *mana*<sup>1</sup>. Among all *dhatu*s, *rakt dhatu* is considered of having unparalleled importance as it carries out the function of “*jeevan*.” It keeps us alive through

this *karma*. Along with this function, it carries out various other functions like *varna utpatti* and *prasadana*, *mamsapushti*<sup>2</sup>, *dhatupuran*, definitive perception of touch.<sup>3</sup> Because of its association with origin, maintenance and destruction of the body, *Sushrutacharya* has also mentioned it as “*Chaturth Dosh*.”<sup>4</sup>

In addition to all the functions mentioned above, there is one more important function which has been attributed to *rakt dhatu*, which is its role in maintenance of *agni* or digestive power. Properly functioning *rakt dhatu* is required for properly functioning *agni*. The association also becomes evident from the fact that in *rakt kshaya*, *agni* becomes “*mand*”. *Raktkshaya* in *Ayurveda* can be compared with anemia, especially, iron deficiency anemia, in which hemoglobin level in the blood is less. It leads to diminished oxygen transport through blood. Iron deficiency anemia is associated with many signs and symptoms like generalized fatigue, shortness of breath, palpitations, etc. It also affects digestive system and leads to diminished digestive power. In this review paper, an effort has been made to put more light on possible reasons behind “*agnimandya*” in *rakt dhatu kshaya* in view of *Ayurveda* as well as modern physiology.

#### **Aims and Objectives:**

1. To study possible reasons of “*agnimandya*” in “*rakta dhatu Kshaya*” with special reference to iron deficiency anemia.
2. To understand the role of “*rakta dhatu*” in “*pachan*.”

3. To do a detailed literary review about the importance of *rakt dhatu* in digestion.

#### **Materials and Methods:**

This is a review article. References from *samhita granthas* like *brihatrayi*, *laghutrayi*, *ayurvedic* books as well as modern physiology and pathology books were collected, analyzed and properly linked. Online references from authentic medical sources were also collected. An honest attempt has been made to draw conclusion after discussion.

#### **Observations:**

In *Ayurvedic Samhitas*, the relation between *rakt dhatu* and *agni* is clearly stated. It has been stated that the person, who has “*vishuddha rakta*” in his body, also has “*avyahat paktruvegam*”<sup>5</sup> i.e. uninterrupted digestive power. It clearly indicates that the state of *agni* depends upon the state of *rakt dhatu*.

Various references from *Ayurvedic samhitas* regarding the correlation between *rakt dhatu kshaya/vikruti* and *agni* put more light on this subject. In *Charak samhita*, “*agnisad* (reduction in *agni*) is mentioned as a “*shonitaj Roga*.”<sup>6</sup> In *Charak samhita*, it is also clearly stated that reduced *agni* is one of the symptoms of *pandu*<sup>7</sup> and in this disease, especially *rakta dhatu kshaya* is present.<sup>8</sup>

Whether intended for treatment purpose as in *raktmokshan* or occurring due to accidents, blood loss always leads to decreased *agni*.<sup>9</sup> After *raktmokshan*, *rakt dhatu* in the body is *anavasthit* – unstable. In such state, *Agni* needs to be

preserved primarily and hence the food that is given should be *laghu* and *deepan*.<sup>10</sup> *Siravyadh* is contraindicated in “*anuvaseet*” person as it will increase the “*agnimandya*” which is already present in such person.<sup>11</sup> This also shows the effect of blood loss on *agni*. From all the above references, it becomes evident that properly functioning *rakt dhatu* is important for maintenance of *agni* whereas *rakt dhatu kshaya* leads to *agnimandya*.

If we look into *Ayurveda* for possible reasons of *agnimandya* in *rakt dhatu kshaya*, we get following explanation. According to *Acharya Sushruta*, there is no existence of any other *agni* in the body without *pitta*.<sup>12</sup> For practical purpose, *agni* and *pitta* are considered to be the same. As per *aashrayashryee bhava*, *pitta* resides in *rakt dhatu* and *kshaya* or *vridhhi* of any of these results in *kshaya* or *vridhhi* of another one.<sup>13</sup> As *rakt dhatu* and *pitta dosha* are closely associated, *raktkshaya* simultaneously causes *pittakshaya* and *mandagni*.

When we refer to physiology and pathology, we find some interesting facts supporting above observations. Blood loss, whether acute or chronic, leads to iron deficiency anemia. Bleeding piles, hookworm infestation and multiple pregnancies are the three most common reasons for iron deficiency anemia in Indians. In iron deficiency anemia, along with other multiple complaints, patients usually complain of low digestive power. The patient has loss of appetite and also complains of other signs of indigestion such as heartburn, abdominal bloating, gas, constipation and or diarrhea. As the

anemia gets corrected, all the above stated signs and symptoms improve.

The correlation between blood loss, low serum iron and low digestive power can be understood with the help of different ongoing mechanisms. There are multiple mechanisms which are playing active role in development of “diminished digestion” in anemia, which are as below.

Iron deficiency reduces the activity of *heme*-dependent thyroid *peroxidase* by 30 to 50% depending on the severity of the iron deficiency.<sup>14</sup> This iron-dependent enzyme uses iodide ions and hydrogen peroxide to generate iodine, which plays a major role in production of thyroid hormones. Hence, reduction in the activity of thyroid peroxidase leads to decreased thyroid hormones production. Hence, iron deficiency anemia is usually associated with hypothyroidism.<sup>15</sup>

Iron deficiency is also related to reduced T4 to T3 conversion.<sup>16</sup> As T3 is the active hormone in the blood, so one may have “normal” levels of T4, but without conversion to T3, it’s useless. Hence, Iron deficiency leads to reduction in T3 levels in blood which results in impaired secretion of digestive juices and poor digestion.

*Ghrelin*, the “hunger hormone” is a peptide hormone produced by *ghrelinergic* cells in the digestive tract. It is secreted when the stomach is empty and it acts on hypothalamic cells to increase hunger sensation as well as to increase gastric acid secretion. It also increases gastrointestinal motility. Low serum iron leads to less secretion of *ghrelin* in the body.<sup>17</sup> Decrease in

*ghrelin* levels can lead to loss of appetite as well as desire to eat diverse foods.

### Discussion:

In view of above references from *Ayurvedic samhitas* as well as physiology and pathology, it can be stated that *rakt dhatu* has utmost importance in maintenance of *agni*. Persons who are associated with properly functioning *rakt dhatu* also have properly functioning *agni*. Though not stated directly under the functions of *rakt dhatu* in any *Ayurvedic samhitas*, one can consider “maintenance of *agni* or *pachan kriya*” as the one of the important functions of *rakt dhatu*.

On the other hand, when there is *rakt kshaya*, it leads to decreased *agni*. This correlation can be understood well when we take into consideration the relation between *rakt* and *pitta dosha* as per *aashrayashryee bhava*. Reduction in the amount of *rakt dhatu* leads to reduction in *pitta*, which also reduces *pachak pitta*. The state of *agni*, especially *jathragni*, depends upon *pachak pitta*. When *pachak pitta* loses its *drava guna*, it itself is termed as *agni*. Reduction in this *pitta* leads to reduction in *agni*. Hence *raktkshaya* leads to *agnimandya*.

Also, as previously stated, *dhatupuran* is the function of *rakt dhatu*. It can be considered as blood supply to each and every tissue of the body. This function gets affected when there is *rakt kshaya* and we can say in such condition, *pittadhara kala* also gets less amount of *rakt dhatu puran*, which also reduces the amount of *pitta secreted* in *annavaha srotas* or *koshtha*. This consequently causes *mandagni*. Hence, impaired

*dhatupuran* may be considered as one more reason for *agnimandya* in *rakt kshaya*.

In the context of physiology, reduced formation of thyroid hormones and reduced secretion of “ghrelin”, the hunger hormone, are associated with iron deficiency anemia. Both, thyroid hormones and ghrelin regulate the secretion of digestive juice. Also thyroid hormones regulate the movements of the GI tract. Less secretion of both of these factors leads to reduction in digestive power in iron deficiency anemia. In cases of acute anemia due to accidental blood loss, less blood supply to digestive organs especially to the glands in the digestive tract affects the secretions from these glands. This may lead to decreased digestive power in such condition.

### Conclusion:

From the above literary study, following conclusions can be made:

1. *Rakt dhatu* carries out the important function of maintenance of *agni*. Hence, it could be stated that ‘*agnidharan*’ or ‘*pachan*’ should be considered as one of the most important functions of *rakt dhatu*.
2. *Rakt kshaya* is associated with *agnimandya*. In view of Ayurveda, the possible reasons of *agnimandya* in *raktkshaya* are *pitta kshaya*, especially *pachak pitta kshaya*, associated with *rakt dhatu kshaya* and impaired *dhatupuran* which causes less supply of *rakt dhatu* to *pittadhara kala*, which further causes less secretion of *pitta*.

3. In context of modern physiology and pathology, iron deficiency anemia can be compared with *rakt kshaya*. Diminished digestive power can be seen in iron deficiency anemia because of decreased production of thyroid hormones and less secretion of *ghrelin* as well.

#### References:

1. Sushrut Samhita, Dr. Anantram Sharma, Chaukhamba Surbharati Publication, Varanasi, Sutrasthan, Adhyay No. 15, Shloka No. 47, Reprint 2009, 130.
2. Sushrut Samhita, Dr. Anantram Sharma, Chaukhamba Surbharati Publication, Varanasi, Sutrasthan, Adhyay No. 15, Shloka No. 7, Reprint 2009, 115.
3. Sushrut Samhita, Dr. Shribhaskar Govind Ghanekar, Meharchand Lachhmandas Publication, New Delhi, Sharirasthan, Adhyay No.7, Shloka No.13, Reprint 2013, 208.
4. Sushrut Samhita, Dr. Anantram Sharma, Chaukhamba Surbharati Publication, Varanasi, Sutrasthan, Adhyay No. 21, Shloka No. 3, Reprint 2009, 177.
5. Charak Samhita, Acharya Vidyadhar Shukla, Choukhamba Sanskrita Publication, New Delhi, Sutrasthan, Adhyay No.24, Shloka No.24, Reprint 2011, 325.
6. Charak Samhita, Acharya Vidyadhar Shukla, Choukhamba Sanskrita Publication, New Delhi, Sutrasthan, Adhyay No.24, Shloka No.13, Reprint 2011, 323.
7. Charak Samhita, Dr. Laxmidhar Dwivedi, Choukhamba Krushnadas Publication, Varanasi, Chikitsasthan, Adhyay No.16, Shloka No.14, Reprint 2016, 565
8. Ashtang Hruday, Dr. Ganesh Krushna Garde, Anmol Publication, Pune, Nidanasthan, Adhyay No.13, Shloka No.5, Reprint 2006 ,200.
9. Sushuta Samhita, Dr. Shribhaskar Govind Ghanekar, Motilal Banarasidas Publication, Delhi, Sutrasthan, Adhyay No.14, Shloka No.37, Reprint 2015, 54.
10. Ashtang Hruday, Dr. Ganesh Krushna Garde, Chaukhamba Surbharati Publication, Varanasi, Sutrasthan, Adhyay No.27, Shloka No.52, Reprint 2012, 107.
11. Sushruta Samhita, P.V. Sharma, Dalhana's commentary, Chaukhambha Orientalia, Varanasi, reprint 2009, Sharirasthan, Adhyay No.8, Shloka No.3, reprint 2009, 379.
12. Charak Samhita, Acharya Vidyadhar Shukla, Choukhamba Sanskrita Publication, New Delhi, Sutrasthan, Adhyay No.12, Shloka No.11, reprint 2011, 188.
13. Ashtang Hruday, Dr. Ganesh Krushna Garde, Chaukhamba Surbharati Publication, Varanasi, Sutrasthan, Adhyay No.11, Shloka No. 26-27, Reprint 2012, 53.
14. Sonja Y. Hess, Michael B. Zimmermann, Myrtha Arnold, Wolfgang Langhans, Richard F. Hurrell, Iron Deficiency Anemia Reduces Thyroid Peroxidase Activity in Rats, *The Journal of Nutrition*,

Volume 132, Issue 7, July 2002,  
Pages 1951–1955.

15. Metwalley KA, Farghaly HS, Hassan AF. Thyroid status in Egyptian primary school children with iron deficiency anemia: Relationship to intellectual function. *Thyroid Res Pract* 2013;10:91-5
16. Soliman AT, De Sanctis V, Yassin M, Wagdy M, Soliman N. Chronic

anemia and thyroid function. *Acta Biomed.* 2017;88:119–127

17. Akarsu, Saadet & Ustundag, Bilal & Gurgoze, Metin & Sen, Yasar & Aygun, A. Denizmen. (2007). Plasma *Ghrelin* Levels in Various Stages of Development of Iron Deficiency Anemia. *Journal of pediatric hematology/oncology.* 29. 384-7. 10.1097/MPH.0b013e3180645170.

***Cite this article:***

*"Review of 'Agnimandya' in 'Rakt Dhatu Kshaya'  
with Special Reference to Iron Deficiency Anaemia."  
Ganesh M. Adelar, Swarupa S. Mane, Pratiksha Talwar*

**Ayurline: International Journal of Research In Indian Medicine 2020; 4 (1):1-6**