

## OBSERVATIONAL STUDY TO EVALUATE THE RELATIONSHIP BETWEEN AGNI & RAKTADHATUSARATA

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### INTRODUCTION

*Ayurveda* is the ancient science of healing and provides service to mankind in which Body Physiology is too much emphasized to understand the Etiology and Pathogenesis of a Disease, so that the best treatment can be searched out for the benefit of humanity. It is told in *Ayurveda* that *Dosha*, *Dhatu* and *Mala* are the basic blocks upon which the Body Stands.<sup>[1]</sup>

*Ayurveda* has described an important factor of Digestion and Metabolism in our body as *Agni*. Ingested food is to be Digested, Absorbed and Assimilated, which is unavoidable for the maintenance of Life, and is performed by *Agni*. In *Ayurveda*, the term “*Agni*” is used in the sense of Digestion of Food and Metabolic Products.

According to *Ayurveda*, there are seven *Dhatu* in person; these are *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja* and *Shukra*. These *Dhatu* are defined as per their Function. These are Important for Healthy state of the Body. *Rakta* is the Second of All the Seven *Dhatu*s, mentioned in *Ayurveda*. It has the Potential for the *Prana Dharana*.<sup>[2]</sup> It has major role in development of various Organs, in their Functioning as well as in cause of many *Vyadhis*. *Sushruta* described as Fourth *Dosha* (Body Humors) to the *Rakta Dhatu* (Blood). *Rakta* nourishes the *Mamsa Dhatu*, brings Lustre to the Skin and keeps an Individual Alive. *Rakta Dhatu* Circulates in the Body and supplies nutrients to All *Dhatu* and is responsible for the Existence, Support and Maintenance of Body.

Present study will help to establish relationship between *Agni* & different *Raktadhatusarta* along with CBC. Also the impact of *Agni* on *Raktadhatusarata* will be found, so We can treat individuals accordingly on the basis of *Raktadhatusarata* if They are found *Hina sara*.

### AIM & OBJECTIVES

1. To assess *Agni* (*Jatharagni*) of different person with *Agni Parikshana Patra*.
2. To assess *Rakta-Dhatu-Sarata Parikshana* by *Rakta Dhatu Sara Parikshana Patra*.

3. To evaluate the relationship between *Agni & Rakta-Dhatu-Sarata* with CBC (HB, RBC, WBC, PLATELET)

### Hypothesis

#### ➤ Null Hypothesis (H0)

There is no relation between *Agni* and *Rakta-Dhatu-Sarata*.

#### ➤ Alternate Hypothesis (H1)

There is a relationship between *Agni* and *Rakta-Dhatu-Sarata*.

### MATERIALS AND METHOD

#### 1. Methods of collection of data

- *Agni* of all individuals were assessed by using standard *Agni Parikshana patra*.
- *Raktasarata* of all selected individuals were assessed by standard *Rakta Dhatusarata* assessment *Patra*.
- Blood Sample of each individual were collected and sent for determination of CBC. (HB,WBC,RBC,PLATELET)

#### 2. Study design

##### Observational Study

1. 100 individuals were selected randomly and assessed by standardized *Agni Parikshana* proforma.
2. *Rakta Sarata* was assessed by standardized *Rakta-sarata* Proforma of selected individual.
3. Relationship of *Agni* and *Raktasarata* were analyzed and discussion and conclusion was drawn.

**3. Sample size:** Study on 100 individuals (50- Males, 50-Females) between the age group of 20 years to 35 years was carried out.

#### 4. Selection criteria

##### A. Inclusion criteria

Apparently individuals of age 20 to 35 years irrespective of sex, cast, community and religion were selected for the study.

##### Exclusion criteria

- Individuals suffering with any systemic diseases, Haemoglobinopathies Tobacco-alcohol addicted were excluded from study.
- Patients suffering from heart disease, S.T.D's, tuberculosis.
- Person who are suffering from any systemic disorder or any other major pathology.

##### 5. Criteria for diagnosis

- Standard Proforma was used for *Agni Parikshana*.
- Standard Proforma was used for *Rakta sarata Parikshana* and it was used for the analysis.
- CBC analysis in laboratory test. (HB,WBC,RBC,PLATELET)

**6. Study duration:** 1 Time Study.

**7. Place of study:** Parul University Campus, Vadodara.

##### 8. Assessment of Result

##### A. Subjective parameters

1. Assessment of *Agni* by *Abhyavaharana Shakti Parikshana*<sup>[3]</sup> & *Jaranashakti Pariksha*<sup>[4]</sup>
2. Assessment of *Rakta Dhatusarata*.<sup>[5]</sup>

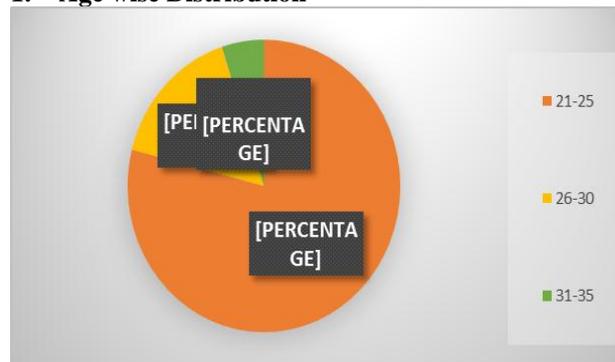
##### B. Objective parameters

Estimation of CBC, (HB, WBC, RBC, PLATELET) (Estimation of CBC was done in Khemdas Ayurved Hospital)

#### OBSERVATION

For the Present survey Study, 100 Individuals ranging from Age 20-35 were taken. Out of 100 individuals, 50 were Male & 50 were Female Volunteers. The observations have been tabulated according to Age, Gender, Diet, *Agni*, *Rakta Dhatu Sarata* & CBC (HB, WBC,RBC,PLETELET) of 100 individuals. The data was also compiled to see hypothesis results by using chi square test.

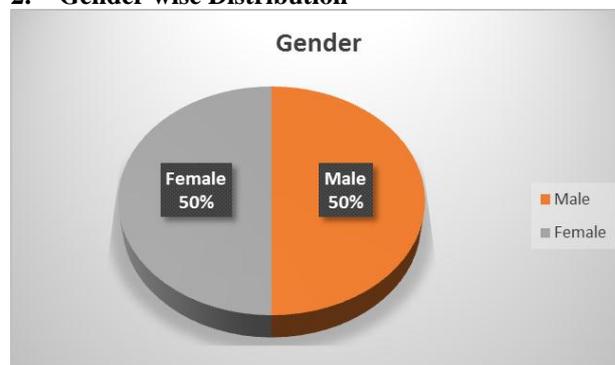
#### 1. Age wise Distribution



**Chart 1: showing incidence of Age group.**

Out of 100 Individuals, 5 (5 %) were in the age group of 31-35 years, 16 (16 %) were in the age group of 26-30 years, 79 (79 %) were in the age group of 20-25 years.

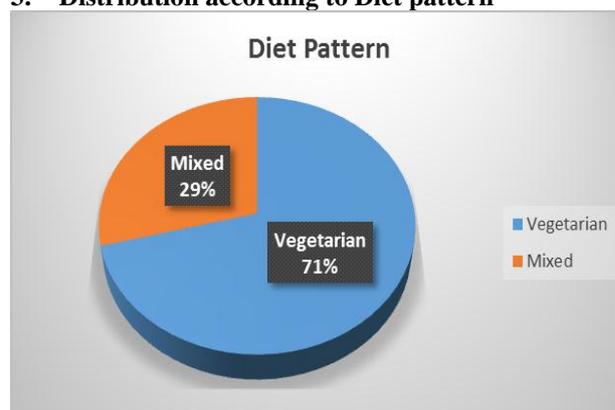
#### 2. Gender wise Distribution



**Chart 2: showing incidence of Gender.**

The data of the present study depicts that the equal number of Volunteers were selected from both sex i.e. 50 % male, 50 % female.

#### 3. Distribution according to Diet pattern

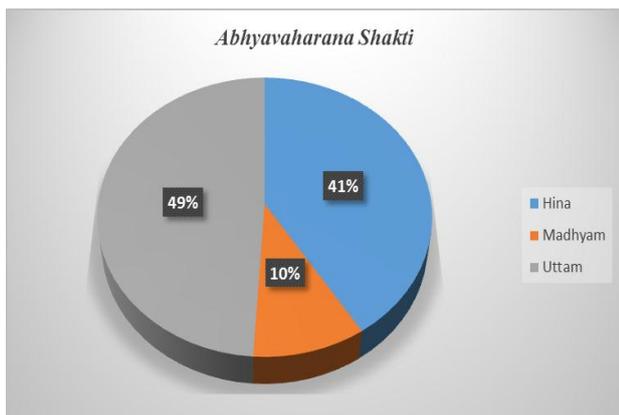


**Chart 3: Showing incidence of Diet pattern.**

In present study, 71 Individuals were Vegetarian and 29 were mixed Diet out of 100.

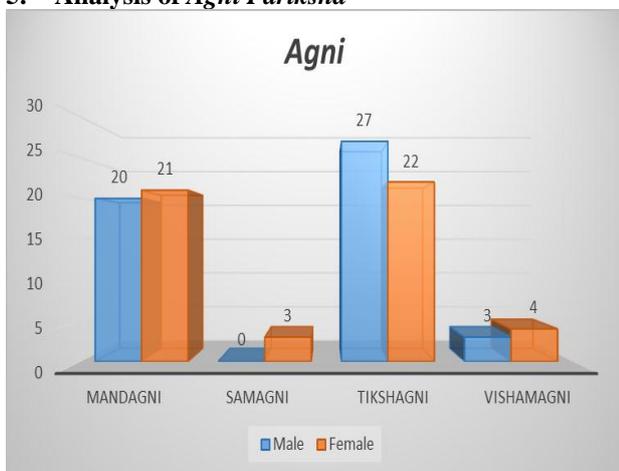
#### 4. Distribution of *Abhyavaharana Shakti*

Chart no 4: Distribution according to *Abhyavaharana Shakti*.



Out of 100 individuals, 41 had *Hina Abhyavaharana Shakti*, 10 had *Madhyam* & 49 individuals had *Uttam Abhyavaharana Shakti*

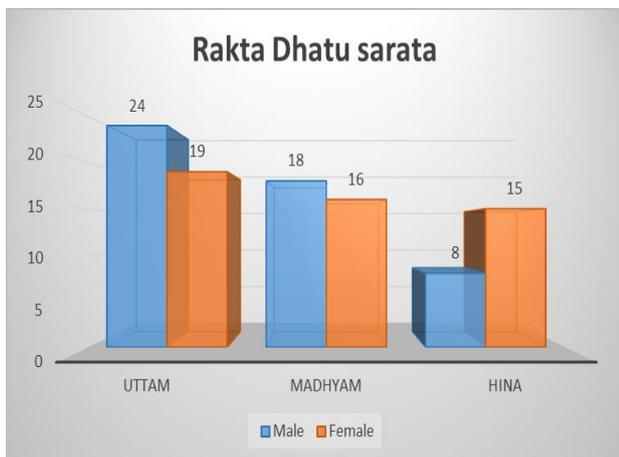
**5. Analysis of Agni Pariksha**



**Chart 5: Showing incidence of Agni.**

Out of 100 individuals more no of Individuals i.e. 49(M-27, F-22) were having *Tikshagni*, 41(M-20,F-21) Individuals had *Mandagni* and only 3 (M-0,F-3) Individuals had *Samagni* . 7(M-3, F-4).Individuals had *Vishamagni*.

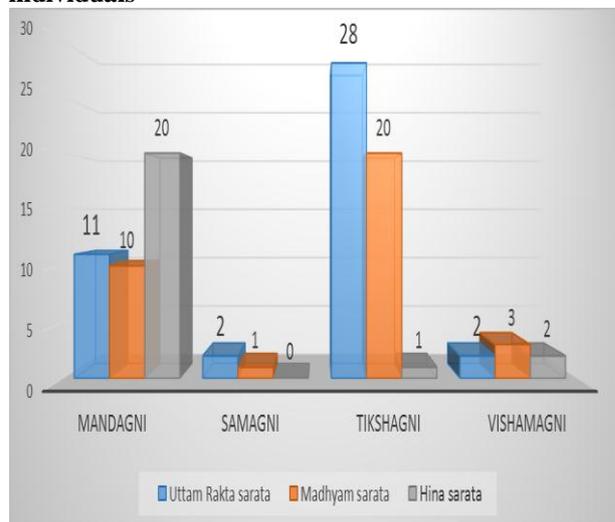
**6. Analysis of Rakta Dhatu Sarata Analysis**



**Chart 6: Rakta Dhatu Sarata Analysis.**

Out of 50 Male Individuals, 24 had *Uttam Rakta Dhatu Sarata*, 18 had *Madhyam Rakta Dhatu Sarata* and 8 had *Hina Rakta Dhatu Sarata*. Out of 50 Female Individuals, 19 had *Uttam Rakta Dhatu Sarata*, 16 had *Madhyam Rakta Dhatu Sarata* and 15 had *Hina Rakta Dhatu Sarata*.

**7. Rakta Dhatu Sarata & Agni wise distribution in individuals**



**Chart 7: Rakta Dhatu Sarata & Agni analysis in Individuals.**

Out of 100 Individuals, 49 Individuals having *Tikshagni* among them 28 having *Uttam Rakta Dhatu Sarata*, 20 having *Madhyam Rakta Dhatu Sarata*, And 1 having *Hina Rakta Dhatu Sarata*. 41 Individuals had *Mandagni*, among them 11, 10 & 20 Individuals had *Uttam, Madhyam & Hina Rakta Dhatu Sarata* respectively. 07 Individuals had *Vishamagni*, among them 02, 03 & 02 individuals had *Uttam, Madhyam & Hina Rakta Dhatu Sarata* respectively. 03 individuals had *Samagni*, among them 02, 01 & 00 individuals had *Uttam, Madhyam & Hina Rakta Dhatu Sarata* respectively.

**Statistically analysis of Rakta Dhatu Sarata & Agni wise distribution**

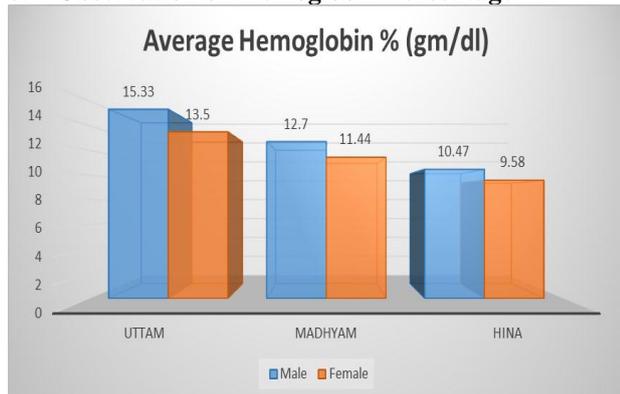
Chi square test is used to find significance between *Rakta Dhatu Sarata* & *Agni*. Findings are:

**Table 1: Statistically analysis of Rakta Dhatu Sarata & Agni.**

N	DF	Chi-Square	P-Value	Result
100	6	29.44	0.0001	Significant

Since P-Value is less than 0.05, we conclude that there is significant association between *Rakta Dhatu Sarata* and *Agni*.

**8. Observation on Hemoglobin Percentage**



**Chart 8: Average hemoglobin %.**

Out of 50 Male Individuals, average Hb gm % for *Uttam Rakta Dhatu Sarta* person was +- 15.33 gm %, average Hb % of *Madhya Rakta Dhatu Sarata* person was +-12.7 gm %, & +-10.47 gm % was average Hb % for *Hina Rakta Dhatu Sara* Person.

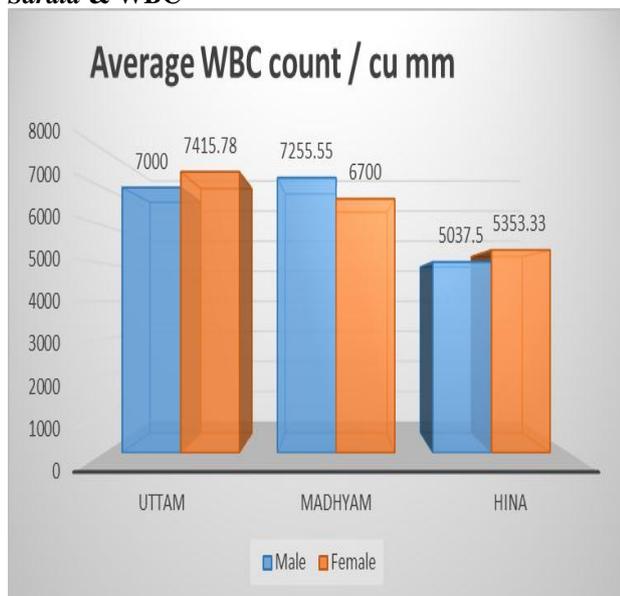
Out of 50 female Individuals, average Hb % for *Uttam Rakta Dhatu Sarta* person was +- 13.5 gm %, average Hb % of *Madhya Rakta Dhatu Sarata* person was +- 11.44 gm %, &+- 9.58 gm % was average Hb % for *Hina Rakta Dhatu Sara* person.

**9. Analysis of Rakta Sarata & WBC Count.**

**Table 2: Analysis of Rakta Dhatu Sarata & WBC count.**

<b>Rakta Dhatu Sarata &amp;WBC (/cu mm)</b>		
<b>Rakta Dhatu Sarta</b>	<b>Male</b>	<b>Female</b>
<i>Uttam</i>	+ 7000	+ 7415.78
<i>Madhyam</i>	+7255.55	+ 6700
<i>Hina</i>	+ 5037.5	+5353.33

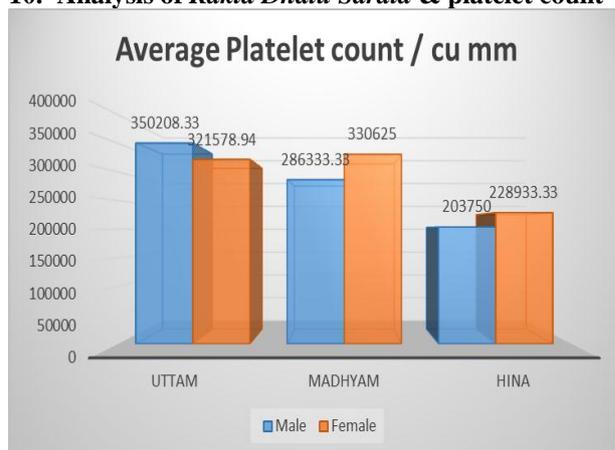
**Chart no 9: Graphical presentation of Rakta Dhatu Sarata & WBC**



Out of 50 Male Individuals, average WBC for *Uttam Rakta Dhatu Sarta* person was +- 7000 / cu mm, average WBC of *Madhya Rakta Dhatu Sarata* person was +- 7255.55 / cu mm & +- 5037.5 / cu mm was average WBC for *Hina Dhatu Rakta Sara* person.

Out of 50 Female individuals, average WBC for *Uttam Rakta Dhatu Sarta* person was +- 7415.78 / cu mm, average WBC of *Madhya Rakta Dhatu Sarata* person was +-6700 / cu mm & +- 5353.33 / cu mm was average WBC for *Hina Rakta Dhatu Sara* person.

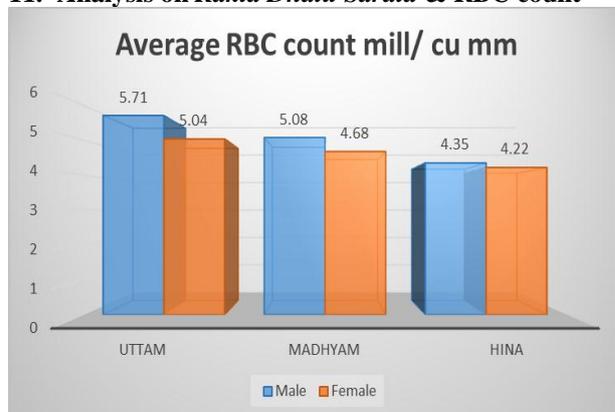
**10. Analysis of Rakta Dhatu Sarata & platelet count**



**Chart 10: Graphical presentation of Rakta Dhatu Sarata & Platelet count.**

Out of 50 Male individuals, average Platelet count for *Uttam Rakta Dhatu Sarta* person was +- 350208.33 / cu mm, average Platelet count of *Madhya Rakta Dhatu Sarata* person was +-286333.33 / cu mm & +- 203750 / cu mm was average Platelet count for *Hina Rakta Dhatu Sarata* person.. Out of 50 Female individuals, average Platelet count for *Uttam Rakta Dhatu Sarata* person was +- 321578.94 / cu mm, average Platelet count of *Madhya Rakta Dhatu Sarata* person was +- 330625 / cu mm & +- 228933.33 / cu mm was average Platelet count for *Hina Rakta Dhatu Sara* person.

**11. Analysis on Rakta Dhatu Sarata & RBC count**



**Chart 11: Graphical presentation of Rakta Dhatu Sarta sarata & RBC count.**

Out of 50 Male individuals, average RBC count for *Uttam Rakta Dhatu Sarata* person was  $\pm 5.71$  mill/cu mm, average RBC count of *Madhya Rakta Dhatu Sarata* person was  $\pm 5.08$  mill/cu mm &  $\pm 4.35$  mill/cu mm was average RBC count for *Hina Rakta Dhatu Sara* person.

Out of 50 Female individuals, average RBC count for *Uttam Rakta Dhatu Sarata* person was  $\pm 5.04$  mill/cu mm, average RBC count of *Madhya Rakta Dhatu Sarata* person was  $\pm 4.68$  mill/cu mm &  $\pm 4.22$  mill/cu mm was average RBC count for *Hina Rakta Dhatu Sara* person.

## DISCUSSION

### 1. Analysis of Agni Pariksha

*Jatharagni* is classified into four categories: *Vishmagni*, *Tikshanagni*, *Mandagni* and *Samagni*. *Samagni* depends on whether the *Doshas* (*Vata*, *Pitta*, *Kapha*) are in Normal stage. When *Pitta* is dominant, the condition is known as *Tikshnagni*. When *Kapha* is dominant, the condition is known as *Mandgni*. When *Vata* is dominant, the condition is known as *Vishmagni*.<sup>[6]</sup>

Analysis was done according to standard proforma of *Agni Parikshan Patra*, score was given by proforma. Maximum 24 points & minimum 8 point. Out of 100 individuals, 49 individuals had *Tikshagni* (Score between 19-24), 41 individuals had *Mandagni* (Score between 14-18) and 3 individuals had *Samagni* (Score between 8-13). Uncertain type of *agni* i.e. *Vishmagni* found in 7 individuals. In this study, out of 100 individuals, only 3 individuals were screened to have *Samagni*, which states that it is very uncommon to found all The All Three *Dosha* in Equilibrium stage.

### 2. Rakta Sarata Analysis

Individuals having the excellence of *Rakta* or Blood are characterized by *Singdha* (Unctuousness), Red Colour, Beautiful Dazzling Appearance of the Ears, Eyes, Face, Tongue, Nose, Lips, Sole of The Hands and Feet, Nails, Forehead and Genital Organs. Such individuals are endowed with Happiness (*Sukha*), Great Genius (*Medha*), Enthusiasm, Tenderness (*Saukumar*), Moderate Strength and Inability to face Difficulties.<sup>[7]</sup> (*C.VI.8\10*) According to *Acharya Sushrut*, Functions of *Rakta* Produce Lusture or Colour of skin.<sup>[8]</sup> (*SU.SU.16\7*) According to *Kedara Kulya Nyaya*, after proper Digestion of *Aahara Dravya*, with the help of *Jatharagni*, makes *Dravya* into *Prasada* and *Kitta Bhaga*. This *Prasad Bhaga* of *Aahara Dravya* consists of All *Dhatu* related Parts and Each *Dhatu* contains their specific *Dhatvagni*. This *Prasad Bhaga* of Food enters into the different channels of *Dhatu*, and When the Specific *Dhatu* related part comes in contact with their specific *Dhatwagni*, it helps to make a specific *Dhatu* and nourish *Dhatu*<sup>[9]</sup> (*ch. Su. 28\4*) (*chakrapani tika*). A standard proforma used & analysis was done, obtained findings were presented. Total maximum score can be obtained up to 37 & minimum score was 0. Out of 100

individuals, 43 individuals obtained score between 25 to 37 i.e. 43 individuals had *Uttam Rakta Dhatu Sarata*. 34 individuals had *Madhyam Rakta Dhatu Sarata*, They scored between 13 to 24 & 23 individuals had *Hina Rakta Dhatu sarata*, They score between 0 to 12 points.

### 3. Relation between Rakta sarata & Agni

By using chi square test, we find there is significance association between *Rakta sarata* & *Agni*, as p value is less than 0.05, and calculated value for chi square is 29.44. Out of 100 individuals, 49 individuals having *Tikshagni* among them 28 having *Uttam Rakta Dhatu Sarata*, 20 having *Madhyam Rakta Dhatu Sarata*, And 1 having *Hina Rakta Dhatu Sarata*. 41 individuals had *Mandagni*, among them 11, 10 & 20 individuals had *Uttam*, *Madhyam* & *Hina Rakta Dhatu Sarata* respectively. 07 individuals had *Vishmagni*, among them 02, 03 & 02 individuals had *Uttam*, *Madhyam* & *Hina Rakta Dhatu Sarata* respectively. 03 individuals had *Samagni*, among them 02, 01 & 00 individuals had *Uttam*, *Madhyam* & *Hina Rakta Dhatu Sarata* respectively.

- *Jatharagni* have important function of *AharaPaka* (Digestion of food) in the Body. It is present in all *Dhatuvahasrotasa* in minute fractions that We call as "*Dhatvagni*". *Jatharagni* is having influence on *Dhatvagni* and *Dhatu*.<sup>[10]</sup>
- If functions *Agni* are not proper in the body then *Dhatuposhana* gets affected & thus giving rise to improper *Dhatu* formation.
- The *Agni* (*Jatharagni*) which Digests Food is regarded as the master of All *Agnis* because increase and decrease of other *Agni* depend on the Digestive fire. Hence one should maintain it carefully by taking properly the wholesome Food and Drinks because on its maintenance depends the maintenance of Life Span and Strength.<sup>[11]</sup>
- Location of *Agni* is *Grahani*.<sup>[12]</sup>
- *Pitta* situated between *Pakwashaya* And *Aamashaya* (*Grahani*), by invisible mechanism Digests Four types of Food & Drinks, Separates *Dosha*, *Rasa*, Urine and Faeces & Seated there itself supports by its inner power remaining seats of *Pitta* and also the Body with Functions of *Agni* the name " Digestive fire" is given to this.<sup>[13]</sup>
- *Pachak Pitta* supports the other *Pitta* by giving them Strength in their Normal functions.<sup>[14]</sup>
- *Pitta* which is located in Liver & Spleen is known as *Ranjaka Pitta*, which impaires Color to *Rasa* and converts *Rasa Dhatu* into *Rakta Dhatu*.<sup>[15]</sup>
- Thus, from above all 6 points, it can be said that individuals' state of *Dhatvagni* is directly into relation with Digestive fire. There is similarity in function & place of *Pachaka Pitta* & *Jatharagni*. *Pachaka Pitta* supports *Ranjaka Pitta* to perform normal function, i.e. formation of *Rakta Dhatu*. So, it can be said that *Agni* is responsible for the formation of *Rakta dhatu*.
- It can be said from above description that Person whose *Agni* is excellent, have a good Metabolism

resulting in Proper Production of *Dhatu*. Those who have poor *Digestive fire* have a improper production of *Dhatu* resulting in *Hina Dhatu Sarata*. From the observations among 100 individuals, 49 had *Tikshagni*, among them 23 having *Uttam Rakta Dhatu Sarata*, 25 having *Madhyam Rakta Dhatu Sarata*. Only 1 person have *Hina Rakta Dhatu Sarata*. So it can be said that there is a positive relation between *Agni & Rakta Dhatu Sarata*.

## CONCLUSION

There is association between *Agni, Rakta Dhatu Sarata & CBC*.

It concluded from all observation that, person having *Samagni* or *Tikshagni* have *Uttam* or *Madhyam Rakta Dhatu Sarta* with Good average CBC%, person having *Mandagni* have *Hina Rakta Dhatu Sarata* with low average CBC %.

## REFERENCE

1. Dr. Kewal Krishana Thakral, Sushruta Samhita, Sutrasthana chapter; 15/3, with hindi commentary by Dalhan & Shri Gayadas, part 1, Published by Chaukhamba orientalia Varanasi, reprint edition, 2016; 157.
2. Sharma Anantram, Sushruta Samhita, Sutra sthan 14/45. "Shushrutavimarshini" Hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2015; 112.
3. Study of correlation between function of purishvaa srotas and jathragni- Dr. Neha Dwdtatrayeragadgil. PhD thesis Guide: Dr.kalpna sathe. Tilak maharashtra vidyapith, 2017.
4. Study of correlation between function of purishvaa srotas and jathragni- Dr. Neha Dwdtatrayeragadgil. PhD thesis Guide: Dr. kalpana sathe. Tilak maharashtra vidyapith, 2017.
5. Chandar Prakash Gunawat et. Al. Weighted mean: A possible method to express over all dhatusarata, J Ayurveda Inter med, 2015; 6(4): 286-289.
6. Tripathi Brahmanand. Charak Samhita, viman sthan 6/12. "Charaka Chandrika" hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2008.
7. Tripathi Brahmanand. Charak Samhita, viman sthan 8/10. "Charaka Chandrika" hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2008.
8. Ambikadatta shastri, Sushrut Samhita (Sutrasthana 16/07), Chaukhamba Bharati Academy, Varanasi, 2011.
9. Tripathi Brahmanand. Charak Samhita, viman sthan 8/10. "Charaka Chandrika" hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi: 2008.
10. Tripathi Brahmanand. Astang Hridayam, Sutra sthan 11/34. "Nirmala" hindi commentary. Chaukhamba Sanskrit Pratishthan, Delhi, 2015.
11. Tripathi Brahmanand. Charak Samhita, chikitsa sthan 15/38. "Charaka Chandrika" hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2008.
12. Tripathi Brahmanand. Charak Samhita, chikitsa sthan 15. "Charaka Chandrika" hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2008.
13. Sharma Anantram, Sushruta Samhita, sutra sthan 21/20. "Shushrutavimarshini" Hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2015; 182.
14. Tripathi Brahmanand. Astang Hridayam, Sutra sthan 12/12. "Nirmala" hindi commentary. Chaukhamba Sanskrit Pratishthan, Delhi, 2015.
15. Sharma Anantram, Sushruta Samhita, sutra sthan 21/10. "Shushrutavimarshini" Hindi commentary. Chaukhamba Surbharati Prakashan, Varanasi, 2015.