

## AN OBSERVATIONAL STUDY ON SHONITA DUSHTI WITH SPECIAL REFERENCE TO PSORIASIS

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### ABSTRACT

The tissue framework of the body comprises of seven sorts of fundamental tissue or *Sapta Dhātu*, one among them is *Rakta Dhātu*. Body is supported or maintained by *Rakta Dhātu* as it is the *Moola of Deha*. *Rakta* is considered as one among the *Dasha Pranaayathana*. Hence prime importance is given to *Rakta* among other *Dhātu* in *Samhita*. For every disease to manifest, *Vatadi Dosha* gets vitiated due to specific *Nidana*, which in turn leads to vitiation of *Rasa Raktadi Dhātu*. *Dushita Rakta* results in the manifestation of numerous diseases which can be either localised or systemic, one among them is *Twakgata Vikara* specifically *Kushta*. Psoriasis is a chronic, proliferative inflammatory disorder of skin which clinically presents as raised, erythematous and scaly plaques on the body. In Indian population prevalence of psoriasis varies from 0.4-2.8%, it is twice more common in males compared to females. In Ayurveda, *Shonita Dushti Lakshana* are mentioned but standardized methods for the

assessment of *Shonita Dushti* based on *Doshadhikya* in the different diseases are not developed. Hence an attempt is made to assess *Lakshana* of vitiated *Shonita* specifically in patients of Psoriasis to know the *Dosha* involved.

**KEYWORD:** *Shonita Dushti*, Psoriasis, *Kushta*, Assessment parameters.

## INTRODUCTION

Ayurveda defines healthy person or *Swastha* as someone whose *Dosha* (mind-body constitution) are all in equilibrium, the *Agni* (digestive fire) is in balanced state, in addition to the *Dhatu* (body's tissues) and *Mala* (waste products) being in balance. It also include mental and spiritual wellbeing as it states that the *Mana* (mind), *Indriya* (sense organs) and *Atma* (soul) must be also in *Prasanna* (pleasant state).<sup>[1]</sup> Disease are caused when all these are out of balance.

Among the *Dhatu*, *Rakta* is the second *Dhatu* and given at most importance due to its prime capacity for sustenance of life. The main function of *Rakta Dhatu* is *Jeevana Karma* along with *Varna Prasada* and *Mamsa Pushti*.<sup>[2]</sup> *Rakta* is the *Moola* of *Deha* and it does *Dharana* of *Deha*. Hence it is considered as *Jeeva* and it should be protected by all means.<sup>[3]</sup> The *Shudha Rakta* provides the person with *Bala*, *Varna*, *Sukha*, and *Ayusha*.<sup>[4]</sup>

In order for any disease to appear, a particular *Nidana* must vitiate *Vatadi Dosha*, which then vitiates *Rasa Raktadi Dhatu*. *Dushti* of *Rakta* occurs due to various *Shonita Dushti Nidana*. Numerous diseases that can be localised or systemic are brought on by *Dushita Rakta*, *Kushta* is one of the disease caused by *Dushita Shonita*.<sup>[5]</sup>

*Kushta* is a disease pertaining to *Twak* caused due to *Sapta Dravya Sangraha*. These are *Tridosha* vitiated due to *Prakopaka Nidana* and *Dhatu* that is *Twak*, *Rakta*, *Mamsa* and *Lasika*.

Since skin is the largest organ in the body, skin based diseases are among the most common diseases in human population, ranging from cancerous to non-cancerous, disease caused by infection, inflammation and auto-immune disorders. Psoriasis is the most common skin disease with the prevalence of 0.4-2.8% affecting both the genders.

Psoriasis is a lifelong immune-mediated inflammatory skin disease having major genetic components and environmental factors to play a role. It is characterised by erythematous

plaques covered with silvery mica like scales, particularly over the extensor surface. The disorder can also affect the joints, scalp, nails, eyes and the disease waxes and wanes with flare-up. Usually diagnosis is made by clinical morphology and site of the lesions. The severity of the disease is assessed using most widely used measurement tool, PASI SCORE, which assesses the severity of the condition and allows for the evaluation of treatment efficiency.

There is no any specific laboratory or haematological investigations till the date. In Ayurveda, certain *Shonita Dushti Lakshana* are been said which are based on *Doshadikya*. These *Lakshana* may help to identify the *Dosha* responsible for the manifestation of the disease there by helps in the management of disease accordingly.

### OBJECTIVES OF THE STUDY

1. To develop an observational tool to assess *Shonita Dushti*.
2. Assessment of *Shonita Dusti Lakshana* in blood of patients of Psoriasis using newly designed tool.
3. Clinical evaluation of *Lakshana* of *Shonita Dushti* in patients of Psoriasis.

### METHODOLOGY

#### SOURCE OF DATA

In this study 30 patients diagnosed with Psoriasis registered from O.P.D and I.P.D of Sri Dharmasthala Manjunatheshwara Ayurveda Hospital, Udupi and 30 apparently healthy individuals in and around the campus were selected for the study.

### METHODS OF COLLECTION OF DATA

#### a) STUDY DESIGN

This study is an observational study between 2 groups. With the review of *Lakshana* of *Shonita Dushti* as mentioned in the *Samhita*, the parameter were developed. The assessment tool was developed considering all the points of physical and biochemical properties of blood based on *Dosha Dushti*.

A special proforma was prepared with all points of history taking, physical examinations as mentioned in Ayurveda and allied sciences. This was then assessed on 1st group with 30 apparently healthy individuals and 2nd group with 30 subjects diagnosed as psoriasis. Accordingly, their blood samples were collected and analysed using the developed tool.

The data obtained is grouped and statistically analysed for the possible correlation.

#### **b) INCLUSION CRITERIA**

- ❖ Clinically Diagnosed cases of psoriasis based on ICD-10-CM DIAGNOSIS code L44.9.
- ❖ Patients of either gender between the age group of 18 years to 60 years will be taken for study.
- ❖ Willingness to participate with informed consent.

#### **c) EXCLUSION CRITERIA**

- ❖ Pregnant and lactating mother
- ❖ Other papulo-squamous disorders of infection origin like secondary. syphilis, tinea corporis, candidiasis.
- ❖ Recent surgeries or trauma.
- ❖ Other systemic illness

#### **d) ASSESSMENT CRITERIA**

- ❖ *Lakshana* of *Shonita Dushti* in patients of psoriasis.
- ❖ *Shonita Dushti Lakshana* based on *Dosha* through developed tools.
- ❖ Clinical Signs and symptoms of psoriasis and severity based on PASI SCORES

#### **ASSESSMENT PARAMETERS ARE AS FOLLOWS**

Assessment of blood was done on *Lakshana* mentioned in *Brihatrayi* on the basis of *Doshadikya* which are enlisted below:

*Rakta Dushti* by *Vata Dosha* will have features of

- *Phenila* (frothy appearance),
- *Aruna* (reddish),
- *Krishna* (black),
- *Vishada* (rough),
- *Tanu* (thin),
- *Vega Sravi* (fast moving)
- *Askandhi* (uncoagulated)

*Rakta Dusti* by *Pitta Dosha*

- *Neela* (blue),
- *Peetha* (yellow),

- *Haritha* (green),
- *Shyava* (blackish shade),
- *Visram* (fishy odor),
- *Pipeelika Makshikanam Anishtam* (disliked by ants and flies),
- *Askandhi* (non-coagulant)
- *Ushna* (raised temperature)
- *Achirena* (slow moving)

*Rakta* vitiated by *Kapha Dosha* will have features of

- *Gairika Varna* (red ochre),
- *Ishat Pandu*
- *Udaka Prateekasha* (liquid),
- *Snigdha* (unctuous),
- *Sheethala* (cold),
- *Bahala/ Tantomadghana* (thick)
- *Picchila* (slimy)
- *Chirasravi* (with delayed bleeding)
- *Mamsa Peshi Prabham* (muscle like appearance).
- *Skandhi* (coagulates)

*Rakta* vitiated by *Sannipata* exhibit all the above features along with *Kanjikabha* (*Kanjika*-sour gruel appearance) and *Durgandha* (foul smell)

*Rakta* vitiated by *Dwidosha* will exhibit *Samsristha Linga* (features of vitiated *Dosha*)

SL. NO	SHONITA DUSHTI	ASSESSMENT PARAMETERS
1	<i>Varna</i>	Colour
2	<i>Gandha</i>	Odour
3	<i>Sheetoshna Guna</i>	Temperature
4	<i>Skandana</i> Property	Bleeding time, clotting time
5	<i>Bahala, Pichila, Mamsa Peshi Prabha</i>	Hyperviscosity
6	<i>Sheeagraami, Mandagami</i>	Spreading nature
7	<i>Phenila</i>	Frothy nature
8	<i>Snigdha, Parusha, Ruksha</i>	Triglyceride
9	<i>Vishada</i>	Serum transparency

**VARNA/ COLOUR OF THE BLOOD**

- TOOL USED: *Varna of Rakta* is assessed by *Prathyaksha Pramana* using DR TALLQVIST Haemoglobin scale
- METHOD: Colour of the blood is assessed as soon as collected from venepuncture sample, as the freshly drawn blood gives the accurate colour. A drop of blood (Pipetting 20 µl of blood from the collecting tube) is put at the center of the strip. The colour of the blood drop is compared with various shades of DR TALLQVIST Haemoglobin shading scale to assess the colour of blood.
- OBSERVATION  
*Vata Dushti- Aruna, Krishna, Shyava*  
*Pitta Dushti- Neela, Peeta, Harita, Shyava*  
*Kapha Dushti- Ishat Pandu, Gairikodaka Sankasha*

**GANDHA/SMELL OF THE BLOOD**

- TOOL USED: *Ghranendriya Pareeksha*
- METHOD: Smell of the blood is assessed as soon as the blood is collected by *Ghranendriya Pareeksha*.
- OBSERVATION:  
*Pitta Dushti- Visra Gandha*

**SHEETOSHNA GUNA/ TEMPERATURE OF BLOOD**

- TOOL USED: Digital cooking (food) thermometer
- METHOD: The temperature of the blood is assessed immediately after collecting blood from venepuncture. The digital cooking (food) thermometer is dipped in collected tube and temperature is measured.
- OBSERVATION  
*Pitta Dushti- Ushna*  
*Kapha Dushti- Sheetha*

**SKANDHANA PROPERTY/ BLEEDING TIME AND CLOTTING TIME****BLEEDING TIME**

- TOOL USED: Duke's method
- METHOD: Earlobe is punctured used lancet and start the stopwatch when the stab was made. Bleeding is allowed to proceed without pressure and blood is allowed to drop on

the Whatman filter paper. The paper is moved so that the each drop will fall on the fresh area of filter paper. When bleeding slowed, the bleeding spot is gently touched with the fresh area of filter paper at the interval of 30 seconds. When blood is no longer stains the filter paper, the stop watch is stopped and the time is recorded.

### CLOTTING TIME

- TOOL USED: Capillary tube method
- METHOD: The blood which is collected by venipuncture with the help of a syringe was immediately filled into a glass capillary tube. Then the capillary tube was rolled in between the palms to maintain the temperature for a minute. Then this capillary tube is tilted at 45 degree to observe the progress of clotting. Then break the capillary tube every 30 seconds until the clot (fibrin thread) is seen between the two broken ends and time is recorded.
- OBSERVATION  
*Vata Dushti-Askandi*  
*Pitta Dushti- Askandi*  
*Kapha Dushti- Chira Sravi/ Skandi*

### BAHALA, PICHILA, MAMSA PESHI PRABHA/ HYPERVISCOSITY

- TOOL USED: Average time taken by the blood to reach the bottom of capillary tube
- METHOD: Soon after the collection of blood, 20 µl of blood is made to flow from one end (top end) of the capillary tube and stop watch is started. Note down the time taken by the blood to reach the bottom end. This test is repeated in 3 fresh capillary tube and time is noted. Then the average time taken in 3 sample is calculated.
- OBSERVATION:  
*Kapha Dushti-Bahala, Pichila, Mamsa Peshiprabha.*

### SHEEGRAGAAMI AND MANDAGAAMI / SPREADING NATURE OF THE BLOOD

- TOOL USED: Measurement of area covered by using IMITOMEASURE APP
- METHOD: 20µl of blood is put at the centre of the whatman filter paper and stop watch is started. Blood is allowed to spread for 1 minute undisturbed. At 1 minute, stop the stop watch and record the area, length, width and circumference using IMITOMEASURE APP. Immediately that filter paper is kept in an incubator to maintain the uniform temperature of 37 degree Celsius and checked at an interval of every 10 minutes until it is

completely dried. After complete drying again area, length, width, and circumference is recorded using IMITOMEASURE APP. Also the time taken for complete dry is noted.

- OBSERVATION:

*Vata Dushti- Sheegra Gaami*

*Kapha Dushti- Manda Gaami*

#### PHENILA/ FROTHY NATURE OF BLOOD

- TOOL USED: Measurement of froth formation.
- METHOD: Sample of blood is taken in a collecting tube and upside down movement of tube was done per second for 30 seconds. After 30 seconds the length of the froth formed is measured using a scale.
- OBSERVATION

*Vata Dushti- Phenila*

#### SNIGHDA, ROOKSHA/ TRIGLYCERIDE

- TOOL USED: Evaluating the triglyceride level
- METHOD: Blood collected in the plain tube and serum is separated by centrifuge. In the serum sample triglyceride level is measured in spectrophotometer.
- OBSERVATION

*Kapha Dushti- Ati Snighda*

*Vata Dushti-Rooksha*

#### VISHADA/SERUM TRANSPARENCY

- TOOL USED: Colour absorption test using spectrophotometer
- METHOD: The blood collected in the plain collecting tube and serum is separated by centrifuge. Transparency and turbidity is measured using colour absorption test using spectrophotometer at 590nm and 690nm wave length.
- OBSERVATION:

*Vata Dushti- Vishada*

Assessment Criteria	Observation		
	VATA DUSHTI	PITTA DUSHTI	KAPHA DUSHTI
Varna- Colour	<i>Aruna</i> (reddish), <i>Krishna</i> (dark blue), <i>Shyava</i> (dark brown)	<i>Neela</i> (bluish), <i>Peeta</i> (yellowish), <i>Harita</i> (greenish), <i>Shyava</i>	<i>Ishat Pandu</i> (light yellowish white), <i>Gairikodaka sankasha</i> (resembling water mixed with red ochre)

<i>Gandha</i> - Odour	-	<i>Visraganda</i> (smelling like raw meat)	-
<i>Sheethoshna guna</i> - Temperature	-	<i>Ushna</i> (warm)	<i>Sheeta</i> (cold)
<i>Skandana</i> property	Clotting time	-	<i>Askandi</i> (hemodilution)
	Bleeding time	-	<i>Chirasravi</i> (flowing slowly)
<i>Bahala, Picchila, Mamsapeshiprabha</i> - Hyperviscosity	-	-	<i>Bahala</i> (thick), <i>Picchila</i> (slimy), <i>Ghanam</i> (thick), <i>Mamsapeshiprabham</i> (resembling to flesh)
<i>Sheegrageami</i> and <i>Mandagaami</i> - Spreading nature	<i>Sheegrageami</i> (fast movement)	-	<i>Mandagaami</i> (slow movement)
<i>Phenila</i> - Frothing nature of blood	<i>Phenilam</i> (similar to foam)	-	-
<i>Snigdha, Rooksha, Parusha</i> - Serum Triglyceride	-	-	<i>Atisnigdha</i> (excessive oiliness)
<i>Vishada</i> - Serum Transparency	<i>Vishada</i> (clear)	-	-

## RESULT

The data was collected and collated in MS Excel and analysed using Graphpad statistical software. Categorical data was expressed as frequencies and percentages. While, continuous data was expressed as mean and standard deviation (SD) or median and interquartile range (IQR). The normality of the data was assessed using Shapiro-Wilk test. The comparison between the groups was made using Unpaired-t test (parametric data) or Mann-Whitney U test (non- parametric data). P value of less than 0.05 was deemed significant.

Comparison of the color of the blood	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Color score	13.7 ± 1.23	13.1 ± 1.2	0.06
Color in percentage	87.3 ± 7.7	83.7 ± 7.9	0.07
Distribution of temperature in Fahrenheit and Celsius scale (Mean ± SD)	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Fahrenheit scale	90.02 ± 3.4	90.45 ± 2.1	0.55
Celsius scale	32.3 ± 1.9	32.5 ± 1.2	0.6

Comparison of the Average and median time taken to dry	Study group (n=30)	Control group (n=30)	P-value
Mean ± SD	18.7 ± 10.8	27 ± 12.7	0.0084*
Median [Interquartile range]	15 [10-22.5]	20 [20-40]	0.009 <sup>#</sup>
Hyperviscosity (Mean ± SD)	Study group (n=30)	Control group (n=30)	P-value
Hyperviscosity	31.6 ± 50.5	14.3 ± 7.9	0.06
Comparison of the frothy nature	Study group (n=30)	Control group (n=30)	P-value

of blood(Mean $\pm$ SD)			
Frothing	0.7 $\pm$ 0.2	0.6 $\pm$ 0.21	0.06
Comparision on triglyceride level (Mean $\pm$ SD)	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Triglycerides	114.7 $\pm$ 63.4	102.4 $\pm$ 64.3	0.4
Bleeding time (Mean $\pm$ SD)	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Bleeding time (s)	140.7 $\pm$ 25.5	141 $\pm$ 41.6	0.97
Clotting time (Mean $\pm$ SD)	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Clotting time (s)	255.2 $\pm$ 26.1	227.5 $\pm$ 52.6	0.01*
Serum transparency (Mean $\pm$ SD)	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Serum transparency in 590nm	0.4 $\pm$ 0.15	0.4 $\pm$ 0.14	1
Serum transparency in 690 nm	0.3 $\pm$ 0.12	0.3 $\pm$ 0.14	1

Spreading nature of the blood	Time-point	Study group (n=30)	Control group (n=30)	P-value (Unpaired T-test)
Length covered	1 minute	1.26 $\pm$ 0.34	1.25 $\pm$ 0.38	0.9
	After complete drying	1.34 $\pm$ 0.34	1.43 $\pm$ 0.53	0.43
Width covered	1 minute	1.03 $\pm$ 0.2	1.01 $\pm$ 0.32	0.77
	After complete drying	1.11 $\pm$ 0.25	1.14 $\pm$ 0.43	0.7
Area covered	1 minute	0.97 $\pm$ 0.45	0.96 $\pm$ 0.6	0.9
	After complete drying	1.14 $\pm$ 0.48	1.29 $\pm$ 1.06	0.48
Circumference covered	1 minute	3.53 $\pm$ 1.05	3.55 $\pm$ 1.1	0.94
	After complete drying	3.99 $\pm$ 1.15	4.12 $\pm$ 1.6	0.71

## DISCUSSION

**DISCUSSION ON VARNA:** Though in this study there was no statistical difference observed between study and control group, but about 43.3% of the subjects showed *Varna* of 12.5 gm% of Tallquist Hb Scale, 33.3% of the subjects showed *Varna* of 14.1 gm% of Tallquist Hb Scale and 23.3% of the subjects showed *Varna* of 15.6gm% of Tallquist Hb Scale. It was observed that *Varna* of *Rakta* was on higher sides of Tallquist Hb Scale which indicated darker colour of *Rakta*. Darker shades of *Rakta* are attributed to *Vata Dosha*, which include *Krishna*, *Shyava*, *Aruna Varna*.

**DISCUSSION ON GANDHA:** In this study, no difference in *Gandha* was observed.

**DISCUSSION ON SHEETOSHNA GUNA OF RAKTA:** The statistic test for *Sheetoshna Guna* of *Rakta* between study and control group observed was statistically non-significant. 50% of the subjects showed the temperature within normal range, where as 27% of the subjects had increased temperature blood and 23% of the subject had decreased temperature

of blood comparatively. Increased temperature of *Rakta* is attributed to *Pitta Dosha* due to its *Ushna Guna* and decreased temperature of *Rakta* is due to *Sheetha Guna* of *Kapha Dosha*.

## DISCUSSION ON SKANDANA PROPERTY

**BLEEDING TIME:** No statistical difference was noted in bleeding time among 2 groups. Though 87% of the subject has normal range of bleeding time but, 10% of the subject had increased bleeding time and 3% of the subjects has decreased bleeding time.

*Askandhi* is seen due to *Rakta Dushti* by *Vata* and *Pitta Dosha*.

**CLOTTING TIME:** In this study, it was noted that a statistically significant increased values of clotting time.

*Chiraskandi* is distinguished by prolonged bleeding time and delayed clotting time which are caused due to *Kapha Dosha*.

**DISCUSSION ON BAHALA, PICHILA, MAMSA PESHI PRABHA:** In this study no statistical significance was noted among both group. Though 53.3% of the subject showed normal level of viscosity, about 43.3% of the subjects showed increased viscosity and only 3.3% of the subject showed decreased viscosity.

Increased viscosity indicates *Kapha Dushti* due to *Guru Guna* with feature of *Bahala*, *Pichila* and *Mamsa Peshi Prabha*.

**DISCUSSION OF SHEEGRAGAAMI AND MANDAGAAMI:** In this study, there was no statistical significance seen in spreading nature in terms of length, width, area and circumference cover by the blood.

Blood can spread in different ways depending on several factors such as viscosity, flow dynamics and overall fluidity. Blood that has excellent flow dynamics and lower viscosity spreads quickly, whereas blood that has changed flow properties or higher viscosity may spread more slowly. *Sheeagraami* that is fast spreading is attributed to *Vata Dosha* as it is having *Laghu* and *Chala Guna*. *Mandagaami* that is slow spreading is attributed to *Kapha Dosha* as it is having *Guru* and *Manda Guna*.

In this study, spreading nature was assessed in terms of length, width, area and circumference covered by the blood at 1 minute and after complete dry. Though there was no statistical

significance found that is the sample showed normal range of spreading nature, when compared in terms of length, width, area and circumference covered showed decreased spreading nature which are indicative *Kapha Dushti*.

**TIME TAKEN TO DRY:** In this study, it was seen that the average time taken to completely dry and median time taken to completely dry was statistically higher among the control group than the study group, which implies time taken to completely dry was lesser in study group. It was observed that 50% of the subjects showed less time to dry, 40% of the subject showed normal time dry and 10% of the subject showed increased time to dry. Here lesser time taken to dry indicates *Vata Dosha* as *Sheegra Guna* is attributed to *Vata Dosha*.

**DISCUSSION ON PHENILA:** In this study, though there was no statistical significance was seen, about 40% of the subject showed increased *Phenila*. *Phenila* is the *Guna* of vitiated *Vata Dosha*.

**DISCUSSION ON SNIGHDA, ROOKSHA:** In this study, no statistical difference was noted in the triglyceride level among the study groups. 77% of the subjects had normal level of triglyceride and 23% of the subject had increased levels of triglyceride. Increased levels of triglyceride indicates *Ati Snigdhata* in *Rakta* which is due to *Kapha Dosha*.

**DISCUSSION ON VISHADA:** No statistical difference was noted in the serum transparency among the study groups. 77% of the subject had normal range of serum transparency in both 690nm, 20% of the subjects had increased serum transparency and 3% of the subject had decreased serum transparency. Increased levels of serum transparency is seen due to *Vishada Guna Vata Dosha* and suggestive of *Vata Dushti*.

## CONCLUSION

*Rakta* has been given prime importance in Ayurveda and is responsible for *Jeevana Karma*. When *Rakta* is vitiated, it can manifest numerous diseases, *Kushta* is also one among them. In Ayurveda all the skin disorder are mentioned under the broad heading of *Kushta*. Psoriasis is an immune-mediated skin disease characterised by erythematous, sharply demarcated papules and plaques covered by silvery micaceous scale, which frequently have genetic predisposition and occasionally have clear environmental triggers. *Rakta* and pitta are having *Ashraya Ashrayi Bhava*. While analysing the *Nidana* enlisted, much of the *Nidana* are *Pitta Prakopaka Nidana*. But *Rakta Dushti* may also occur even by *Vata Dosha*, *Kapha Dosha* and

*Tridosha* vitiation. In this study, highest incidence of intake of *Dadhi, Takra, Masha, Harita, Jalaja Mamsa, Anupa Mamsa, Nishpava, And Diwaswapna* are seen. Majority of the *Nidana* are *Kapha Prakopaka Nidana*.

Among designed assessment parameters, statistically significant result was seen in 'Skandana' property i.e clotting time which are indicative *Rakta Dushti* by *Kapha Dosha* and decreased time taken to dry which is suggestive of *Rakta Dushti* by *Vata Dosha*.

Though there was no statistically significant result found in other assessment parameters, observational finding were satisfactory. It is observed that *Varna* (colour) of *Rakta* is darker suggestive of *Rakta Dushti* by *Vata Dosha*, increased *Ushna Guna* (temperature) suggestive of *Rakta Dushti* by *Pitta Dosha*, *Askandi* (increased bleeding time) suggestive of *Rakta Dushti* by *Vata* and *Pitta Dosha*, *Bahala Pichila Mamsa Peshi Prabha* (hyperviscosity) suggestive of *Rakta Dushti* by *Kapha Dosha*, *Mandagami* (decreased spreading nature) suggestive of *Rakta*

*Dushti* by *Kapha Dosha* due to *Styayi, Bahala, Ghana, Pichilaguna*, increased *Phenila* (froth) suggestive of *Rakta Dushti* by *Vata Dosha*, increased *Snigdha* (triglyceride) suggestive of *Rakta Dushti* by *Kapha Dosha*, and increased *Vishada* (serum transparency) suggestive of *Rakta Dushti* by *Vata Dosha*. *Rakta Dushti* by *Kapha* and *Vata Dosha* are majorly observed in this study. Abnormal *Gandha* was not observed in any of the subjects.

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