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Blood Color Shade identification with the help of Red Color Shade Strip

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ABSTRACT

Ayurved medical science has been treating patients since ancient time in India. It has unique principals and unique diagnosis based upon *Tridosha*. In current era there are many diagnostic methods available. Blood sample is mostly used for the diagnosis. But today's parameters are different like Haemoglobin, Red Blood cell count, Platelets, etc. In Ayurveda, blood's *Varna Pariksha* i.e. color examination method was used for diagnosis of many diseases. Hence with the help of computer and RGB color method we have developed red color shade strip according to *Tridosha* prominence. In this study participants are divided into two groups i.e. healthy and unhealthy. Blood samples of these patients were compared with red color strip. This study is about *Varna Pariksha* and its importance in diagnosis of *Tridosha*. So this study will be able to quantify this test by using red color shade strip. It is useful for primary prognostic diagnosis of *Vata Dosha* by *Varna Pariksha*. This study indicates black shade of red color in terms of RGB wavelength. Red (176-30), Green (38-25) & Blue (28-22). The code of black shade of red color is found in between #AF251B and #1F1A17. Healthy individual's blood color shade is in at 50% and unhealthy individual's blood color shade is at 60% as per red color shade strip.

Key Words *Varna Pariksha, Dr Kale's RCSS (Red color shade strip), Blood color analysis, Tridosha, Ayurvedic diagnosis, Blood Colour Analysis*

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INTRODUCTION

Each object of the universe reflects one color. Human body is also one of them. There are many color shades to human beings. Each part of body has its color. These colors are affected by many factors like races, genes, demography, type of

work, exposure to sun, etc. If we took example of human skin, it ranges from dark brown to lightest hue and the most important substance responsible for it is a pigment called as melanin. When we deal with medical science there is an observation of human body and its constituents. We observed



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colors of skin, eye, hair, sputum, faces, blood, nail, palm etc. We kept record of normal & abnormal colors. Color is a subjective observation which we cannot quantify in terms of value.

In ancient times blood color was observed to decide *Dosha* combination of individual. The physician was concluding some judgment after observing blood color shade. Our study is focused on this judgment. Can we measure or quantify this judgment with the help of any standard color shades? This paper is written and dedicated to providing guidelines for the *Ayurvedic* physician, students to better understand the possible use of red color shade strip (RCSS).

AIMS AND OBJECTIVES

1. To review *Varna Pariksha*
2. To observe blood samples and compare it with RCSS
- A) To find red color shade of Healthy Individual
- B) To find red color shade of Unhealthy Individual

Previous Work Done:

No previous work found on this topic.

Research Methodology

Standard Operating Procedure:

1. Person of age between 18 to 60 years was selected for this study.
2. A written consent was taken from each participant. A case paper of questionnaires in which causes for vitiation of *Vata*, *Pitta* and *Kapha Dosha* and their respective symptoms according to *Ayurvedic* text was prepared for

assessment of individual. Using these questionnaires a score was calculated.

3. According to questionnaires score and Hb% & RBC value, we divided the participant's into two groups.

4. For Group 'A' :

a. Questionnaires score below 10% was considered as less vitiated *dosha* individual or healthy participants.

b. Hb% and RBC value were done, any types of variation in these values are not considered.

5. For Group 'B' :

c. Questionnaires score above 10% was considered as vitiated *dosha* individual.

d. Hb% and RBC value were done, any types of variation in these values are considered.

6. These two groups gives us an idea of vitiated *Dosha*.

7. Standard red color shade strip is prepared.

8. Blood Sample Collection: 3 ml Blood sample is removed from Anterior Cubital Vein. Then it is taken into EDTA bulb. Hb% and RBC count is processed and noted.

9. Collected blood was taken into concave glass, waited for 1 min. Then RCSS was held near to blood sample and the observation was noted

10. Collected data of both groups was evaluated.

11. Discussion and Conclusion is drawn.

Materials and Methods

Inclusion and Exclusion Criteria

Inclusion Criteria-

1. Participants were selected between the age group of 18 years to 60 years.

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Exclusion Criteria-

1. Patients having history of genetic disorders, under treatment of sulfa containing drugs and not willing to give blood samples were excluded from this study.

Self-made red color shade strip for subjective evaluation of blood color Figure 1

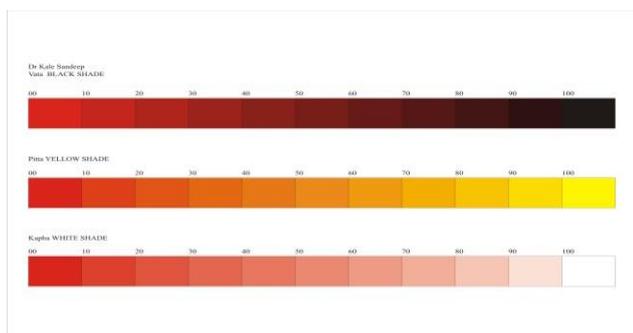


Figure 1 Dr Kale's RCSS strip

If we have to observe color (*Varna Pariksha*) of given blood sample by our eyes, it is easy to identify (red color) but when we have to observe its shade and to express it in terms, it is impossible for human brain to give the exact value. But in this case if we prepare some standards it will be easy to express. On this basis author of this article has made such strip with the help of RGB value of red color shades and computer color identification system.

Vata Red Color Shade Figure 2, 3 and 4

Dr Kale's RCSS strip, black color shade stands for *Vata dosha*, yellow color shade stands for *Pitta dosha* and white color shade stands for *Kapha dosha* and these colors are added in standard Red color by 10% of interval and ten standard color shades are obtained.

We used this RCSS strip by holding near to blood sample so we can compare color.

VATA DUSHTI

SR. No.	DOSHA %	COLOR	COLOR ANALYSIS APP			CODE
			RED	GREEN	BLUE	
1	V 00	[Red]	218	37	28	#DA251C
2	V 20	[Red]	175	37	27	#AF251B
3	V 40	[Red]	136	33	26	#88211A
4	V 60	[Red]	102	27	24	#661B18
5	V 80	[Red]	66	22	21	#421615
6	V 100	[Black]	31	26	23	#1F1A17

Figure 2 Red color – Black shade

PITTA DUSHTI

SR. No.	DOSHA %	COLOR	COLOR ANALYSIS APP			CODE
			RED	GREEN	BLUE	
1	P 00	[Red]	218	37	28	#DA251C
2	P 20	[Orange]	225	85	23	#E15517
3	P 40	[Orange]	230	120	23	#E67817
4	P 60	[Yellow]	238	155	17	#EE9B11
5	P 80	[Yellow]	248	195	01	#F8C301
6	P 100	[Yellow]	255	245	00	#FFF500

Figure 3 Red color – Yellow shade

KAPHA DUSHTI

SR. No.	DOSHA %	COLOR	COLOR ANALYSIS APP			CODE
			RED	GREEN	BLUE	
1	K 00	[Red]	218	37	28	
2	K 20	[Red]	225	85	62	
3	K 40	[Red]	231	119	95	
4	K 60	[Red]	239	154	133	
5	K 80	[Red]	246	197	180	
6	K 100	[White]	255	255	255	

Figure 4 Red color – White shade

Sample Size-

This is an observational and analytical study, we were selected 104 participants. In which we found-

Group A - Healthy participants- 46

Group B - Vitiating *Dosha* Participants - 58

Total 104 participants were screened.

Operational Definition:

Healthy individuals: "Rogastu *Doshavaishamyam, Dosha Samyam tu Arogata*", As per this definition equality of *Dosha* in normal state is a *Aroga* i.e. healthy condition. Normal state of *Dosha* or minimum vitiation of *Dosha* is



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decided according as per the score obtained in questionnaires.

Variable:

1. Healthy and unhealthy individuals.

2. Signs and Symptoms-

All signs and symptoms are noted and they are categorized in *Vataja*, *Pittaja*, *Kaphaja*, *Vata-Pittaj*, *Vata-Kaphaja*, *Pitta-Kaphaja* and *Tridoshaja* type of condition of participant.

3. Diet & Routine schedule-

Diet & Routine schedule are noted and they are categorized in *Vataja*, *Pittaja*, *Kaphaja*, *Vata-Pittaj*, *Vata-Kaphaja*, *Pitta-Kaphaja* and *Tridoshaja*.

4. Hb% and Red Blood Cell count is done

5. RCSS gradation value

Study Centre

R. A Podar Ayurved College, Worli, Mumbai.

1. To review *Varna Pariksha*:

1. A) Review of *Varna Pariksha* (Blood Color Shade) according to Ayurved science:

Blood (According to Ayurveda, *Rakta Dhatu*) is considered as a basic and important element of human body. Function of blood is *Jeevan* i.e. it helps to increase the life span. *Vata*, *Pitta* and *Kapha*^{1, 2} are three important and basic elements of body known as *Tridosha*. These *Tridosha* are causative agents of origin of the body, so the equilibrium of *Tridosha* is important for a disease free body. The person's origin, existence and dissolution are associated with these three *doshas* along with blood. So whenever there is vitiation in *Tridosha's* by any cause there is a change in body constituents and it is developed as signs,

symptoms or disease. So, *Tridosha* are an important clinical parameter for diagnosis of the disease. Traditionally, *Tridosha* assessment is performed using *Nadi Pariksha* (pulse diagnosis), case taking, etc. These are direct observations done by physician.

Varna Pariksha^{3,4,5,6} is mentioned in *Ayurvedic* text to diagnose *Tridosha* condition of *Rakta Dhatu* i.e. observation of color of blood. It is a naked eye examination of blood. In this examination venous blood is collected in the bowl or plate. Then under the sunlight, shade of color of blood is observed and noted.

If proportion of *Vata Dosha* is increased in blood, it appears as Blackish⁷, shade to Red color. If proportion of *Pitta Dosha* is increased in blood, it appears as Yellow⁸ or Blackish shade to Red color. If proportion of *Kapha Dosha* is increased in blood, it appears as Whitish⁹ shade to Red color. These *Tridosha* imbalances cause diseases. If we are able to quantify these *Tridoshas* level among individuals it will be helpful to physician to treat accordingly.

It is subjective observation i.e. results may vary according to various physician. Also observing color has its limitations, so until and unless there is marked change in blood it will not be noted. So if there is a minute change in the color of blood, we are unable to measure it.

1. B) Review of *Varna Pariksha* (Blood Color Shade) according to Modern Science:

No such blood color examination method is established in modern science. It may be because of philosophy behind this science. Modern



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science studied the blood and its components. Many laboratory tests are developed on blood like Hemoglobin, RBC, WBC, TLC, PCV, etc. According to modern science blood is red in color. Hemoglobin is the coloring matter of red blood cell. Arterial blood is scarlet red because it contains more oxygen and venous blood is purple red¹⁰. Hemoglobin is a protein that forms a complex with iron molecules. Iron has the property of reflecting red light. Each red blood cell, or erythrocyte, contains about 270 million hemoglobin molecules and because there is so

much iron in the blood, blood looks red. Sometimes we find many shades of red color in the blood. There are few pathological conditions that can change the color of blood. This can be genetic, as well as induced by certain toxins and drugs¹¹.

OBSERVATION

Healthy Individual

Table 1, 2 and 3

Table 1 Healthy Individual study

Sr No.	Healthy Individual Dosha Score Below 10% Black Shade stands for Vata	Out of 46 healthy Individual, Blood Color Shade	Percentage
1	10%	00	00
2	20%	00	00
3	30%	02	4.34
4	40%	09	19.56
5	50%	17	36.95
6	60%	10	21.73
7	70%	05	10.86
8	80%	01	2.17
9	90%	01	2.17
10	100%	00	00

In above table it is found that, 40% black shade is found in 21.7% healthy individual where as in unhealthy it is 13.8%. 50% black shade is found in 37.0% healthy individual where as in unhealthy it is 19.0%. 60% black shade is found in 21.7% healthy individual where as in unhealthy it is 34.5%, 70% black shade is found in 10.9%

healthy individual where as in unhealthy it is 13.8% (Figure 5 and Table 04)

Table 4 Pearson Chi square test, with P- value

	Value	Degree of freedom	P-Value
Pearson Chi-Square	14.600	6	0.024
No. of Valid Cases	104		

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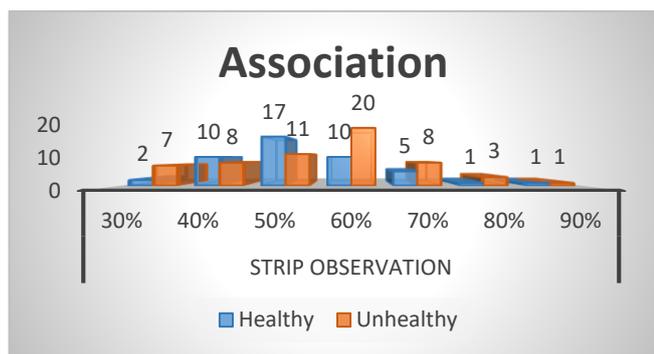


Figure 5 Graph of association of Blood Color Shade Strip Reading between healthy & unhealthy individuals

Chi-Square Test is carried out to test the association between healthy and unhealthy individuals from above table we can observe that, P-Value is less than 0.05. Hence we can conclude that, there is significant association between observation of blood color with the help of RCS Strip and healthy & unhealthy patients.

Table 2 Unhealthy Individual study

Sr No.	Unhealthy Individual Dosha Score Below 10% Black Shade stands for Vata	Out of 58 healthy Individual, Blood Color Shade	Percentage
1	10%	00	00
2	20%	00	00
3	30%	07	12.1
4	40%	08	13.8
5	50%	11	19.0
6	60%	20	34.5
7	70%	08	13.8
8	80%	03	5.2
9	90%	01	1.7
10	100%	00	00

Table 3 Chi square test is applied to healthy & unhealthy Individual

RCS Strip Observation		Health status		Total
		Healthy	Unhealthy	
30%	Count	2	7	9
	%	4.3%	12.1%	8.7%
40%	Count	10	8	18
	%	21.7%	13.8%	17.3%
50%	Count	17	11	28
	%	37.0%	19.0%	26.9%
60%	Count	10	20	30
	%	21.7%	34.5%	28.8%
70%	Count	5	8	13
	%	10.9%	13.8%	12.5%
80%	Count	1	3	4
	%	2.2%	5.2%	3.8%
90%	Count	1	1	2

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	%	2.2%	1.7%	1.9%
Total	Count	46	58	104
	%	100.0%	100.0%	100.0%

DISCUSSION

1. It is found that blood color shade observation (*Varna Pariksha*) is a prognostic test, according to Ayurved science. Color shade of blood reflects involvement of *Dosha* in it. Black color shade indicates *Vata*, Yellow color indicates *Pitta* and White shade indicates *Kapha*.

2. In both the groups Black shade is found in between 30% to 90%. This study indicates black shade of red color in terms of RGB. Red (176-30), Green (38-25) & Blue (28-22)

3. The code of red color shade is found in between #AF251B and #1F1A17.

4. 50% black shade is found in 37.0% healthy individual where as in unhealthy it is 19.0%.

60% black shade is found in 21.7% healthy individual where as in unhealthy it is 34.5%.

By above observation we can say that healthy individual's blood color shade is in at 50% and unhealthy individual's blood color shade is at 60% as per RCSS.

5. Because of this study we can quantify the change in blood color shade up to some extent.

6. It is found that in RCSS individual *Doshas* and respective color is considered but in many cases two or all *Doshas* are increased so according to this RCSS require changes.

7. According to RCSS only black shade found in all blood samples. Yellow and White shade didn't find. It means only through the human eyes

blood color shade observation is not enough to conclude. But definitely this RCSS is helpful for primary prognosis.

CONCLUSION

Dr Kale's Red Color Shade Strip is prepared by using computerized RGB color standards. It is useful for primary prognostic diagnosis of *Vata Dosh* by *Varna Pariksha*. This study indicates black shade of red color in terms of RGB. We found values for Red (176-30), Green (38-25) & Blue (28-22). The code of black shade of red color is found in between #AF251B and #1F1A17. Healthy individual's blood color shade is in at 50% and unhealthy individual's blood color shade is at 60% as per RCSS.

Abbreviations:

RCSS: Red Color Shade Strip (**Figure 6**)

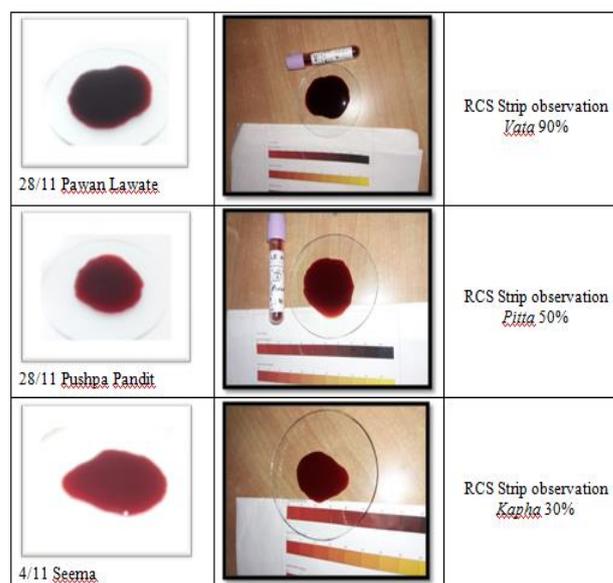


Figure 6 Some samples comparing with Dr Kale's RCSS



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