JOURNAL OF NATURAL REMEDIES
DOI: 10.18311/jnr/2021/25862
RESEARCH ARTICLE

Co-relation of *Prakriti* of an Infant with Skin Color RGB Values of Facial Photograph and Standardization of Reference Standards of *Prakriti* Color Representor

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Abstract

Aim and Objective of the Study: In spite of individualized variation, skin color-one of the *Prakriti* determining characteristics contribute an important role to confirm the diagnosis of *Prakriti* as stated in *Ayurveda* viz. *Dhusaragatra* (dusky color of body), *Tamra Varna* (coppery color), and *Durva*, or *Saccharum, MunjaRoxb.* (Sarakanda) color of skin represents *Vata, Pitta* and *Kapha Prakriti* respectively. The present study was intended to affirm and standardize the skin color variation in accordance to *Prakriti* in term of RGB values. **Method:** *Prakriti* of 100 infants was assessed through PRS-IPA (Prototype Research Software for Infant *Prakriti* Assessment) software, while the RGB values were gathered from facial photographs of healthy infants of different *Prakriti* in addition to photographs of *Tamra* (70-80% Oxidized and non-oxidized copper plate), green, partially dry, dry root area of *Cynodondactylon* (L.) Pers. (*Durva*) green, partially dry, dry stem part of *Saccharum MunjaRoxb.*(Sarkanda) and different processed soil sample (red, black, Sodic, alluvial soil) through MATLAB R 2014b software. **Result and Discussion:** Minimum intermediate t value difference and non-significant p value shows that R, G, B and total RGB value of *Kapha Prakriti* infants skin is very close to RGB score of dry stem Part of *SaccharumMunjaRoxb.* (Sarkanda) plant, Dry Root of *Cynodondactylon* (L.) *Per.* (Durva), RGB score of *Pitta Prakriti* infants's skin is also close to RGB score of non–oxides copper plate and RGB score of *Vata Prakriti* infants's skin is also close to processed dry Red soil, Black soil and processed 25% wet alluvial soil. **Conclusion:** We can conclude summary of brief result and discussion that evaluation of skin color by photograph through RGB value calculated by MATLAB R 2014b is specific objective parameter for *Prakrti* determination in infant. Significant variation in RGB values is seen as per *Prakriti* of infants

Keywords: Infant, *Pitta, Prakriti, Kapha, Vata*, RGB

1. Introduction

Ayurveda is a natural health care system that originated in India more than 5000 years ago. Itoffers its modalities by the way of *Ahara* (diet), *Vihara* (lifestyle), and *Ousadhi* (medication), which are three pillars of *Prakriti* – based on this it is regarded as a holistic science[1]. It emphasizes the treatment of disease in highly individualized manner as it believes that every individual is unique and having different constitution[2]. The need for scientific evaluation of *Ayurveda* has been recognized for a long time. It has personalized approach involving constitutional assessment, which can guide prevention, diagnosis and therapeutics of diseases[3]. *Ayurveda* also offers detailed guidance about the food, nutrition and diet as per the individual constitution or *Prakriti* as well as seasons[4].

"*Prakriti*" is a consequence of the relative proportion of *Tri-Dosha*, which are not only genetically determined, but also influenced by maternal diet, environment, lifestyle, and age of the transmitting parents[5]. *Prakriti* is classified into seven varieties, among which, the first three are considered as extremes, exhibiting readily recognizable phenotypes, and are more predisposed to specific diseases[6,7].

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Article Received on: 12.08.2020 Revised on: 02.10.2020 Accepted on: 09.03.2021

Colour of human body is very significant for the diagnosis, therapeutic designs and prognosis. Every part of body like skin, tongue, nails, and eyes has specific colour that gives healthy appearance of individual/infant. Variation in these colour reflect unhealthy conditions in individuals[8–11].

In spite of individualized variation, skin color contributes an important role in determining the *Prakriti*. Variation in human body's color presents the particular type of *Prakriti*[12]. *Vata, Pitta* and *Kapha Prakriti* color analogous to *Dhusaragatra or Krishna varna* (blackish skin), *Tamra varna* (coppery color) and Durva or Sarkanda respectively[13–16].

The possibilities of error in body color assessment are usually observed being a subjective assessment and vary subject to subject (qualitative tools). Today many types of techniques are available for skin color evaluation such as RGB (R-red, G-green, B-blue) values of face skin[6].

RGB values of predefined part of face photograph which is considered more perceptible[11]. So, the rationale of this study is to explore a relation between RGB value of skin and Prakriti of infants with RGB values of root of *Cynodondactylon* (L.) *Pers.*(Durva)[17], different parts of *Saccharum MunjaRoxb.*(Sarkanda)[18,19] copper, and different soil[20,21].

2. Materials and Methods

2.1 Selection of Patients

A total number of 100FT-AGA (Full Term augment presentation) 4 days old healthy neonates were randomly selected for the study from the tertiary hospital after getting written informed consent from the parents. Ethical Committee Clearance of the Institute having ECCNo- ECR/Bhu/Ins/UP/2014/Re-registration2017 dt. 31.01.017 was also obtained. Any neonate, having weight more than 2.5 kg, irrespective to sex, gestational age less than 37 weeks or more than 42 weeks, having any acute or severe disease including in-utero or birth asphyxia or associated any gross congenital anomaly were excluded at the time of registration. In present study the PRS-IPA (Prototype Research Software-Infant *Prakriti* Assessment) was used for infant *Prakriti* assessment. The PRS-IPA first user friendly software for storing large number of infants *Prakriti* assessment data with subsequent follow-up study withcreate a record data base using excel (MS) and other auxiliary facilities[10]. The data were collected in two parts.

2.2 Assessment of *Prakriti*

Prakriti assessment in every infant were performed through predesigned software i.e. PRS-IPA (Prototype Research Software-Infant *Prakriti* Assessment) based on the *Prakriti* specific characteristics[22–27] at registration and follow-ups were made at 3 months apart i.e. first follow up at 3rd month, follow-up at 6th month, further at the age of 9th and 12th month. Assessment were made by the Proto type research software and finally *Prakriti* were obtained after considering the following guidelines for the interpretation of single, double or triple *Doshaja prakriti*.

2.2.1 Tridosha Prakrti

It is formed with equal contribution of each Dosha 33.333% i.e. 33.333 for *Vata* plus 33.333 for *Pitta dosha* plus 33.333 for *Kapha dosha prakrti* characteristics which is equal to 99.999% (100%). Variation in percentage of all the characteristics of any participating *Dosha* out of all characteristics of three *Dosha* does not differ more than 10% of aggregated scores of total characteristics of any other *Dosha*, was considered as *Tridosha Prakrti*.

2.2.2 Dvandaja Prakrti

When two *Dosha* separately have 66.667% i.e. each *Doshaja* characteristic will be more than 33.333% (separate to each other)and rest of the single Dosha will have less than 33.333% sharing of own characteristics. For example, in *Vata-Pitta Dwandaja prakriti, Vata* and *Pitta* both *Dosha* will have>33.333% share of own characteristics, separately than rest of the *Dosha* i.e. *Kapha* will have <33.333%. In other words, Vata+ Pitta >66.667%(>33.333% + >33.333%) and *Kapha* should have <33.333% share.

2.2.3 Single Dosha Prakrti

It is called when one *Dosha* has been contributed by two *Dosha* by at least sum of 20% of their shares (66.667%) in addition to its own characteristics (33.333%) i.e. 6.67% (10% share i.e. 3.333% of each *Dosha*, out of ideal contribution i.e. 33.33% of each *Dosha* (3.333 + 3.333 = 6.67%) and this percentage will be adding on the percentage of single *dosha* i.e. 33.333 + 6.667% = 40.00% (minimum requirement for the single *Doshaja prakriti*), while rest of both *Dosha* should have< 33.33%, separately.

In other words, in single *Doshaja Prakriti* only one *Doshaja* should have more than 40% own characteristics and none of the rest Dosha will have own characteristic equal or more than 33.333% share. (Increase in one *Doshaja* characteristics beyond 33.333%, reciprocally reduce the characteristic percentage in rest of the two *Dosha* separately)

2.3 Assessment of RGB Scores in Infant

The assessment was completed in two steps:

2.3.1 Taking Image of Infant in Prakriti-Vikriti Assessment Lab in Kaumarbh ritya /BalRoga OPD of S.S hospital, Indian Medicine wing, BHU Varanasi

- Baby cot was placed between camera stand and jpeg image was taken by Sony Camera (Sony Handycam series HRDXR550 with focal length-3.8 mm, focal number -F/1.8, exposure time 1/25 sec) without flash.
- At the time of taking face image, room light was measured by Light meter (Fisher Scientific) and >120-126 cd/m2light was fixed in each case
- Distance between baby and camera was fixed (25 cm) in each case as per the protocol of photography adopted for research work and it was measured by Distance meter (Fisher Scientific).

2.3.2 Calculation of RGB through MATLAB2014b

- A crop-section of 150 x 150 pixels from the selected JPEG image was taken from the prominent part of right cheek region of infant, below the right eye and lateral to the philtrum.
- Icon of MATLAB R 2014 b software displayed on taskbar of desktop was opened. The crop-section of JPEG image file was renamed and inserted in MAT-code RGB folder, which was appeared on desktop at the time of installation of MATLAB R2014 b software.
- Then MATLAB R 2014b software was opened. Further RGB value file was opened RGB value in file will be opened. In line 1[rgbImage=imread('.jpg');] insert the given 'name' of JPG image-file in between 'and .jpg 'Run' button, given in ribbon of the opened page, was clicked. The values of the Red, Green, and Blue color were displayed in a separate window in addition to figure window. Three cut sections were taken in each baby for the RGB value. The mean value of these three data was taken as a final data of RGB for the study.

2.3.3 Algorithm for Calculation of RGB Value

- Input: Initialize the input face image with size m × n pixel, where m, n = 500
- Resize and crop the face image (I) into p × q pixel (where p=150 and q = 150)
- Split RGB image into three separate grey scale image (I);the red (R), green (G), blue (B) color as follows: Image_red (R) = Image_rgb (:,1);Image_green (G) = Image_rgb (, 2);Image_blue (B) = Image_rgb (:,3);
- Calculate the average of Red (R), Green (G) and Blue (B) of face image (I) as follows: Average = 1/3*(R+G+B); Output: written in Average

2.4 Assessment of RGB Scores in Reference Standards of *Prakriti*

Vata Prakriti individuals have *Dhusara Varna*[13] therefore assessment of RGB score of 4 different types of soil, in dry and 25% wet condition were done as the color of soils are described reference color for *Dhusara Varana* in different Sanskrit textbook [28–30].

To confirm the exact *Dhusara Varna* which represents the *Vataja prakriti* of infants, different soil samples viz. red soil, alluvial soil, black soil, sodic soil were collected from the Department of soil science, institute agriculture Science, BHU Varanasi after getting approval from Department of soil science.

Pitta Prakriti individual have *Tamra Varna*[29,31] (coppery color) of the body. To affirm this similarity, normally available oxidized and non-oxidized copper plate samples were collected.

Kapha prakriti individuals, has body color like *Durva (Cynodondactylon* (L.) *Pers.)* or *Sarakanda (Saccharum MunjaRoxb)*[19]. Therefore, both plants were collected and species identification was done by Department of Botany, institute Science, BHU Varanasi.

To find out RGB values of different parts of the *Durva* like fresh or dry intra-nodal part of stem, dry/fresh root of Durva*(Cynodondactylon* (L.) *Pers.)*, and fresh/dry stem part of *Sarakanda (Saccharum MunjaRoxb)*, along with processed soil samples and copper plate, photographs were taken as per the protocol for research work. RGB color assessment was done by MATLAB R 2014b software.

2.5 Statistical Analysis of Data

(IBM SPSS) Statistics software version 22.0 wasused for statistical analysis of data. As per *Prakriti* of an infant RGB value of the data was categorized and through statistical analysis find out the relation between RGB data with Particular *Prakriti* of infant. The result of statistical analyzed data is written as mean ± standard deviation of mean (Min – Max), One Way ANOVA test, and Post-Hoc pairs (Bonferroni tests) was applied to find out the significant relation between two *Prakriti*. And online t test was used for compare mean between different samples.

3. Results

3.1 Standardization for *Vata Prakriti*

Prakriti of registered infants was assessed in terms of RGB values and compared with the RGB values of various types of soils (Table 1). When mean values of R, G, B and RGB of dry processed red soil and dry processed black soil were compared with mean values of R, G, B and RGB of *Vata prakriti* infants, P value was found insignificant (p>0.05) as shown in Table 1. RGB Score reference range of oxidized copper and non-oxidized copper along with Infant's Skin of *Pitta Prakriti* has shown in Table 2. Non -oxidized copper plate p value is non-significant with respect to R, G, B and RGB value of *Pitta Prakriti* infant. RGB Score reference range of fresh, semi dry and full dry, rootarea of *Cynodondactylon* (L.)*Pers,* fresh, semi dry and dry, stem area of *Saccharum MunjaRoxb.*(Sarakanda), along with Infant's Skin of kapha Prakriti has shown in Table 3. Dry root of *Cynodondactylon* (L.) *Pers.,* Dry stem part of *Saccharum MunjaRoxb.* p value is non-significant with respect to R, G, B and RGB value of *Kapha Prakriti* infant.

Table 1. RGB score of different Soil along with infant's face skin Colour of *Vata prakriti*

Type of Soil & *Vata prakriti*	**Mean ±SD (Min-Max) T value and p value for types of Soil Vs Vata prakriti infant**			
	RED	**GREEN**	**BLUE**	**TOTAL**
Dry Processed Red soil (N=3)	98.00±6.92 (90-102) t=1.6 p=0.1335 (NS)	64.67±6.3 (61-72) t=1.4 p=0.16 (NS)	32.00±14.42 (29-38) t=1.35 p=0.2013 (NS)	194.67±4.6 (192-200) t=0.99 p=0.34 (NS)
Processed Wet Red Soil (25% Moisture) (N=3)	90.33±1.15 (89-91) t=2.5 p=0.02	51.33±2.0 (49-53) t=1.15 p=0.271 (NS)	28.33±2.5 (26-31) t=3.312 p=0.0087	170±5.5 (164-175) t=2.746 p=0.0177
Dry Processed Sodic soil (N=3)	126.67±0.5 (126-127) t=1.55 p=0.142 (NS)	109±0.0 (109-109) t=10.6 p=0.00	72±0.0 (72-72) t=10.00 p=0.001	307±0.57 (307-308) t=7.0 p=0.001
Wet Processed Sodic Soil (25% Moisture) (N=3)	107.00±5.56 (92-102) t=0.64 p=0.53 (NS)	97.00±5.0 (92-102) t=7.0 p=0.00	71.33±2.30 (70-74) t=9.715 p=0.0001	274.33±14.01 260-288 t=4.5 p=0.00
Dry Processed Alluvial soil (N=3)	117.67±3.25 (114-120) t=0.52 p=0.59 (NS)	99.33±3.7 (95-100) t=8.5 p=0.00	64.67±2.3 (62-66) t=.7.72 p=0.0001	281.67±9.2 (271-288) t=5.15 p=0.002
Wet Processed Alluvial Soil (25% Moisture) (N=3)	97.33±11.01 (90-110) t=1.6 p=0.125 (NS)	58.33±11.93 (50-72) t=8.5 p=0.00	42.00±4.58 (38-47) t=0.90 p=0.38 (NS)	197.67±4.9 (192-201) t=0.77 p=0.45 (NS)
Dry Processed Black soil (N=3)	116.33±10.16 (110-128) t=0.383 p=0.71 (NS)	55.67±5.50 (50-61) t=0.259 p=0.800 (NS)	39.67 ±10.0 (29-49) t=0.19 p=0.84 (NS)	211.33±8.9 (201-217) t=0.19 p=0.84 (NS)
Wet Processed Black Soil (25% Moisture) (N=3)	55.67±1.1 (55-57) t=6.40 p=0.001	47.67±1.1 (47-49) t=1.9 p=0.089	34.67±1.1 (34-36) t=1.26 p=0.23 (NS)	138.6±2.8 (137-142) t=5.00 p=0.003
Infant of *VATA prakriti* (n=10)	**112.79±14.98 (98.84–129.45)**	**56.99±8.21 (40.95–64.96)**	**38.83±5.53 (28.56–48.54)**	**208.57±23.49 (166.80–232.14)**

Table 2. RGB score 80% oxidized and non-oxidized copper plate normally available copper plate (Tamara) along with infant's face skin colour of *Pitta*

Type of copper plate & *Pitta Prakriti*	Mean ±SD (Min-Max) T value and p value for types of copper plate Vs Pitta Prakriti infant			
	RED	**GREEN**	**BLUE**	**TOTAL**
Oxidized Copper plate (N=3)	65.67±2.3 (63-67) t=22.45 P=0.001	38.67±2.3 (36-40) t=15.27 p=0.001	20.67±0.5 (20-21) t=8.9 p=0.00	125.0±9.5 (119-128) t=28.5 p=0.00
Non-oxidized Copper plate (N=3)	158.33±5.05 (153-164) t=5.51 P=0.001	91.33±2.02 (89-93) t=4.665 p=0.005	55.33±5.50 (50-61) t=5.7 p=0.00	304.67±1.58 (303-306) t=2.23 p=0.04(ns)
Infant *Pitta prakriti* (n=28)	**154.18±6.55 (135.80–163.63)**	**85.56±5.06 (71.45–92.63)**	**52.20±5.93 (44.63-75.38)**	**292.27±8.89 (276.57-305.59)**

Table 3. RGB score of *Cynodondactylon* (L.) *Pers. (Durva)* and *Saccharum MunjaRoxb.*(Sarkanda) along with infant's face skin colour of *Kapha*

Type of plant samples & *Kappha prakriti*	Mean ±SD (Min-Max) T value and p value for types of plant samples Vs *Kapha prakriti* infant			
	RED	**GREEN**	**BLUE**	**TOTAL**
Fresh root of *Cynodondactylon* (L.) *Pers.* (N=3)	97.33±8.3 (92-107) t=12.13 p=0.00	93.33±5.7 (90-100) t=3.38 p=0.005	77.67±4.7 (74-83) t=1.7 p=0.11	271.33±16.1 (261-290) t=6.23 p=0.00
Semi dry root of *Cynodondactylon* (L.) *Pers.* (N=3)	115.33±3.05 (112-118) t=10.08 p=12	110.0±2.6 (108-113) t=0.94 p=0.36	94±3.6 (91-98) t=0.82 p=0.4	319.67±8.0 (315-329) t=3.77 p=0.00
Dry root of *Cynodondactylon* (L.) *Pers.* (N=3)	185.00±1.73 (184-187) t=1.9 p=0.07	109.0±0.57 (109-110) t=0.79 p=0.44 (NS)	84.00±0.00 (84-84) t=0.70 p=0.49 (NS)	378.33±2.309 (377-381) t=0.47 p=0.63 (NS)
Fresh stem of *Saccharum MunjaRoxb.* (Sarakanda) (N=3)	115.0±4.35 (110-118) t=10.06 p=0.00	111.33±3.05 (108-114) t=0.744 p=0.47	73.3±5.8 (69-80) t=2.3 p=0.003	300±2.6 (298-303) t=4.85 p=0.00
Semi drystem of *Saccharum MunjaRoxb.* (Sarakanda) (N=3)	125.33±4.04 (123-130) t=8.3 p=0.001	118.33±.057 (118-119) t=0.34 p=0.76 (NS)	100.33±7.23 (92-105) t=1.7 p=0.10 (NS)	344.00±2.0 (342-346) t=2.49 p=0.028
Drystem of *Saccharum MunjaRoxb.* (Sarakanda) (N=3)	181.00±6.92 (177-189) t=7.86 p=0.001	117.33±2.3 (116-120) t=1.16 p=0.26 (NS)	91.67±4.04 (87-94) t=1.9 p=0.07 (NS)	386.33±1.115 (385-387) t=0.70 p=0.49 (NS)
Infant *Kapha prakriti* (n=18)	186.39±11.77 (166.16–215.09)	116.03±11.14 (98.06–138.55)	88.74±10.60 (68.62–112.2)	390.61±31.39 (339.52–464.84)

Table 4. Showing relation of *Prakriti* between Red, Green Blue and total (RGB) score of infant's skin color in different *Prakriti* at registration

Prakriti **N=100**	**Red Mean ±SD (Min-Max)**	**Green Mean ±SD (Min-Max)**	**Blue Mean ±SD (Min-Max)**	**RGB Mean ±SD (Min-Max)**
1. *Vata* (n=10)	112.79±14.98 (98.84–129.45)	56.99±8.21 (40.95–64.96)	38.83±5.53 (28.56–48.54)	208.57±23.49 (166.80–232.14)
2. *Pitta* (n=28)	154.18±6.55 (135.80–163.63)	85.56±5.06 (71.45–92.63)	52.20±5.93 (44.63-75.38)	292.27±8.89 (276.57-305.59)
3. *Kapha* (n=18)	186.39±11.77 (166.16–215.09)	116.03±11.14 (98.06–138.55)	88.74±10.60 (68.62–112.20)	390.61±31.39 (339.52–464.84)
4. *Kapha Pitta* (n=10)	174.39±6.62 (165.36-188.35)	108.56±3.77 (102.56–112.23)	79.84±5.74 (71.52–92.80)	362.83±11.74 (341.95–385.53)
5. *Vata Pitta* (n=21)	140.04±8.90 (116.12–155.13)	72.33±4.12 (64.02–80.29)	43.46±6.62 (30.73–57.38)	255.69±11.48 (231.48–270.93)
6. *Vata Kapha* (n=13)	164.63±4.39 (157.59-172.89)	95.35±4.86 (88.38–104.57)	63.13±6.13 (54.37-76.17)	323.11±9.47 (309.59–336.96)
One-Way ANOVA (Between *Prakriti* comparison)	F=93.044 P=0.00	F=102.001 P=0.000	F=86.263 P=0.000	F=135.921 P=0.000
Post Hoc test Significant pairs-Bonferroni test (p<0.05)	V vs. P (0.000) V vs. K (0.000) V vs. VP (0.000) V vs. VK (0.000) V vs. KP (0.000) P Vs. VP (0.000) P Vs. KP (0.000) P Vs. VK (0.027) K vs. VP (0.000) K vs. VK (0.000) K vs. KP (0.013) VK vs. VP (0.000) KP vs. VP (0.000)	V vs. P (0.000) V vs. K (0.000) V vs. VP (0.000) V vs. VK (0.000) V vs. KP (0.000) P Vs. VP (0.000) P Vs. VK (0.005) P Vs. KP (0.000) K vs. VK (0.000) K vs. VP (0.000) VP vs. VK (0.000) VP vs. KP (0.000) VK vs. KP (0.002)	V vs. P (0.000) V vs. K (0.000) V vs. VK (0.000) V vs. KP (0.000) P vs. K (0.000) P Vs. VP (0.005) P Vs. VK (0.002) P Vs. KP (0.000) K vs. VK (0.000) K vs. VP (0.000) VK vs. VP (0.000) KP vs. VP (0.000) VK vs. KP (0.002)	V vs. P (0.000) V vs. K (0.000) V vs. VK (0.000) V vs. KP (0.000) V vs. KV (0.000) P vs. K (0.000) P Vs. VP (0.000) P Vs. VK (0.000) P vs. KP (0.000) K vs. VP (0.000) K vs. VK (0.000) VP vs. VK (0.000) VP vs. KP (0.000) VK vs. KP (0.000)

Table 4 reveals that Maximum Red (186.39±11.77), Green (116.03±11.14), Blue (88.74±10.60), total (390.61±31.39) score of infants were seen in *Kapha prakriti* infants while minimum Red (112.79±49.98), Green (56.99±8.21), Blue (38.83±5.53) total (208.57±23.49), score of infants were seen in *VataPrakriti* infants and medium

Red (154.18±6.55), Green (85.56±5.06), Blue (52.20±5.93) total (, 292.27±8.89), score of infants were seen in *Pitta Prakriti* infants.

One-way ANOVA test showed significant variation in all these scores (p value <0.001 and on applying Post Hoc Bonferroni Test these scores were found significant almost in all most all the pairs.

4. Discussion

After complete analysis of data suggest that RGB, R, G and B values have significant relation with different types of *Prakriti*. The result of One-way ANOVA test shows significant variation in all *Prakriti* pairs. For instance, mean values of Red, Green, Blue component, and RGB for three basic 112.79 ± 14.98, 56.99 ± 8.21, 38.83 ± 5.53, and 208.57 ± 23.49 respectively for *Vata prakriti*; while 154.18±6.55, 85.56±5.06, 52.20±5.93, and 292.27±8.89 respectively for *Pitta Prakriti* infants; 186.39±11.77, 116.03±11.14, 88.74±10.60, and 390.61±31.39 respectively for *Kapha prakriti* infants; while values of R, G, B and RGB for *Dwandaja prakriti* types fall in between the above said values for *Vata, Pitta* and *Kapha prakriti*. All these support the findings of previous studies carried out by *Srivastava Niraj et. al.*[11] and *Tripathi et al* (2016) in regard to RGB values of facial skin in accord to *Prakriti* of infants and healthy adults respectively[11,32].

Minimum intermediate t-value difference and non-significant p value shows that R, G, B and total RGB value of *Kapha prakriti* infants' skin is found very close to RGB score of dry stem part of *Saccharum MunjaRoxb. (Sarkanda)* plant, dry root of *Cynodondactylon* (L.) *Pers. (Durva),* RGB score of *Pitta Prakriti* infants' skin is also close to RGB score of non – oxides copper plate and RGB score of *Vata prakriti* infants' skin is also seen very closed to processed dry red soil, black soil and processed 25% wet alluvial soil.

These findings suggest that *Sarakanda, Durva,* non-oxide plate of copper and dry red soil, and black soil may be one of the important alternating tool of MATLAB R 2014b software for assessing color characteristic used to determining different *Doshika prakriti*.

5. Conclusion

The colour variation of human skin play significant role in assessment of *Prakriti*. Evaluation of infant's skin color by photograph through RGB value calculated by MATLAB R 2014b which is a specific objective parameter can be used for *Prakrti* determination in infant. Significant variation in values of RGB is seen in accord to *Prakriti* of infants, for instance, *Kapha, Pitta* and *Vata prakriti* infants have maximum, medium and minimum RGB values for facial skin.

As these values are very closed to the RGB values for the color of dry stem of *Saccharum MunjaRoxb.(Sarkanda)* plant, dry root of *Cynodondactylon* (L.) *Pers.(Durva)*, for *Kapha prakriti* infants, non – oxides copper plate for *Pitta prakriti* infants and processed dry red soil, black soil and processed 25% wet alluvial soil for *Vata prakriti* infants may be considered as reference standards in absence of MATLAB R 2014 b software in remote and fast screening of the infants for the *Prakriti* assessment at clinical setting.

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