

AN APPROACH TO STANDARDISE *MUTRA PARIKSHA* WITH THE HELP OF *MUTRA VARNA* SCALE BASED ON THE CONCEPT OF AYURVEDA

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ABSTRACT

Background and Objectives: *Mutra Pariksha*^[1] (Urine examination) is a popular Ayurvedic examination for the diagnosis purpose of the diseases. It is one of the *Ashtavidha Pariksha* (eight fold examination) which is useful for colour, appearance, consistency of urine for different diseases and *Dosha* involvement. There are a number of Ayurveda researches have been done for the diagnosis of different diseases based on *Mutra as Tail Bindu Pariksha* (Examination of urine by oil drop method). However, there are no studies (Ayurvedic researches) available regarding the standardisation of colour, consistency etc based on which Ayurvedic diagnosis of the disease can

be made. This study was an attempt to standardise colour of urine in three (*Peeta*, *Pandu*, *Haridra Varnas*) variety of *Vikrita Mutra* (altered urine) in different diseases and to correlate the colour with *Dosha* involvement according to the diseases as per *Ayurveda*. **Material and Methodology:** 30 apparently healthy individual's urine (20 – 40 years) was collected and examined to standardise the normal urine colour (*Prakrita Mutra Varna*) and developed a scale. Classical texts have mentioned about different kind of *Mutra Varna* (urine colours) in different pathological conditions for instance *Pandu* and *Neela Varnas* of *Mutra* mentioned in *Vatic Vikaras*, *Haridra Varna Mutra* mentioned in *Haridrameha*, *Pittaj Mutrakriccha*, *Kamla* etc. So taking the references from the classical texts, *Mutra Varna Scale* (MVS) was developed for three colours only, which are *Vikrita Peeta Varna*, *Pandu* and *Haridra Varna*.

These three colours were standardized with the help of six factors of colour i.e. Hue, Saturation, Luminance, Red, Green, and Blue. **Result:** Correlation coefficient value comes ($r = 1$) which shows a significant correlation between the urine colour and dominance of *Doshas*.

KEYWORDS: *Mutra Pariksha*, *Ashtavidh-Pariksha*, *Varna*, Urine examination, colour factors.

INTRODUCTION

Pariksha in Ayurveda is not merely examination of the patient condition and naming the diseases, but also the identification of the disproportion of the *Ti-Doshas* i.e. *Vata*, *Pitta*, *Kapha* (three energies of human body). Ancient Ayurvedic *Acharya*'s laid importance on observational techniques and favoured it over invasive techniques. In Ayurveda a comprehensive clinical examination was given by the name of *Rogi-Roga Pariksha* (Examination of disease and patient). This examination helps us to understand the strength of the patient and nature of the disease as well. *Ashta sthana Pariksha* includes examination of disease through 8 fold diagnosis which was first given by *Acharya* Yogratnakar. Eight folds are *Naadi* (Pulse), *Mutra* (Urine), *Mala* (Stool), *Jihva* (tongue) *Shabd* (Sound), *Sparsh* (Touch), *Drik* (Eye), *Akriti* (Built, Gait, Decubitus etc).^[2] *Mutra Pariksha* is one of the *Ashtavidh Pariksha* which is well-liked in Ayurvedic examination for the diagnostic purpose of the diseases. *Mutra Pariksha* is based on colour, appearance, consistency, density, and odour of the urine of diseased patient. *Acharya* Yogratnakar has given different features of urine according to *Dosha* involvement and also given a diagnostic method for *Sadhyata-Asadhyata* (curable and incurable) by the name of *Tail Bindu Pariksha*, this *Pariksha* is based on the direction of oil drop flow and tells about *Sadhyata* and *Asadhyata* of diseases. In urine examination colour can also be one of the diagnostic feature to understand the concept of *Dosha* involvement as according to Ayurveda in case of *Vata* aggravation urine is *Pandu* (pale) *Varna*, in case of *Pitta Dosha* it is yellow and red like oil (*Peeta Arunam Tailsum*) and in *Kapha* disorder it is frothy, unctuous and like water of small pond (*Pallava Varitulya*).^[3] However, no study has yet attempted to document altered *Varnas* of *Mutra* according to the concept of Ayurveda given in authentic texts. In the absence of data to show whether any changes occur in urine with the presence of a particular disease an approach has been made to develop and standardise MV scale with its validation by correlating it with *Dosha* involvement in respect of the concept of Ayurveda.

MATERIALS AND METHODS

Development and standardisation of MV Scale-

Thirty apparently healthy individuals were screened for the study with the age of between 20-40 years. Urine samples of screened individuals were collected to standardise about *Prakrita Varna* of *Mutra* (natural colour of urine). In classical texts there is no description available about *Prakrita Varna* of *Mutra* but *Peeta Varna* was described as *Peeta pushpa*^[4] which is a synonym of plant *Avartaki* due to the yellow colour of flower. *Avartaki* belongs to Leguminosae family and its botanical name is *Cassia auriculata*. So, *peeeta Varna* has been matched with *Avartaki pushpa* which is yellow in colour and a strip of yellow colour based on the colour of *Avartaki Pusha* with different grading has been made with the help of six colour factors i.e. Hue, Saturation, Luminance, Red, Green, and Blue. The screened urine sample were matched with the strip which ranges from 165 luminance to 176 luminance according to the colours of urine of the samples given in “Fig. 1” and “Fig. 2”, in which colour factors Hue, Sat, Red, Green showing no difference and based on the differences in luminance and blue factors grading was decided. It signifies that there is little difference in *Prakrita Peeta Varna* of *Mutra*.

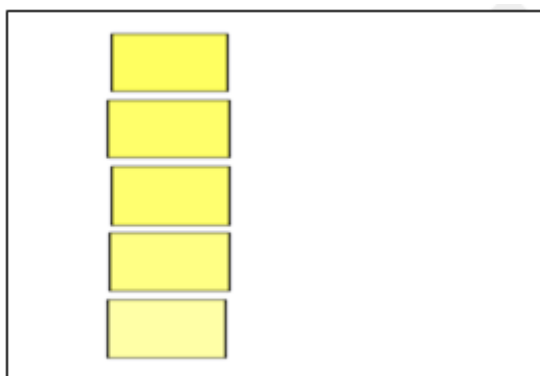
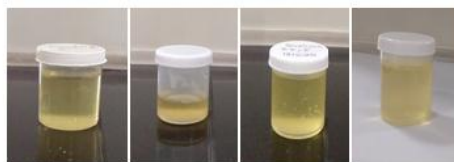


Fig. 1: Showing natural colour of urine.



HUE	SAT	LUM	RED	GREEN	BLUE
40	240	165	255	255	96
40	240	170	255	255	106
40	240	172	255	255	111
40	240	173	255	255	113
40	240	176	255	255	119

Fig. 2: Colour of urine matched with colour factors.

After that a scale of three urine colours i.e. *Peeta*, *Pandu* and *Haridra* has been developed with six factors of colour as mentioned above in different grading. In classical text Charak Samhita, *Pandu* (Pale yellow) colour has been taken as *Ketaki Dhool Sannibham*^[5] (Pollen grains of *ketaki* flower) *Pandu Varna* has been matched with downloaded picture of *Ketki* plant (*Pandanus odoratissimus*) which is also known as *Kewra* or *Suchipushpa* as its synonyms (in “Fig. 3”), it belongs to *Pandanaceae* family having flowering season in *Varsha Ritu* (Raining season) and fruits in *Grishma Ritu* (Summer).^[6] *Pandu Varna*, in urine found in the dominancy of *Vata Dosha* which is a *Vikrita Varna*, *Vikrita Peeta Varna* was different from the *Prakrita Varna* of urine based on the grading of the colour factors. *Haridra Varna* was taken by mixing the *Haridra* with water in a glass and develops a scale accordingly with the help of colour factors both *Peeta* and *Haridra Varna*’s are found in the dominancy of *Pitta Dosha* in different diseased conditions. *Mutra Varna* scale shown in “Fig.4”.

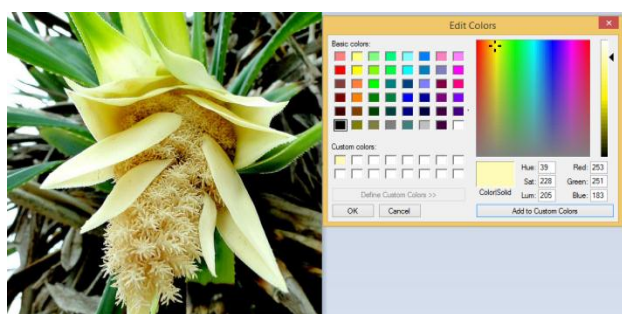
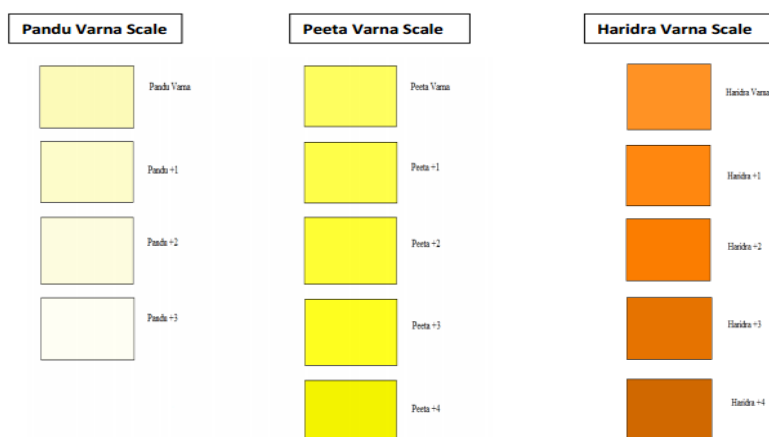


Fig. 3: Showing Ketaki pushpa matched with six colour factors.

Vikrita Mutra Varna Scale (VMVS)

S.no.	Vikrita Varna	Hue	Sat	Lum	Red	Green	Blue
1.	Pandu Varna	39	228	205	253	251	185
	Pandu +1	39	228	115	254	253	203
	Pandu +2	39	228	125	254	253	224
	Pandu +3	39	228	135	255	255	244
2.	Peeta Varna	40	240	165	255	255	96
	Peeta +1	40	240	155	255	255	74
	Peeta +2	40	240	145	255	255	53
	Peeta +3	40	240	135	255	255	32
	Peeta +4	40	240	115	244	244	0
3.	Haridra Varna	20	240	138	255	146	36
	Haridra +1	20	240	128	255	135	15
	Haridra +2	20	240	118	251	125	0
	Haridra +3	20	240	108	230	115	0
	Haridra +4	20	240	98	208	104	0

Fig. 4: Mutra Varna Scale showing different degrees of Peeta, Pandu and Haridra Varna matched with six factors of colour Hue, Sat, Lum, Red, Green and Blue.

Collected sample matching with MV scale:-

Urine sample has been collected of one hundred and two (102) consecutive patients irrespective of age attending the OPD and IPD of All India Institute of Ayurveda, New Delhi with different diseases. Patients were enrolled after obtaining their written informed consent. Acutely ill patients with severe hepatic, respiratory, cardiac, renal dysfunction and pregnant or lactating women were excluded from the study. The study was carried out during the period from October 2017 to January 2018.

As this study was a hypothetic generating proof of concept study where we wished to study whether any changes occurred in urine colour with clinical presentation of the patient as

given in the classical texts. Following written informed consent to participate, a detailed clinical history was taken from each individual and urine samples were coded at the clinical site and dispatched to the laboratory. After collection of urine samples, routine urine examination was done including pH, specific gravity, protein, sugar with the dipstick method then the colour of urine was matched with the MV scale.

Statistical Analysis

This study is the first investigation into the correlation between urine colour and *Doshic* involvement in the patients. The results of this study support the hypothesis that urine colour on a scale with different grading is positively correlated with *Doshas* dominance present in patients. Here Correlation coefficient statistical analysis has been done in between the colour codings of urine and *Doshic* involvement in the patients. Correlation coefficient value comes usually in between -1 and 1 to display how strongly two variables are related to each other. So here results show that urine colour can be used to estimate *Doshic* involvement in the patients as seen in the figures (5, 6, and 7) below.

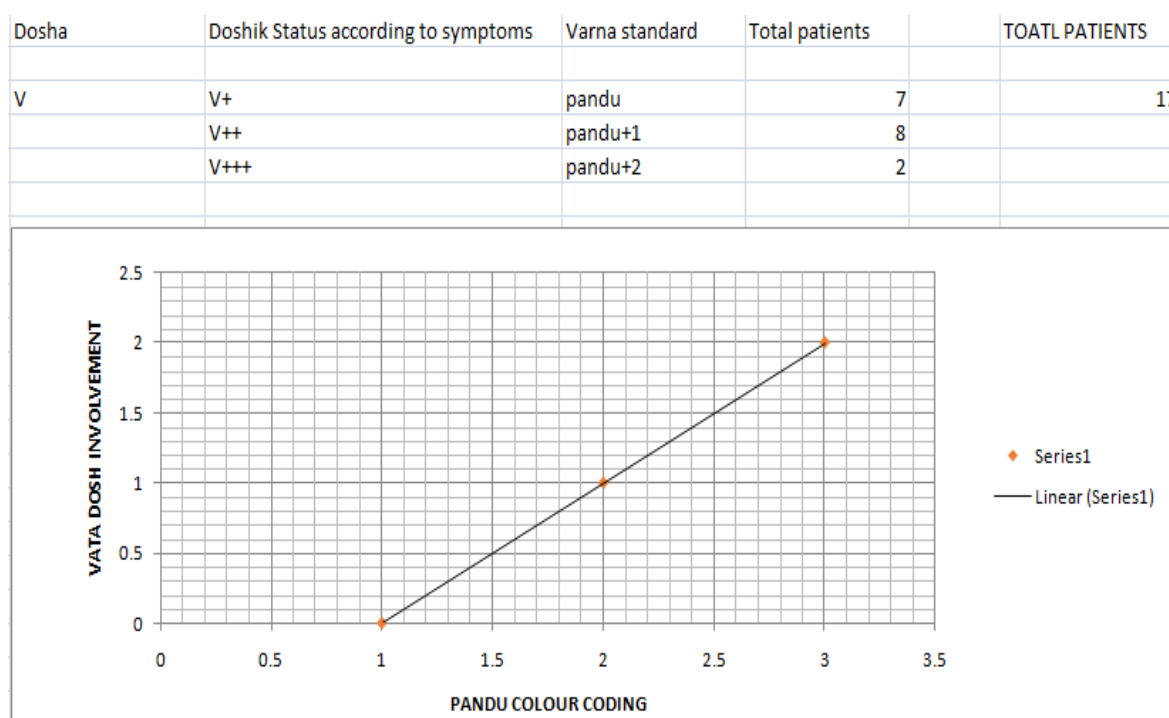
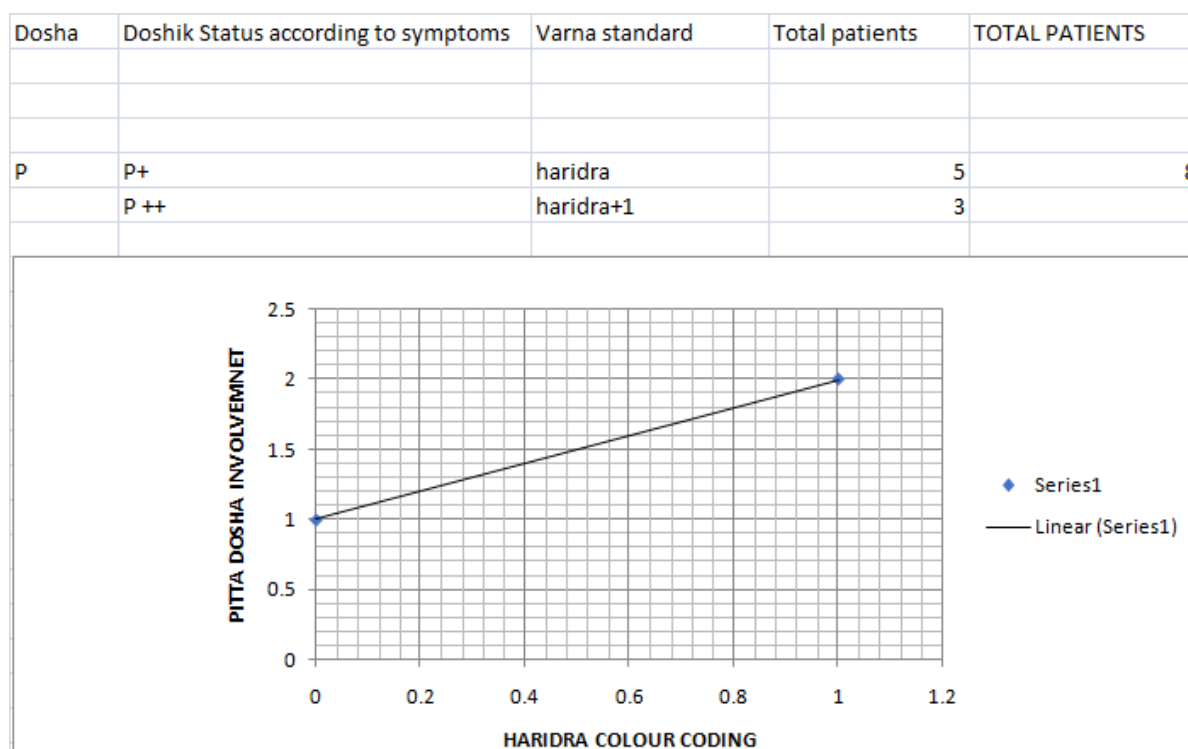
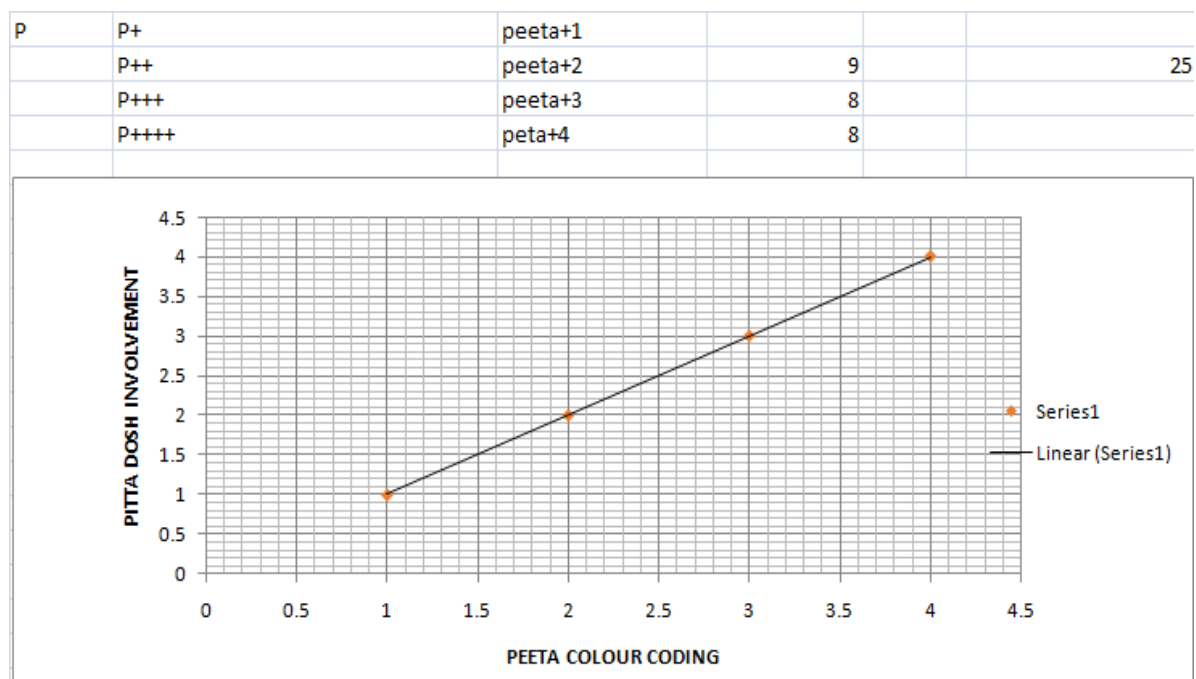


Fig. 5: Shows correlation between *Pandu* colour and Vata Dosh involvement.



RESULTS

The results were analysed on the basis of colour of urine matched with the MV scale and clinical presentation of the individual to know the *Dosha* involvement as per Ayurvedic texts.

Correlation coefficient value comes ($r = 1$) which shows a perfect positive correlation between the urine colour and dominance of *Doshas*, which means that as variability in colour of urine increases on X axis, variability of *Doshas* dominance also increases on Y axis. So, among 102 diseased patients, 25 patients were found of *Vikrita Peeta* colour of urine in different degrees in which *Pittaj Dosha* was dominant. 17 patients were of *Pandu* coloured urine having *Vatik Dosha* dominance and 8 patients of *Haridra Mutra* having *Pitta Dosha* dominance in different diseases. The scale was found to be significantly matching in the diagnosis of involvement of *Doshas* in different degrees based on Ayurveda concepts.

Out of 102 patients 25 patients were found of *Vikrita Peeta* colour of urine in different grading in which *Pittaj Dosha* was dominant in chief complaint and other sign and symptoms. 17 patients were of *Pandu* coloured urine having *Vatik Dosha* dominance and 8 patients of *Haridra Mutra* with different clinical appearance and *Pitta Dosha* dominance having *Pittaj Mutrakriccha*, *Kamla*, *Haridrameha*. The scale was found to be significantly matching in the diagnosis of diseases based on Ayurveda concepts as shown three types of urine colour presentation in the “figure 8”.

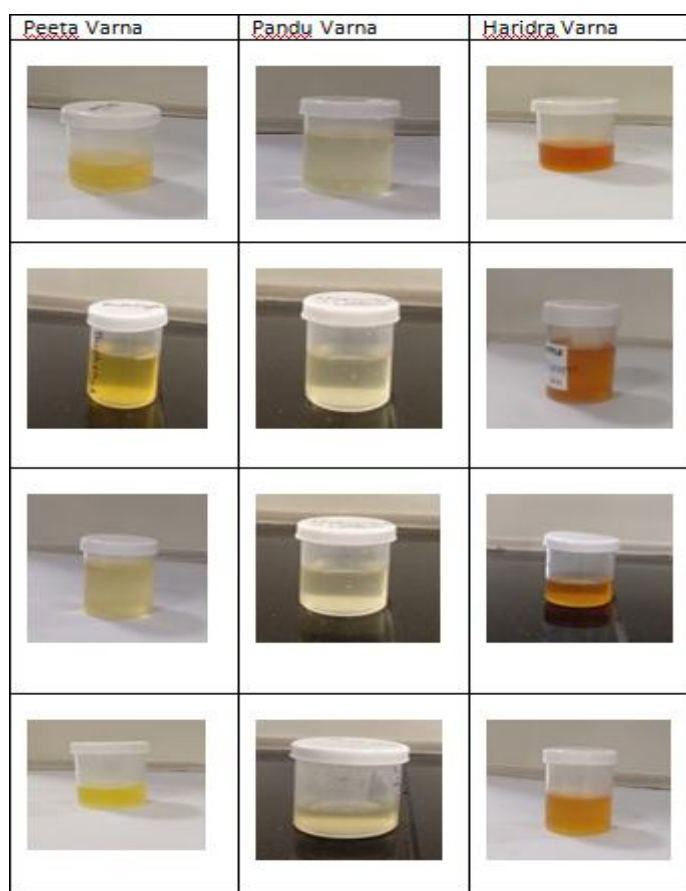


Fig. 8: Showing *Vikrita Peeta*, *Pandu* and *Haridra Varna* of Urine samples.

Urine samples of the patients matched with the MV scale and out of 102 patients total 17 patients were of *Pandu Varna* urine in which 7 is of *Pandu Varna*, 8 is of *Pandu+1*, 2 is of *Pandu+3*, and no urine sample was matched with grading *Pandu+3* from the scale, 25 patients were of *Peeta Varna* in which none of the urine sample is matched with *Peeta+1*, 9 is of *Peeta+2*, 8 is of *Peeta+3* and again 8 is of *Peeta+4*. 8 patients were found of *Haridra Varna* urine in which 5 urine samples is of *Haridra Varna* and 3 were of *Haridra+1* as shown in “table 1”. Routine urine examination was also done by dip stick method for specific gravity, pH, Sugar and protein.

Table 1: Showing three types of urine colour matched with MV scale with different grading.

S. No.	Total Patient	Colour Grading	No. of pts. found	Total pts. With grading
1	102	<i>Pandu</i>	7	17 pts. of <i>Vikrita Pandu Varna</i> urine
		<i>Pandu+1</i>	8	
		<i>Pandu+2</i>	2	
		<i>Pandu+3</i>	-	
2		<i>Peeta+1</i>	-	25 pts. of <i>Vikrita Peeta Varna</i> urine
		<i>Peeta+2</i>	9	
		<i>Peeta+3</i>	8	
		<i>Peeta+4</i>	8	
3		<i>Haridra</i>	5	8 pts of <i>Vikrita Haridra Varna</i> urine
		<i>Haridra+1</i>	3	

DISCUSSION

In this study we present the impact of urine colour changes according to the symptoms of the patients on the concept of Ayurveda, and matched with the MV scale to know the dominance of *Doshas* accordingly. Daily multiple collection of urine sample was taken and asked symptoms of the patients. Collected urine was matched with the MV scale and a significant match was observed in the urine colour with the MV scale according to the dominance of the *Doshic* involvement. According to Ayurveda there are different parameters to assess significant changes in the *Mutra Varna*, *Gandha*, *Pravritti*, *Phena*, *Samhanan*, *Sparsh*, as per symptoms and diseases of the patient given in the classics but urine colour parameter is more valid than others.

CONCLUSION

Acharya Yogratnakar mentioned *Mutra Pariksha* as one of the *Ashtavidha Pariksha* which can become a very essential tool to facilitate the Ayurvedic physician for the diagnosis of the diseases. As urine examination is a non-invasive method which is now days turn out to be a need of an hour in the field of diagnosis. *Mutra Varna Pariksha* is a trouble-free methodology in the community health care where there is no much Equipment is required to assess the diseased condition. In summary this *Pariksha* and MV scale helps to rule out the dominance of particular *Dosha* Involvement according to the symptoms present in the patient with which patient can diagnosed easily with the dominance of *Dosha* and get treatment accordingly.

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