

Diuretic Properties of Different Varieties of Buttermilk (Takra) - In Traditional Medicine

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Abstract:- Mutrala drugs are those drugs which increases the quantity of urine output. Takra is also indicated for mutrakricrata and mutragraha condition. Mutrala dravya causes diuresis by increasing the production of urine which in turn causes easy flow of urine. . Studies shows that most of the mutrala dravya are sita in nature. Here all the varieties of takra except ghola are ushna and ruksha in nature. There exist a paradox in the concept. thus the study was conducted to find the diuresis (mutrala) property of five different varieties of takra explained in bhavaprakasha in experimental animal model. It is concluded that only ghola and takra are diuretic among the five varieties of takrabhedha mentioned in bhavaprakasha which is statistically not significant.

Keywords:- Diuretic, Mutrala, Buttermilk, Takrabhedha.

I. INTRODUCTION

Diuretics are the substance that increase the production of urine. In ayurveda, it can be correlated with mutrala karma. According to ayurvedic concept, amla, ushna ruksha dravyasa are mutrasangrahaneeeya, and mutrala are sita in nature¹. But contrary to the ideology, many acharyas indicated takra in the condition of mutrakrichra and mutragra^{2,3,4,5}. Thus the study was conducted in rats to find out the diuretic action of takrabhedha mentioned in bhavaprakasha.

II. MATERIALS AND METHODOLOGY

Study settings were college of Dairy science and technology Mannuthy, SDM Centre for Research in Ayurveda and Allied Science, Udipi, V.P.S.V Ayurveda College Kottakkal.

Animal species for study: Wistar albino rats (150-250) of either sex from animal house attached to Pharmacology laboratory, SDM Centre for Research in Ayurveda and Allied Sciences, Udipi, Karnataka. Females were nulliparous and non-pregnant. All the animal experiments were carried out in Pharmacology Laboratory, SDM Centre for Research in Ayurveda in Allied Science after the prior permission of Institutional Ethics Committee. The experimental protocol was approved by the Institutional Ethics Committee of SDM Centre for Research in

Ayurveda and Allied Sciences, SDM College of Ayurveda Campus, Kuthpady, Udipi on 14/03/2017. Approval No: SDMCRA/IAEC/CPCSEA/KT-05, after exemption of research proposal by IEC, V.P.S.V. Ayurveda College, Kottakkal, as per proceedings of NO: IEC/CI/05/16; dated 28-04-2016.

Animals were acclimated to laboratory environment for seven days prior to the onset of experiment. Total 3 animals of either sex with an average weight between 150 and 250 mg were selected and grouped as one and they were kept in separate metabolic cages after proper labelling. Like this 18 rats were randomly selected and divided into 5 groups. Dose calculation was based on standard reference Paget's and Burn's table (1964). Wistar Albino rats: Human Dose x 0.0118 x 5 = 'X' g/kg x Animal body weight. And was fixed as 30 ml. Fixed dose of sample was administered orally through libitum in polypropylene bottles with stainless steel sipper tube. Drug was administered for 7 days for the study.

Mode of drug preparation: The different Takrabhedās were prepared at the Laboratory, SDM research Centre, Udipi and laboratory settings of V.P.S.V Ayurveda College, Kottakkal, daily for experimental and analytical study respectively. (As per the standardized procedure.)

➤ *Standardisation of procedure for preparation of takrabhedas⁶:*

The milk used for the preparation of the *Takrabhedā* was procured from the Safa Farm, Chudalapaara, and Kottakkal. A cow was selected and milk was collected from that particular cow every day at same time, at 3 pm and it was boiled in vessel by keeping it over water in a sterilizer and was allowed to cool down to 37° C. At that particular temperature the milk was inoculated with two buttermilk starter cultures designated as *L.acidophilus* and yogurt culture. (5 ml of *L. acidophilus* and 5 ml of yogurt culture for 1000 ml of milk). inoculation was done at 9 pm and kept overnight kept for 15 hours and pH of the buttermilk was continuously observed with pH meter and when the pH became 4.5, the curd obtained was taken and churned using Mathana Yantra. The churning time was standardized as 30 minutes, (as after 30 minutes of churning when buttermilk samples were analyzed for fat content it was nearly 0.1-0.2%).

- *Ghōla*⁷: churned for 30 minutes without addition of water and butter was not removed.
- *Mathita*⁷churned for 30 minutes without the addition of water and removed the butter.
- *Takra*⁷churned for 30 minutes by adding 25 ml of water for 100 ml of curd and removed the butter.
- *Udaśvit*⁷ churned for 30 minutes by adding 50 ml of water for 100 ml of curd and removed the butter.
- *Caccika*⁷churned for 30 minutes by adding 100 ml of water for 100 ml of curd and removed the butter.

Five varieties were taken in five sterile bottles and were transported to College of Dairy Science and technology Mannuthy in ice box filled with ice packs, for Analytical study.

Rats were placed in separate metabolic cages. 100 gram of food and 150 ml of water were measured and given to each rats separately. Measurement was done on a particular time every day (9:00am)In this phase, da, was measuredly urine output was measured on routine basis. The procedure was continued up to 5 days.

➤ *Experimental Phase:*

In this phase animals was administered the drug as per the calculated doses. Experiment was done successively in the order of *Ghōla*, *Mathita*, *Takra*, *Udaśvit* and *Caccika*.Daily urine output was measured for ten consecutive days.

III. STATISTICAL ANALYSIS

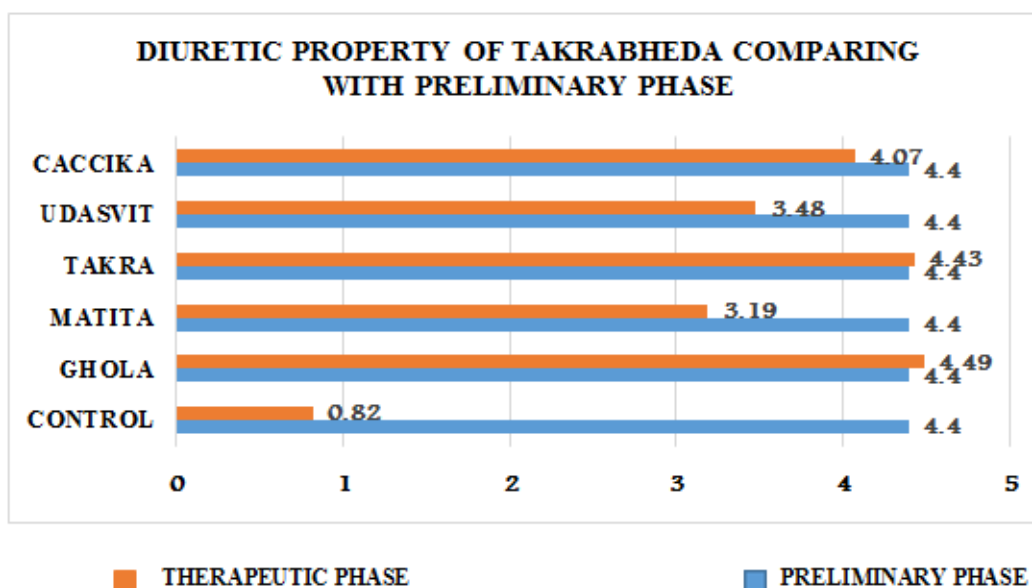
Result was statistically analyzed by ANOVA followed by Dunnet multiple comparison as post hoc test, if p<0.05 using graph pad instant software and by ANOVA followed by Tukey Kramer as post hoc test, if p<0.05 using graph pad instant software

➤ *Effect of Takrabhēdās on Urine Output With Data Presented In Relative Values Comparing With Control:*

GROUP	Urine output in ml/ 100 g body weight			Value of Sig.	P value
	P Phase MEAN±SEM	T Phase MEAN± SEM	% change		
Control	4.40± 0.36	0.82±0.10##			
<i>Ghōlam</i>	4.40± 0.36	4.49±1.01**	447.56↑	**	P<0.01
<i>Mathitam</i>	4.40± 0.36	3.19±0.86##*	289.02↑	*	P<0.05
<i>Takra</i>	4.40± 0.36	4.43±0.51**	440.24↑	**	P<0.01
<i>Udaśvit</i>	4.40± 0.36	3.48±0.50**	324.39↑	**	P<0.01
<i>Caccika</i>	4.40± 0.36	4.07±0.31**	396.34↑	**	P<0.01

*P<0.05,**P<0.01-Compared with control##P<0.01-Compared with preliminary phase

Table 1:- One way ANOVA of Relative value of Urine Output with Control:



Graph 1:- Comparison of Relative value of Urine Output with Control

The data shows that there is statistically very significant increase in the therapeutic value of urine output, of *Ghōlam*, *Takra* *Udaśvit* and *Caccika*, when compared to the therapeutic phase of the control. There is statistically significant increase in the therapeutic phase of urine output, of *Mathitam* when compared to the therapeutic phase of control group. There is statistically non-significant increase in the therapeutic phase of *Ghōla*, *Takra* when compared to the preliminary phase of the same group. There is a decrease in the therapeutic phase of *Mathitam* when compared to the preliminary phase of the same group the result is statistically very significant. There is statistically non-significant decrease in the therapeutic phase of urine output *Udaśvit* and *Caccika* when compared to the preliminary phase of the same group.

➤ *Effect of Takrabhēdās On Urine Output With Data Presented In Relative Values Comparison With In The Group*

GROUP	P Phase MEAN±SEM	T Phase MEAN± SEM
<i>Ghōlam</i>	4.40± 0.36	4.49±1.01
<i>Mathitam</i>	4.40± 0.36	3.19±0.86
<i>Takra</i>	4.40± 0.36	4.43±0.51
<i>Udaśvit</i>	4.40± 0.36	3.48±0.50
<i>Caccika</i>	4.40± 0.36	4.07±00.31

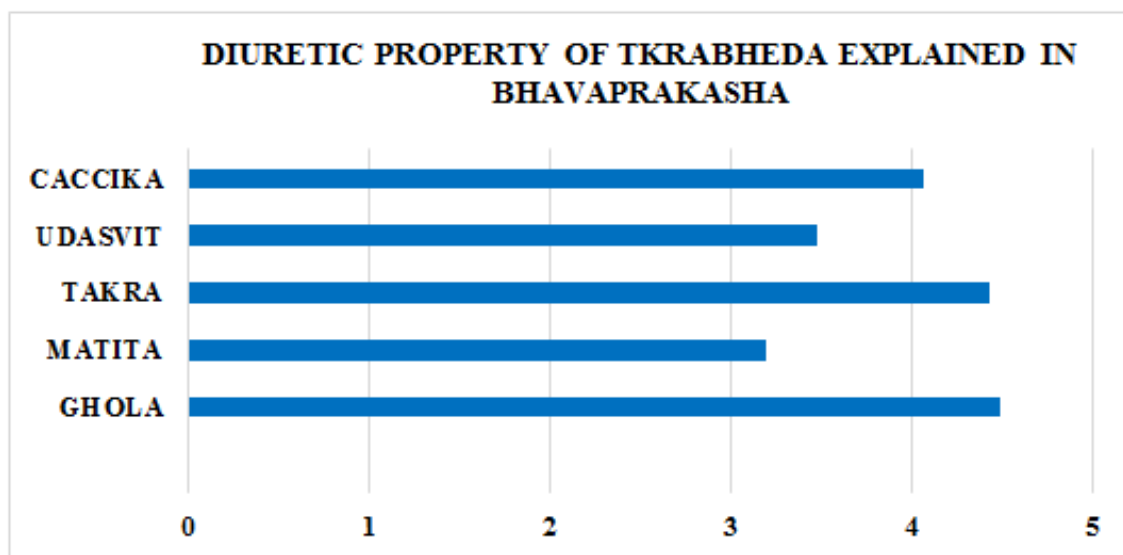
P<0.05,P<0.01-Compared within group ,P<0.01-Compared with preliminary phase

Table 2:- One way ANOVA of Relative value of Urine Output with Group

Group	Group v/s	Value of Sig.	P value
<i>GHŌLA</i>	<i>Mathitam</i>	*	P<0.05
	<i>Takra</i>	NS	P>0.05
	<i>Udaswith</i>	NS	P>0.05
	<i>Caccika</i>	NS	P>0.05
<i>MATHITA</i>	<i>Takra</i>	*	P<0.05
	<i>Udaśvit</i>	NS	P>0.05
	<i>Caccika</i>	NS	P>0.05
<i>TAKRA</i>	<i>Udaśvit</i>	NS	P>0.05
	<i>Caccika</i>	NS	P>0.05
<i>UDASVIT</i>	<i>Caccika</i>	NS	P>0.05

P value is 0.0095 is considered very significant.

Table 3:- Post Hoc Test of Relative value of Urine Output with Group



Graph 2:- Comparison of Relative value of Urine Output with Group

Compared to *Ghōlam*, *Mathitam* showed significant decrease and *Takra* and *Udaśvit*, showed non-significant decrease in urine out. Compare to *Mathitam*, *Takra* showed significant increase and *Udaśvit* and *Caccika* showed non-significant increase. Compared to *Takra*, *Udaśvit* and *Caccika* showed non-significant decrease in urine output. Compared to *Udaśvit*, *Caccika* showed non-significant increase in urine output. Compared to *Mathitam*, *Takra* showed significant increase and *Udaśvit* and *Caccika* showed non-significant increase in urine output.

IV. RESULT AND DISCUSSION

Results shows that comparing to the preliminary phase only, ghola and takra variety showed increase in urine output, rest others showed decrease in urine output. This shows takrabhedha is not having diuretic property. But comparing to control group all other groups fed with different varieties of takra showed significant increase in urine output. This shows takra is more diuretic than water. The decrease in urine output of takrabhedha might be because of its kashaya amla rasa and ruksha guna and amla or katu vipaka². In a study on action of takrabhedha on water intake showed that, the group of rat fed with normal water showed decrease in water intake than other groups which are fed with five different varieties of takrabhedhas explained in bhavaprakasha⁸. As the water intake is less urine output also will be less, this might be the reason for the decrease in urine output in control group. Out of the five varieties of takra, ghola and takra variety showed increase in urine output which is not statistically significant, but this slight increase in ghola might be because of its snigdha, sita guna than water⁶. Some ushna guna dravyas are also mutrala as it increases the production of urine by removing srothorodha. This might be the reason for mutrala property of takra as studies shows that takra variety is most ushna among the five varieties.⁶

V. CONCLUSION

It is concluded that varieties of takrabhedha are not much effective as diuretic. But all five varieties of takra explained in bhavaprakashashowed increase urine poutput compairing to water. Among the takrabhedha Ghola and Takra showed diuretic property. Snigdha, sita property of Ghola might have increased the urinary output.

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