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A COMPARATIVE EXPERIMENTAL STUDY OF *GUDUCHI GHANA VATI* PREPARED FROM FRESH AND DRY *GUDUCHI* W.R.T ANTIPYRETIC EFFECT

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ABSTRACT

Background and objective: *Guduchi ghana vati* is widely used in the clinical practice. As per classical reference the drug *Guduchi* should be always used in fresh form. Most of the pharmacy due to unavailability of fresh *Guduchi*, using dry *Guduchi* during preparation of *Guduchi ghana vati*. Hence the present study was undertaken to evaluate the Antipyretic activity of *Guduchi ghana vati* prepared from fresh and dry *Guduchi* in Wistar Albino rats. **Methodology:** An experimental study was conducted to evaluate antipyretic activity by taking 4 groups with 6 Wistar Albino rats in each group. The results were then analyzed statistically. **Results:** Fresh *Guduchi ghana vati* and Dry *Guduchi ghana vati* group had highly significant antipyretic activity compare to control group. **Interpretation and conclusion:** Among both the samples dry *Guduchi ghana vati* group is therapeutically more effective. This may be due to *shushka dravyas* are *guru* and *tikshna* in nature. The reason may be presence of phytoconstituents more in dry *Guduchi ghana vati*.

KEYWORDS: *Guduchi ghana vati*, fresh, dry, *fever*.

INTRODUCTION

In ayurveda classics, *Jwara* expained in detail as a separate disease.[1] It is defined as having an abnormally high body temperature[2], usually accompanied by shivering, headache and in

severe instances delirium. *Guduchi* is most commonly prescribed drug in the treatment of jwara. In siddhayoga sangraha, *Guduchi* ghana vati[3] was mentioned in the context of *Jwara chikitsa*. As per *Acharya Sharangadhara* the drug *Guduchi* should be always used in fresh form.[4] Due to the seasonal availability of the drug, it is difficult to procure the drug throughout the year. Hence Majority of the pharmaceutical companies using 'dry form' of the drug for the preparation. Thus, the present study was planned to evaluate comparative antipyretic effect of *Guduchi* ghana vati prepared from fresh & dry *Guduchi* by experimental study on Wistar albino rats.

MATERIAL AND METHODS

Drug and chemicals

Raw drug required for the preparation of *Guduchi ghana vati* was collected near Udupi and authentified by Dravya guna department. Preparation of *Guduchi ghana vati* from fresh and dry *Guduchi* was carried out in the laboratory of Dept. of Rasashatra and Bhaishajya kalpana, S.D.M College of Ayurveda, Udupi.

Preparation of test drugs

For preparation of Fresh *Guduchi ghana vati*, The Previously prepared *Guduchi Kwatha* from fresh *Guduchi* was taken in a stainless steel vessel and kept on a gas stove. Boiling was done till it attained semisolid consistency. Once it attained semisolid consistency, it was taken out of fire and kept for drying in sunlight. After removal of moisture content, rolled into pills of 500mg size, dried and stored.

For preparation of dry *Guduchi* ghana vati, The Previously prepared *Guduchi kwatha* from dry *Guduchi* was taken in a stainless steel vessel and kept on a gas stove. Boiling was done till it attained semisolid consistency. Once it attained semisolid consistency, it was taken out of fire and kept for drying in sunlight. After removal of moisture content, it was rolled into pills of 500mg size, dried and stored.

Experimental Animals

Wistar strain albino rats were selected from animal house of SDM- Centre for Research in Ayurveda and Allied Sciences – Udupi. The rats were maintained under strict laboratory conditions, controlled with environmental, temperature, humidity & light dark cycles. Rats were fed with balanced pelleted diet commercially obtained from pranav agro industries pune

& water ad libitum. The experimental protocol was approved by the institutional animal ethical committee.

Experimental design[5]

Pyrexia was induced by subcutaneous injection of 1ml/100g of 12.5% yeast suspension in normal saline solution. The drug were administered after 18th h of yeast administration. The rectal temperature was recorded by using digital tele thermometer for consecutive 5h and 24 h of yeast administration.

Table 1: Grouping of wistar albino rats for experimentation.

Sl. No	Group	No. Of rats	Drug
1.	Control	6	No drug
2.	Reference standard	6	Paracetamol
5.	Test – III	6	Fresh *Guduchi ghana vati*
6.	Test – Iv	6	Dry *Guduchi ghana vati*

Data will be expressed as mean ±SEM and the data will be analyzed by one way ANOVA followed by Dunnet's multiple 't' test.

RESULTS

Table 2: Effect of fresh *Guduchi ghana vati* & dry *Guduchi ghana vati* during 1st hour of temperature.

GROUP	1 ST HOUR	% CHANGE
Control	38.81±0.311	--
Reference Standard	38.61±0.204	0.51↓
Fresh *Guduchi* ghana vati	38.63±0.162	1.15↓
Dry *Guduchi* ghana vati	38.05±0.204*	1.95↓

Data : MEAN ±SEM, *P<0.05

Table 3: Effect of fresh *Guduchi ghana vati* & dry *Guduchi ghana vati* during 2nd hour of temperature.

GROUP	2nd HOUR	% CHANGE
Control	38.83±0.393	--
Reference Standard	38.41±0.162	1.08↓
Fresh *Guduchi* ghana vati	38.56±0.192	0.69↓
Dry *Guduchi* ghana vati	37.73±0.233**	2.86↓

Data : MEAN ±SEM, **P<0.01

Table 4: Effect of fresh *Guduchi ghana vati* & dry *Guduchi ghana vati* during 3rd hour of temperature.

GROUP	3rd HOUR	% CHANGE
Control	38.55±0.334	--
Reference Standard	38.41±0.157	0.36↓
Fresh *Guduchi* ghana vati	38.43±0.168	0.31↓
Dry *Guduchi* ghana vati	37.63±0.230**	2.37↓

Data : MEAN ±SEM, **P<0.01

Table 5: Effect of fresh *Guduchi ghana vati* & dry *Guduchi ghana vati* on 4th hour of temperature.

GROUP	4th HOUR	% CHANGE
Control	38.9±0.378	--
Reference Standard	38.03±0.021	2.23↓
Fresh *Guduchi* ghana vati	38.56±0.183	0.87↓
Dry *Guduchi* ghana vati	37.68±0.263**	3.13↓

Data : MEAN ±SEM, **P<0.01

Table 6: Effect of fresh *Guduchi ghana vati* & dry *Guduchi ghana vati* on 5th hour of temperature.

GROUP	5th HOUR	% CHANGE
Control	38.71±0.364	--
Reference Standard	38.03±0.226	1.75↓
Fresh *Guduchi* ghana vati	38.56±0.244	0.38↓
Dry *Guduchi* ghana vati	37.6±0.208*	2.86↓

Data : MEAN±SEM, *P<0.05

Table 7: Effect of fresh *Guduchi ghana vati* & dry *Guduchi ghana vati* on 24th hour of temperature.

GROUP	24th HOUR	% CHANGE
Control	38.6±0.186	--
Standard	37.95±0.125	1.68↓
Fresh *Guduchi* ghana vati	38.1±0.175	1.29↓
Dry *Guduchi* ghana vati	37.5±0.230**	2.84↓

Data : MEAN +SEM, **P<0.01

DISCUSSION

In modern term, jwara may be compared with pyrexia. lesion of hypothalamus may cause fever by interfering of either the thermo sensory center or the hypothalamic areas which regulate heat loss and heat production. Yeast induced pyrexia method was selected due to the convenience and availability of animals. Brewers yeast is a fungi containing of gram negative

bacteria, which are responsible for rise of temperature above normal. It causes thermo-genesis resulting in hyperpyrexia. Pharmacological studies conducted on *Guduchi* revealed that it has Immunomodulator activity, Anti-toxic activities, Antipyretic activity, Anti inflammatory activity, memory enhancing activity and Antidiabetic activity etc.

Experimental study

During 1st hour of observation after administration of drug, the change of percentage was found to be decrease in dry *Guduchi ghana vati* groups significantly and reference standard and fresh *Guduchi ghana vati* group had a non significant decrease of rectal temperature when compared to control group.

During 2nd hour of observation after administration of drug, the change of percentage was found to be decrease in dry *Guduchi ghana vati* group had a highly significant decrease of rectal temperature when compared to control group. Reference standard and fresh *Guduchi ghana vati* groups showed a minimal decrease of rectal temperature which was non significant.

During 3rd hour of observation after administration of drug, the change of percentage was found to be decrease in fresh *Guduchi ghana vati* and reference standard group non significant when compared to control group. Dry *Guduchi ghana vati* group had a very significant decrease of rectal temperature when compared to control group.

During 4th hour of observation after administration of drug the change of percentage was found to be decrease in dry *Guduchi ghana vati* group very significantly when compared to control group. Reference standard and fresh *Guduchi ghana vati* had a non significant decrease of rectal temperature.

During 5th hour of observation after administration of drug the change of percentage was found to be decrease in dry *Guduchi ghana vati* group significantly when compared to control group. Reference Standard and fresh *Guduchi ghana vati* had a non significant decrease of rectal temperature.

During 24th hour of observation after adminisration of drug the change of percentage was found to be decreased in dry *Guduchi ghana vati* group very significantly when compared to control group. fresh *Guduchi ghana vati* and reference standard group had a non significant decrease of rectal temperature.

The data obtained from the present study clearly indicates that both the test group have antipyretic activity. *Guduchi ghana vati* prepared from dry is more effective in comparison to prepared from fresh *Guduchi*.

Probabale mode of action

The root cause for manifestation of jwara is *Ama*. *Deepana* and *Pachana* property of *Guduchi* will help to resolve the *mandagni* of *jwara*. The major *dosha* involved in *jwara* is *pitta dosha*. The drug *Guduchi* is having *tikta* and *kashaya rasa* which helps in pacifying *pitta dosha* and *srotoshodhana*. It has *rasayana* property which will work in cellular level and has the capacity to reduce the inflammatory changes in cell.

In Contemporary science, antipyretic action of any drug to resolve pathogenesis of fever can be;

- By decreasing the synthesis of prostaglandins induced by interlukin- 1 and interlukin – 6 in the hypothalamus.
- By resetting of the thermoregulatory system, leading to vasodilation and increased heat loss.

CONCLUSION

Guduchi ghana vati is widely practiced in the management of *jwara*. According to classical reference *Guduchi* should always be used in fresh form. At all times fresh drug is not available, which is problematic to physicians in day to day clinical practice. So *Guduchi ghana vati* was prepared from fresh and dry *Guduchi* for this study. The present study clearly indicates that both the test groups have antipyretic activity. But *Guduchi ghana vati* prepared from dry *Guduchi* showed more antipyretic activity in comparison to those prepared from fresh *Guduchi*. This may be due to the guru and tikshna gunas of shushka dravyas.[6] It may attribute to the presence of more phytoconstituents in dry *Guduchi ghana vati***.**

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