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## A Comparative Pharmaceutico-Analytical study of *Guduchi Kwatha* Prepared from Fresh and Dry *Guduchi*

Vidyashree<sup>1\*</sup>, Ashok Kumar B N<sup>2</sup>, Radhika Ranjan Geethesh P<sup>3</sup> and Ravindra Angadi<sup>4</sup>

<sup>1-4</sup>Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda & Hospital, Kuthpady, Udupi, Karnataka, India

### ABSTRACT

**Background and Objective:** *Guduchi Kwatha* is indicated in the treatment of *Jwara*. As per *Acharya Sharangadhara* the drug *Guduchi* should be always used in fresh form. Due to the seasonal availability of the drug, it is difficult to procure the drug throughout the year. Hence the present study was undertaken to compare pharmaceutical and analytical study of *Guduchi Kwatha* prepared from fresh and dry *Guduchi*. **Aims and objectives:** To study the organoleptic characters and evaluation of *Guduchi kwatha* prepared from fresh and dry *Guduchi* in terms of physico-chemical analysis and chromatographical parameters.

**Material and Methods:** preparation of *Guduchi Kwatha* from fresh and dry *Guduchi* was carried out according to *sharangadhara samhita*, both samples were subjected to physico-chemical analysis. **Conclusion:** The analytical parameters of both *Guduchi Kwatha* were almost similar but Total solids was more in DGK which denotes that its active constituents are more.

### KEYWORDS

*Guduchi Kwatha, Jwara, Fresh, Dry*



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## INTRODUCTION

*Guduchi* is one such drug which is renowned for its therapeutic effect on *Jwara*. It is indicated in wide range of diseases due to its *deepana*, *pachana*, *tridoshagna* and *rasayana* properties<sup>1</sup>. *Acharyas* have explained that the single drug *Guduchi* can be used therapeutically in various forms. *Guduchi Kwatha*<sup>2</sup> taken here is indicated in the treatment of *Jwara*. In present clinical practice *Kwathas* were abundantly used. As per *Acharya Sharangadhara* the drug *Guduchi* should be always used in fresh form<sup>3</sup>. Due to the seasonal availability of the drug, it is difficult to procure the drug throughout the year. Hence Majority of the pharmaceutical companies use 'dry form' of the drug for the preparation. Thus, the present study was planned to standardise the *Guduchi kwatha* prepared from fresh and dry *Guduchi* through analytical parameters.

## AIMS AND OBJECTIVES

To analyse the sample of *Guduchi kwatha* prepared from fresh and dry *Guduchi* by using suitable parameters. To assess the comparative HPTLC profile of *Guduchi Kwatha* prepared from fresh and dry *Guduchi*.

## MATERIALS AND METHODS

### Collection of raw drug

Raw drug required for the preparation of *Guduchi Kwatha* was collected near Udupi and authenticated by *Dravya guna* department. Preparation of *Guduchi Kwatha* 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.

### Method of collection of data

*Guduchi Kwatha* from fresh and dry *Guduchi* was prepared according to *Sharangdhara Samhita*.

### Preparation of fresh *Guduchi kwatha*(FGK)

Fresh *Guduchi* stem was collected from udupi. Stems were cleaned and cut into small pieces. The crushed stems were put into copper vessel and 8 litres of water was added to it and boiled over mild fire. When the water quantity reduced to 1/4<sup>th</sup> part, it was filtered using a cotton cloth. Filtered *Kwatha* was taken in a separate vessel and residue in the cloth was discarded. The ingredients of fresh *Guduchi kwatha* is mentioned in table 1.

**Table 1** Ingredients of Fresh *Guduchi kwatha*

Sl.no	Ingredients	Part used	quantity
1.	Fresh <i>Guduchi</i>	Stem	2kg
2.	Water		8 lit

### Preparation of Dry *Guduchi kwatha* (DGK)

Fresh *Guduchi* stem was collected from udupi. Stems were cleaned and dried thoroughly under sunlight. Dry *Guduchi*



stems were made into coarse powder using pounding machine. The coarse powder of *Guduchi* was put into copper vessel and 16 parts of water was added to it. When water quantity was reduced to 1/8<sup>th</sup> part, it was filtered using a cotton cloth. Filtered *Kwatha* was taken in a separate vessel and residue in the cloth was discarded. The ingredients of dry *Guduchi kwatha* is mentioned in table 2.

**Table 2** Preparation of Dry *Guduchi kwatha*

Sl.no	Ingredients	Part used	quantity
1.	Dry <i>Guduchi</i>	Stem	2kg
2.	Water		32 lit

### Precautions:

During the process, mouth of the vessel was not covered with lid.

Moderate fire was maintained throughout the preparation.

Stirring was done to avoid charring of the ingredients.

### Analytical study:

Analytical study was conducted to understand the nature of the compounds of the prepared samples. Both samples were subjected to evaluate organoleptic characters, physico-chemical analysis and HPTLC profile to develop possible analytical profile.

## RESULTS

Both the samples were prepared according to classical reference. Observation during

preparation is mentioned in table 3 and organoleptic characters and physico-chemical analysis of both samples are explained in table 4 and 5.

**Table 3.** Comparison of observation of FGK and DGK

Parameters	FGK	DGK
<i>Guduchi</i>	2 kg	2kg
Total quantity of water	8 litre	32 litres
Temperature given	80 – 90 <sup>o</sup> c	80 – 90 <sup>o</sup> c
Time taken for the reduction	2hr 15min	6 hrs
Total quantity of <i>kashaya</i> obtained	2 litre	4 litre

**Table 4** Organoleptic characters of FGK and DGK

Parameter	FGK	DGK
Colour	Dark green	Brown
Odour	Characteristic smell	Characteristic smell
Taste	Bitter	Bitter
Appearance	Liquid	Liquid

**Table 5** Results of standardisation parameters of FGK and DGK

Parameter	Results n = 3	%w/w
	<i>Guduchi Kwatha</i> (Fresh)	<i>Guduchi Kwatha</i> (dry)
pH	5.40	5.54
Refractive index	1.33379	1.33579
Specific gravity	0.9731	1.0226
Viscosity	1.46	2.61
Total solids (%)	3.34	3.51

## DISCUSSION

### Pharmaceutical study

The raw drug required for the study was procured from Udupi and were again verified by the scholars of dravyaguna Department of SDM College of Ayurveda, Udupi. The botanical source of *Guduchi*



taken for the study was *Tinospora cordifolia*.

#### **Preparation of Fresh *Guduchi Kwatha***

Fresh *Guduchi* sample was collected and weighed. It was then washed to remove any external impurities. The *Guduchi* stem was then chopped into small pieces and crushed slightly using *Khalwa yantra*. Four parts of water was added to it as *Guduchi* is considered as *Mrudu dravya*. Crushed *Guduchi* was put into boiling water in order to avoid spoilage. Extraction was considerably less due to large particle size. The procedure was completed in 2hrs 15minutes and the volume of end product was 2L. The temperature maintained throughout the procedure was between the range of 80–90<sup>0</sup>c. After reducing 1/4<sup>th</sup> part, it was filtered through a clean cloth.

#### **Preparation of Dry *Guduchi Kwatha***

A pilot study was carried out to fix the ratio of the water. In the pilot study it was found that the quantity of water required for the preparation of *Kwatha* from dry *Guduchi* was more than that required for preparation of *Kwatha* from fresh *Guduchi*. This change in quantity might be due to the loss of moisture content from the drug during the drying process which was replaced by air and further lead to the shrinkage of the cell walls of the drug. Initially freshly collected *Guduchi* was dried and made into coarse powder. Here, since

the particle size was reduced to *yavakuta churna*, the extraction of active principles might have increased. The procedure was completed in 6hrs and the quantity of the obtained end product was 4 litres. The temperature maintained throughout the procedure was between the range of 80 – 90<sup>0</sup>c. When it reduced to 1/8<sup>th</sup>, it was filtered through a clean cloth.

#### **Analytical study**

Analytical study was carried out to know the physico chemical changes in both the samples.

The favourable range of pH for absorption in the Gastrointestinal tract is 5-7. The pH of FGK and DGK was found to be 5.40 and 5.54 respectively which is favourable for easy absorption throughout the GIT. Refractive index of a substance is a dimensionless number that describes how light, or another radiation, propagates through that medium. Refractive index of FGK and DGK was 1.33379 and 1.33579, respectively. Viscosity of FGK was 1.46 and DGK was 2.61. This might be because of increased amount of active principles which might have been extracted into water. The total solid content determines the amount of active constituents in a given sample of drug. The total solid content of FGK was 3.34 whereas DGK was 3.51.

#### **HPTLC**

#### **R<sub>f</sub> value at short UV**



HPTLC of FGK showed one spot at the  $R_f$  value 0.08 while DGK showed 2 spots at the  $R_f$  value 0.08, 0.24. The alkaloid at spot with  $R_f$  value 0.08 was common in both.

#### **At long UV**

HPTLC of FGK showed one spot at 0.11 whereas DGK showed three spots at  $R_f$  values 0.17, 0.24 and 0.47.

#### **After derivatisation**

HPTLC of FGK showed one spot at the  $R_f$  value 0.11 while DGK showed four spots at the  $R_f$  value 0.11, 0.61, 0.73 and 0.87. The alkaloid at spot with  $R_f$  value 0.11 was common in both.

#### **Densitometric scan at 254nm**

DGK showed maximum area at  $R_f$  value 0.04 i.e 44.18% and 53.55%. DGK showed maximum area at  $R_f$  value 0.02 i.e 59.95% and 68.70%.

#### **Densitometric scan at 366nm**

FGK showed maximum area at  $R_f$  value 0.03 i.e 94.88% and 98.87%. DGK showed maximum area at  $R_f$  value 0.03 i.e 72.07% and 76.53%.

#### **Densitometric scan at 620nm**

FGK showed maximum area at  $R_f$  value 0.17 i.e, 25.01% and 31.09%. DGK showed maximum area at  $R_f$  value 0.08 i.e 31.59% and 34.66%.

## **CONCLUSION**

In the pharmaceutical study of Guduchi Kwatha prepared from fresh and dry

Guduchi, the final product obtained was more from dry sample of Guduchi. The analytical parameters of both the samples of Guduchi Kwatha were almost similar but total solid was more in DGK which denoted that its active constituents were more.



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