

### Research Article

## Physico-chemical analysis of Vatari Guggulu

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Article Received on: 03/12/2019 Accepted on: 27/09/2019 Published on: 31/12/2019

### ABSTRACT:

*Ayurveda* is the ancient system of healthcare, native to Indian sub-continent. To set the SOP for *Vatari Guggulu*, we prepared its two pilot samples and three another batches. To standardize the sample on physico-chemical parameters it was tested in analytical laboratory and results were documented.

As a pharmaceutical and physico-chemical analysis there were no much more difference found in all three samples of *Vatari Guggulu*.

*Vatari Guggulu* was prepared by following the method prescribed in *Bhaishajya Ratnavali* with required changes in SOP. Analytical study revealed the uniformity of the procedures in all the three samples, as evidenced by the observation of the analytical values of the three samples were not much variation found.

**KEY WORDS:** *Vatari Guggulu*, Standardization, pharmaceutical study, analytical study

### INTRODUCTION:

Recent implementation of GMP properly emphasizes the reorientation of drug standardization in the field of Indian Medicine especially pharmaceutical aspects which is media of drugs availability. During the process of standardization one has to concentrate on safety and efficacy of drug, a non-infect and physically non-damaged raw material with its fullest potency is a prerequisite for production of a safe and effective drug. The selected drug following all the methods mentioned in classical texts as well as the latest guidelines issued by the Government.

Standards are living documents, which reflect science, technology & system.

To maintain their value they should be first decided, achieved, set and then periodically, reviewed to maintain their currency. In this attempt to set process standardization in the preparation of *Vatari Guggulu* three batches of trial drug were prepared and analysed. While actually testing the utility of any pharmaceutical process, it should be viewed with two aspects.

- The first is inherent in the process and the materials it involves. They are such that they actually do not much alter the results.
- The other aspect is of handling this process & materials. If the process along with the materials involved is very vulnerable to time, space, season, gravitational pull, heat man handling etc. then there is every possibility that it will not yield constant & persistently uniform results over a period variation or place variation.

### OBJECTIVES OF THE STUDY:

1. To validate the standard method of preparation of *Vatari Guggulu*.
2. To find out difficulties in the preparation.
3. To know difference in *Vatari Guggulu* prepared in three different batches at pharmaceutical grounds.

**MATERIALS AND METHODS:**

All the raw materials were procured from local market.

Pharmaceutical processes carried out during the study are as follows –

- Removing foreign matter from crude drug.
- Preparation of *Triphala Churna*<sup>[1]</sup>
- *Guggulu Shodhana*
- *Gandhaka Shodhana*
- Preparation of powders of crude drug
- Preparation of *Vatari Guggulu* pills (*vati*)

***Guggulu Shodhana***<sup>[2]</sup>

This was done under two batches.

**Batch I** - Ayurvedic formulary of India 1st edition P. 55 (little modified). As in *AFI Shodhana* was mentioned with *Dolayantra* method but here we didn't apply this method.

**Batch II** - *Vrudha Vaidhya Parampara*.

Results of *Guggulu shodhana* were documented in **Table No. 1**.

***Gandhaka Shodhana***<sup>[3]</sup>

*Gandhaka shodhana* was done according to the reference of *Rasaratna samucchaya*.

Results shown in **Table No. 2**.

**Preparation of *Vatari Guggulu* pills (*vati*)**<sup>4</sup>

According to the standardization point of view three samples of *Vatari guggulu* were prepared. i.e. same ingredients in same proportion for all three samples were used.

To know the exact proportion of *Eranda tail* to made *vati*, two samples for pilot study were prepared and one quantity was fixed for study sample

Reference: - *Bhaishajya Ratnavali*. Results shown in **Table No. 3**.

**Table No. 1: Showing results of *Guggulu Shodhana***

Sr. No.	Observations	Batch I	Batch II
1	<i>Ashudha Guggulu</i>	1.5 kg	1.5 kg
2	<i>Triphala kwatha</i>	5 lit.	5 lit.
3	Yield obtained	1710 g	1890 g
4	Expected yield*	2050g	2050g
5	Residue found	365 g	80 g
6	Net loss in yield	460 g	186 g
7	Colour	Black	Black
8	Odour	Aromatic smell	Aromatic smell
9	<i>Rasa</i>	<i>Tikta, Kashaya</i>	<i>Tikta. Kashaya</i>
10	Duration	days	26 days

**Table No. 2: Showing results of *Gandhaka Shodhana***

Sr. no.	Shodhana No.	Quantity of <i>Gandhaka</i> (g)	Obtained material (g)	Weight loss(g)	% weight loss
1	1 <sup>st</sup>	500	480	20	5
2	2 <sup>nd</sup>	480	466	14	3.68
3	3 <sup>rd</sup>	466	450	16	4.37
			<b>Total</b>	50	13.05

**Table No. 3.1: Showing ingredients and quantity of pilot samples of *Vatari Guggul***

Sr. No.	Ingredients	Sample I <sub>P</sub>	Sample II <sub>P</sub>	Sample I	Sample II	Sample III
1	<i>Amalaki</i>	100 g	200g	400 g	400g	400g
2	<i>Haritaki</i>	"	"	"	"	"
3	<i>Bibhitak</i>	"	"	"	"	"
5	<i>Shuddha Guggulu</i>	100 g	200g	400 g	400 g	400 g
6	<i>Eranda tail</i>	100g	100g	100 g	100 g	100 g
7	<i>Shuddha Gandhaka</i>	100 g	200g	400g	400g	400g
	<b>Total</b>	600 g	1100 g	2100 g	2100g	2100g

**Table No. 3.2: - Showing Results of *Vatari Guggulu***

Sample	Total quantity taken (g)	Total quantity obtained (g)	Net loss (g)	% loss
I <sub>P</sub>	600	550	50	8.33
II <sub>P</sub>	1100	1060	40	3.63
I	2100	2000	100	4.5
II	2100	2050	50	2.3
III	2100	2060	40	1.90

**Analytical Study:<sup>5</sup>**

All the three samples of *Vatari Guggulu* have been analyzed following different parameters. It was studied for organoleptic characters and physico-chemical parameters. Organoleptic

characters of the samples are obtained by using sense organs. It is a very useful parameter to determine and compare the quality of samples.

**RESULTS:****Table No. 4: Showing the Organoleptic parameters of the samples**

Parameters	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
<b>Colour</b>	Greyish black	Greyish black	Greyish black
<b>Odour</b>	Specific	Specific	Specific
<b>Taste</b>	<i>Tikta, Katu, Kashaya</i>	<i>Tikta, Katu, Kashaya</i>	<i>Tikta, Katu, Kashaya</i>
<b>Touch</b>	<i>Ruksha</i>	<i>Ruksha</i>	<i>Ruksha</i>

**Table No. 5: Showing physico-chemical parameters of different samples**

Sr. No.	Parameters	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
1	<b>pH Value</b>	3.57	3.30	3.34
2	<b>Moisture content</b>	14.01%w/w	12.80%w/w	13.80%w/w
3	<b>Total Ash</b>	5.06 %w/w	5.60%w/w	5.43%w/w
4	<b>Acid Insoluble Ash</b>	0.90%w/w	0.63%w/w	0.71%w/w
5	<b>Alcohol soluble extractive</b>	3.38%w/w	29.02%w/w	27.77%w/w
6	<b>Water soluble extractive</b>	41.80%w/w	44.69%w/w	45.38%w/w
7	<b>Total bacterial count</b>	736/gm	1677/gm	3392/gm
8	<b>Total fungal count</b>	Nil/gm	Nil/gm	Nil/gm
9	<b>Thin Layer Chromatography</b>	0.83, 0.56, 0.29, 0.17	0.75, 0.55, 0.29, 0.12	0.76, 0.54, 0.29, 0.15

**DISCUSSION:**

Pharmaceutical procedures in the present study include preparation of *Vatari Guggulu*. In the preparation initially, two pilot samples were prepared to finalise the SOP and then three samples for standardization were prepared. For the preparation of drug various procedures like *Guggulu shodhana*, *Gandhaka Shodhana* and powdering of crude drugs were carried on.

*Guggulu shodhana* was done by two different methods. In first method *shodhana* was done with reference of AFI with some changes in SOP like quantity of *Triphala kwatha* and *swedana vidhi* had been changed. In second method *shodhana* was done with reference of *Vrudha Vaidhya Parampara* i.e. traditionally physicians fixed the standard for *Guggulu shodhana* from their experience. In this *shodhana* process four times *Triphala Kwatha* was used.

*Gandhaka shodhana* by *Dhalana* method was completed in two days where in, the process was repeated for three times.

To fix the SOP of *Vatari Guggulu* we made two pilot samples of this preparation. When we prepared first pilot sample according to actual reference in text we found that the material is too soft to made pills. So we

decreased the quantity of *Eranda* oil in second pilot sample and we got the expected result i.e. pills were easily made. Thus taking the experience from pilot preparations we made three samples of *Vatari Guggulu* with *Bhaishajya Ratnavali* reference and with change in *Eranda* oil quantity. In these samples also pills were soft and sticking to tray so we spread *Triphala* powder over tray. Pills were dried in shadow.

Though the same quantity of each ingredient was used for three samples the difference is found in final yield (**Table No. 3.2**). It is due to the handling loss differ in each sample. The *Guggulu* is very sticky in nature so more loss is found in these preparation, as it sticks to container and difficult to remove it.

Analytical study deals with the analysis of the values of some physical constants and chemical values of the prepared formulation. In present research work 3 samples of *Vatari Guggulu*, prepared by self, was tested on various preliminary standardization parameters as well as on some of the sophisticated analytical tests. Here an attempt was made to put physico-chemical standards of *Vatari Guggulu*. (**Table No. 4 & 5**)

**CONCLUSION:**

*Vatari Guggulu* prepared by following the method prescribed in *Bhaishajya Ratnavali* with required changes in SOP.

Analytical study of *Vatari Guggulu* revealed the uniformity of the procedures in all the three samples, as evidenced by the observation of the analytical values of the three samples were not much variation found.

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**Cite this article as:**

[Renuka Suryawanshi, Santosh Pawale, Lagad C. E., Physico-chemical analysis of Vatari Guggulu, ADJIM 2019; 4\(4\), p. 01-04.](#)