

**PRELIMINARY PHARMACEUTICO – ANALYTICAL STUDY OF SHANKHAPUSHPI GRANULES - A NEW DOSAGE FORM**<sup>1</sup>\*Vd. Dhatri R. Umraniya, <sup>2</sup>Dr. B. L. Umrethia <sup>3</sup>Dr. U. U. Zala <sup>4</sup>Dr. B. D. Kalsariya<sup>1</sup>P.G.Scholar, Post Graduate Department of Rasashastra and Bhaishajya Kalpana, J.S. Ayurved Mahavidyalaya, Nadiad.<sup>2</sup>Dr. Bharti L. Umrethia, Reader, Upgraded post graduate dept. of Rasashastra and Bhaishajya Kalpana, Govt. Ayurved College, Vadodara.<sup>3</sup>Dr. Upendra U. Zala, Proffesor and head, Post Graduate Department of Rasashastra and Bhaishajya Kalpana, J.S. Ayurved Mahavidyalaya, Nadiad.<sup>4</sup>Dr. Bharat D. Kalsariya, Reader, Department of Rasashastra and Bhaishajya Kalpana, Akhandanand Ayurvedic College, A'bad.**\*Corresponding Author: Vd. Dhatri R. Umraniya**

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**ABSTRACT**

**Aim:** *Shankhapushpi* (*Convolvulus pluricaulis* Choisy, *Convolvulaceae*) is a well known Ayurvedic herb for its actions on the central nervous system, especially to enhance intellect, memory and other mental faculties. Classically it is advised to use its *Kalka* (Fresh paste) but it is practically difficult when target is child age group. **Material and methods:** So, an attempt was made to prepare *Shankhapushpi* Granules out of *Shankhapushpi* *Kvatha*, *Sharkara* and *Shankhapushpi Churna*. **Results:** An average loss of 64.08% was observed. Preliminary analysis like organopeltic, physico chemical, Phytochemical, Heavy metal analysis and microbial overload was done. **Conclusion:** The Anubhuta method used here can be taken up for primary profile of *Shankhapushpi* Granules and can be further used for large scale production.

**KEYWORDS:** *Shankhapushpi*, *Convolvulus pluricaulis* Choisy, *Medhya*, Granules.**INTRODUCTION**

In Ayurveda, *Acharya* have emphasised not only on curing the diseased condition but also emphasised on prevention of the same.<sup>[1]</sup> Ayurveda enlists a number of drugs known for its *Rasayana* effect which fulfils the second aim.

*Medhya Rasayana* are a peculiar class owing multidimensional utility in various conditions of mental ailments. *Shankhapushpi* (*Convolvulus pluricaulis* Choisy, *Convolvulaceae*) has been quoted as best *Medhya* when taken in form of fresh paste (*Kalka*) by *Acharya Charaka*.<sup>[2]</sup> Such *Medhya Rasayana* being prescribed to all the age groups right from child to an old age, arises the need of proper dosage form which can be appropriate for that particular age group.

Focusing on the child age group, prevalence of ADHD, anxiety, depression etc mental illness have been raising.<sup>[3]</sup> It is very necessary to manage mental faculties to ensure proper brain development of a child.

*Shankhapushpi* has been scientifically proven for having memory and learning behaviour,<sup>[4]</sup> anxiolytic,<sup>[5]</sup> anti depressant,<sup>[6]</sup> brain nourishment activity.<sup>[7]</sup>

Since *Shankhapushpi* possesses mainly *Tikta* and *Kashaya Rasa*,<sup>[8]</sup> it is a difficult task to administer to child age group. Henceforth, to overcome the issue of palatability, shelf life, dose fixation, here is an attempt to develop *Shankhapuspi* Granules and to provide analytical data related to the same.

**AIMS AND OBJECTIVE**

1. To prepare *Shankhapushpi* Granules with the *Anubhuta* method.
2. To carry out analytical profile of *Shankhapushpi* Granules.

**MATERIALS AND METHODS****Preparation of *Shankhapushpi* Granules**

**Ingredients** – *Shankhapushpi Yavakuta Churna* (SYC), *Sharkara*, *Shankhapushpi Churna* (SC).

**Apparatus** – S.S. vessel, ladle, heating device, weighing scale, thermometer, pyrometer and cotton cloth.

### Method of preparation

1. Preparation of *Shankhapushpi Kvatha* (SK).

**Reference** – Sha.Sa.Ma.9/2

*Yavakuta Churna* of *Shankhapushpi* was taken in a S.S. vessel and soaked overnight in 4 times of potable water. The mixture was heated until 1/4th quantity of water remained. It was then filtered through a cotton cloth. This prepared *Kvatha* was used for further process.

2. Preparation of *Shankhapushpi* Granules (SGr)

**Reference** – *Anubhuta* method

The prepared mixture of *Shankhapushpi Kvatha* and *Sharkara* (1: 1 part) was taken in S.S. vessel and heated

over mild heat till 2 ½ thread consistency was achieved. After that, the vessel was taken out from heat source and *Shankhapushpi Churna* (1/4<sup>th</sup>) was added and mixed homogeneously. The mixture was then passed through No.10 sieve to get Granules. These Granules were dried to get rid of any moisture. It was stored in a container.

### Analytical Study

Organoleptic parameters like colour, taste, appearance were carried out for raw drug, *Shankhapushpi Kvatha* and *Shankhapushpi* Granules. Physicochemical parameters like loss on drying,<sup>[9]</sup> Ash value,<sup>[10]</sup> Acid insoluble ash,<sup>[11]</sup> were done for all samples. While pH,<sup>[12]</sup> specific gravity,<sup>[13]</sup> were done for *Shankhapushpi Kvatha*. Reducing sugar,<sup>[14]</sup> and Total sugar,<sup>[15]</sup> were carried out for the finished product. Microbial overload,<sup>[16]</sup> and heavy metal analysis,<sup>[17]</sup> were also carried out for the test sample along with preliminary qualitative phytochemical study.<sup>[17]</sup>

## OBSERVATIONS AND RESULTS

**Table 1: Showing Pharmaceutical data of *Shankhapushpi Kvatha*.**

Result	Results
Initial Quantity of potable water (ml)	1200
Obtained Quantity of <i>Kvatha</i> (ml)	303.3
Obtained Quantity of <i>Kvatha</i> in%	25.2
Weight of Residue (ml)	253.3
Loss of water in ml	896.6
Loss of water in%	74.72
Reason of loss	Evaporation of water

**Table 2: Showing pharmaceutical data of *Shankhapushpi* Granules.**

Parameters	Results
Initial Quantity of Ingredients (ml)	450
Obtained Quantity of Granules (g)	161.6
Obtained Quantity Granules %	35.91
Loss (g)	288.4
Loss in%	64.08
Reason of loss	Evaporation of <i>Kvatha</i>

**Table 3: Showing Organoleptic parameters of all samples.**

Sl. No.	Characteristics	Raw		In process	Final product
		SYC	SC	SK	SGr
1	Colour	Brown	Dark Green	Dark brown	Greenish brown
2	Appearance	Powder	Powder	Liquid	Granular
3	Texture	Coarse	Smooth	Smooth	Rough
4	Taste	Astringent	Astringent	Astringent	Sweet
5	Odour	Characteristic to <i>Shankhapushpi</i>	Characteristic to <i>Shankhapushpi</i>	Characteristic to <i>Shankhapushpi</i>	Not specific

**Table 4: Showing Physicochemical parameters of raw, in process and finished product.**

Sl. No.	Parameters	Raw		In process	Final product
		SYC	SC	SK	SGr
1	pH	6.8	6.7	6.4	6.82
2	Specific gravity	-	-	1.0081	-
3	Total solid content	-	-	4.91	-
4	LOD	6	7.96	-	3.66
5	Total- ash	8.5	14.6	-	1.81
6	Acid insoluble ash	4.5	3.86	-	0.42
7	Alcohol soluble extractive(% w/w)	5.9	6.63	-	15.99
8	Water soluble extractive(% w/w)	13.02	23.06	-	77.08
9	Reducing sugar % w/w	-	-	-	37
10	Total sugar % w/w	-	-	-	66.6
11	Particle size	-	157.8	-	-
12	Tap density	-	1.386	-	-
13	Bulk density	-	0.2869	-	-

**Table 5: Showing phytochemical analysis of SGr.**

Sl. No.	SGr				
1	Starch	-	7	Glycosides	-
2	Alkaloids	+	8	Flavanoids	-
3	Amino acids	+	9	Tannins	+
4	Protiens	-	10	Steroids	+
5	Saponin test	+	11	Teriterpenoids	+
6	Carbohydrates	+	-	-	-

**Table 6: Showing heavy metal analysis of SGr.**

Sl. No.	Test parameter	Testing method/ Procedure	Name of instrument	Instrument Detection Limit/ permissible limit (mg/L)	Result SGr
1.	Mercury	In House	ICP-OES	0.0610	BDL
2.	Cadmium	In House	ICP-OES	0.0027	BDL
3.	Lead	In House	ICP-OES	0.0420	BDL
4.	Arsenic	In House	ICP-OES	0.0530	BDL

\*BDL- Below Detection Limit

**Table 5.13: Showing microbial overload of SGr.**

Sl. No.	Samples	Pathogen				Total microbial count cfu./ g
		E. coli	Salmonella spp.	S. aureus	Pseudomonas aureus	
1.	SGr	Ab	Ab	Ab	Ab	35

\*Ab- Absent

**DISCUSSION**

The *Anukta* ratio (Sha.Sa.Ma.8/2) of any *Avaleha Yoga* was followed for the preparation of SGr by only changing the duration of heat and the final consistency of the product. Here, *Kvatha* was used as a *Drava Dravya* so as to imbibe more of the active principles. To which *Sharkara* was added around 80° to 90° C temperature. *Darvi Pralepatvam* was observed after 52 min of *Paka*. After 62 min of *Paka*, 2 ½ thread consistency was achieved on pressing between thumb and index finger. *Apsu Majjanam*, *Sthiratvam*, *Patitastu Na Shiryate* was also observed after 70 min. Colour turned to greenish brown after addition of *Shankhapushpi Churna*. Mixture attained semi solid to solid consistency when cooled. It was easier to make granules when the mixture was

slightly warm instead of completely cool. The mass was passed through 10 # sieve to attain granules form. During the preparation, an average loss of 64.08% was observed due to the evaporation of water content and the process of inversion. Granules prepared from this method showed 6.82 pH (10% aqueous solution) and 3.66% moisture content. Ash value (% w/w) and acid insoluble ash value (% w/w) were 1.81% and 0.42% respectively. SGr contains 37% reducing sugar (% w/w) and 66.6% total sugar (% w/w). Preliminary qualitative phytochemical tests showed presence of alkaloids, amino acids, saponins, carbohydrates, tannin and steroids. On heavy metal analysis, SGr showed all metals Below Detection Level (BDL). It also showed absence of pathogens and microbes on microbial overload. All these

parameters indicating towards its safety and quality assurance.

## CONCLUSION

*Shankhapushpi* Granules made by this *Anubhuta* method, can be applicable o develop the preliminary profile of *Shankhapushpi* Granules. The observed parameters can be considered for the further study and for the larger scale production. A clinical study specific to age group can also be conducted to confirm the results clinically.

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