

STANDARDIZATION OF THE PREPARATION OF A HERBO-MINERAL FORMULATION SWASANANDA GULIKA

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ABSTRACT

Swasananda Gulika is mentioned in *Arogyaraksha Kalpadruma*, as a remedy for *Kasa*, *Swasa* and *Hikka*. In present study *Swasananda Gulika* was prepared according to the Standard Operative Procedures (SOPs) mentioned in classics. It is important that crude drugs of both herbal and mineral origin should be subjected to *Sodhana* (purification) before using internally or in the preparation of any other compound form of drugs. The ultimate objective of *sodhana* process is to increase the bio-availability of the drug and further potentiating the biological efficacy. There are many methods for the *sodhana* process of each ingredient of *Swasananda Gulika*. Each process imparts specific properties to the drugs. So it is a difficult task to select a proper *sodhana* method. Of the various *sodhana* methods, the method which is suitable for the preparation of *Swasanandagulika* was chosen here. To standardize a process, proper analysis should be done in each step. Analytical study of each *sodhana* procedure during the preparation of *Swasanandagulika* was conducted in present study and observations were noted carefully. In current study, best method for *Hingulasodhana* was done, in which *hingula* becomes physically more pure and after *sodhana*, the weight of purified *hingula* was found to be increased by 1.4 gm (3%). The weight gain may be due to the presence of organic matter in the *bhavanadravya* which was added during *sodhana*. It may be starch or other particles. During purification, *sodhana* drugs will attribute some properties to the drugs to be purified. In this study it has been observed that *nimajjana* in *gomutra* for 3 times, mentioned in the classics was found to be more accurate method for *Vatsanabhasodhana*. For the preparation of the medicine for *Swasa*, the drug of choice of *Vatsanabhasodhana* was *gomutra* compared to *godugdha*, since *gomutra* has *Vatakaphahara* property. In this study it has been also found that, there was a weight gain of *Swasanandagulika* (18%), compared to the total weight of ingredients which may be from the *Triphalakashaya* added for *bhavana*.

Keywords: Swasananda Gulika, Sodhana, Hingula, Vatsanabha, Triphalakashaya.

INTRODUCTION

The Aim of Ayurveda is not only to treat the patient but to preserve and promote health. To fulfill this aim, ancient seers tried innumerable measures and found that the drugs of different origins are suitable to achieve the same. During the initial days *kashtoushadhis* (herbal drugs) were used mainly for therapeutic purpose. In due course of time, drugs of other origin like mineral, animal etc, were introduced into the system and countless *Rasaushadhis* (herbo-mineral formulations) came in to existence. *Rasaushadhis* are popular because of their small dose, tastelessness, quick action, effective in dreadful diseases without producing any discomfort to patients and long shelf life¹. Many types of *Rasaushadhis*, based on their preparatory methods like *kharaleeyarasayana*, *Parpati*, *Pottali*, *Kupipakwarasayana* etc. are explained in *Rasashastra*². Of which *Swasanandagulika* is a *kharaleeyarasayana*. It is important that crude drugs of both herbal and mineral origin should be subjected to *Sodhana* process (purification) before using internally or in the preparation of any other compound form of drugs. *Sodhana* is a method in which different drugs are treated with various processes such as grinding and mixing with other drugs with a view to remove their toxicity and make it effective for therapeutics³. In Ayurvedic classics many *sodhana* procedures for drugs are explained. Each process imparts specific properties to the drugs. It is the duty of the Physician to decide proper *sodhana* method which is suitable for specific medicine preparation.

With the advent of a new drug delivery system, strict guidelines are needed for drug ap-

proval. To accept a drug globally, it is desirable to study the principle and practice of Ayurveda by utilizing the facilities of modern methods. Now a day, scientific validation (standardization) of a process is necessary for its acceptance. To standardize a process, proper analysis should be done in each and every step. Hence a detailed practical study has been carried out in the purification of the ingredients and during the preparation of *Swasanandagulika*.

AIMS & OBJECTIVES

1. To identify and collect genuine samples of raw drugs (*Hingula*, *Vatsanabha* and *Karpura*) and *Bhavanadravyas* (*Triphala*) of *Swasanandagulika*.
2. To purify *Hingula* and *Vatsanabha* as per classical method.
3. To prepare *Triphalakashaya* for *bhavana* as per classical method.
4. To prepare *Swasanandagulika* as per classical method.

MATERIALS & METHODS

Swasanandagulika is mentioned in *ArogyarakshaKalpadruma* 6th chapter, as a remedy for *Kasa*, *Swasa* and *Hikka*⁴. In present study *Swasanandagulika* was prepared according to the Standard Operative Procedures (SOPs) mentioned in classics. *Swasanandagulika* comes under the category of both *Gu ikakalpana* and *Kharaleeyarasayana*. The ingredients of *Swasanandagulika* are given in Table no:1.

Table 1: Showing the list of Ingredients

Sl no:	Sanskrit name	Scientific name/ botanical name	Parts used
1	<i>SodhitaHingula</i>	Sulphatumhydragyrum (Cinnabar / Red sulphide of mercury)	Whole part
2	<i>SodhitaVatsanabha</i>	<i>Aconitum chasmanthum</i> Stapf. ex Holmes.	Dried Tuberos root
3	<i>Karpura</i>	<i>Cinnamomumcamphora</i>	Extract
<i>Bhavanais</i> done with the <i>Kashaya</i> following drugs:			
4	<i>Haritaki</i>	<i>Terminaliachebula</i> Retz.	Pericarp of dried Fruit.
5	<i>Vibhitaki</i>	<i>Terminaliabelerica</i> Roxb	Pericarp of dried Fruit.
6	<i>Amalaki</i>	<i>Emblicaofficinalis</i> Gaertn.	Pericarp of dried Fruit.

Above drugs were procured from a renowned raw drug procuring and distributing agency, Anchery drugs, Thrissur, Kerala. All the drugs were identified by the botanist for their genuinity, before starting the practical. All the ingredients were checked for physical impuri-

ties and subjected to the pharmaceutical processing. Pharmaceutical processing of *Swasanandagulika* was done in the Teaching Laboratory of the P.G. Department of *Rasa-shastra* and *Bhaishajya Kalpana*, Amrita School of Ayurveda, Kollam, Kerala.

Table 2: Showing the list of Practicals

Sl No:	Name of the Practical
1	HingulaSodhana
2	VatsanabhaSodhana
3	Preparation of <i>TriphalaKashaya</i>
4	Preparation of <i>SwasanandaGulika</i>

Sodhana (Purification) of constituent drugs

It is important that crude drugs of both herbal and mineral origin should be subjected to *Sodhana* process before they are used internally or

in the preparation of any other compound form of drugs. Hence a detailed practical study has been carried out in their purification point of view.

Practical No: 1

Name of the Practical	:HingulaSodhana
Reference	: <i>Rasatarangini</i> - 9/16 – 17
Date of beginning	: 13/05/2015
Date of Completion	: 06/06/2015
Ingredients	Quantity
1) Unpurified <i>Hingula</i>	: 45 gm
2) <i>Nimbuswarasa</i>	: 45 ml in each time (total 315 ml).
Method	: <i>Bhavana</i> for 7 times, followed by <i>kshalana</i> with water.
Apparatus	: Mortar and pestle, vessels, cloth, measuring cylinder etc.

Procedure: 45 gm of impure *Hingula* was weighed and kept in a clean mortar and fine powder was made. Initially 120 gm *nimbu* (4 lemons) was taken and squeezed out the juice. For first *bhavana* 45 ml *swarasa* (the quantity sufficient to immerse the *hingulachurna*) was added. The mixture was subjected for continuous trituration till *swarasa* dried up which is considered as the completion of first *bhavana*. The same process repeated for 6 times and totals 7 *bhavanas* are given. Every time fresh *swarasa* was used. After 7 *bhavanas* the mixture was washed with water (1litre) and poured into a vessel which was kept undisturbed for the sedimentation of *hingula*. Next day water was decanted and pH of decanted water was checked. The washing process was

repeated (4 times) till the pH of decanted water became neutral. The wet *hingula* powder obtained at the bottom of the vessel was kept for drying in sunlight. Dried *hingula* was collected and weighed⁵.

Observations

- The colour of *asuddhahingula* was shining dull red which became brighter and brighter after each *bhavana*.
- During washing of *hingula* after 7 *bhavanas*, it was found that each time the pH of decanted water was increased and after 4 times it became neutral, i.e. equal to the pH of normal water.
- The weight of purified *hingula* after complete drying was found to be increased.

Result

➤ Time taken for practical	: 24 days
➤ Quantity of <i>Hingula</i> taken	: 45 gms
➤ Quantity of <i>Hingula</i> obtained	: 46.4 gms
➤ Wt. gain	: 1.4 gms (3%)

Table 3: Showing the Physical Characters of *Hingula*.

Sl No:	Tests	<i>AsuddhaHingula</i>	<i>SuddhaHingula</i>
1	Consistency	Shining blocks	Lusterless powder
2	Colour	Dull red	Red
3	Touch	Hard, Solid	Soft, Fine
4	Odour	No specific odour	No specific odour

Table 4: Showing the pH of decanted water after *HingulaSodhana*.

<i>Kshalana</i> (times)	pH
First	2.61
Second	3.52
Third	6.98
Fourth	7.05

Practical No: 2

Name of the Practical	: <i>VatsanabhaSodhana</i> .
Reference	: <i>Rasatarangini</i> - 24/ 19-22.

Date of beginning	: 16 / 05/ 2015
Date of Completion	: 06/06/2015
Ingredients	Quantity
1) <i>AsuddhaVatsanabha</i>	: 100 gm.
2) <i>Gomutra</i>	: 400 ml each time (total 1200 ml).
Method	: <i>Nimajjana</i> for 3 times followed by <i>Soshana</i> (drying).
Apparatus	: mud vessel, knife, Jar, Porcelain tray etc.

Procedure: *Vatsanabha* was cut into small pieces and kept in a mud pot. Cow's urine was poured to dip these pieces and kept soaked (*Nimajjana*) overnight. Next day *gomutra* was exchanged with fresh one. The procedure was repeated twice. Each time analysis (pH and T.S.S) of *gomutra* was done. After doing the procedure of *nimajjana* for 3 times, *vatsanabha* was removed from *gomutra* and dried in sunlight. After proper drying, it was powdered and weighed⁶.

Observation

- Colour of *gomutra* was changed from light yellow to dark brown.

- pH of *gomutra* was found to be decreased (became more acidic) after each *sodhana*.
- T.S.S of *gomutra* after first and second *sodhana* was found to be increased when compared to fresh *gomutra*. But after third *sodhana*, T.S.S was same as that of fresh *gomutra*.

Result

- Time taken for practical : 21days
- Quantity of *Vatsanabha* taken : 100 gms
- Quantity of *Vatsanabha* obtained : 75 gms
- Weight loss : 25 gms

Table 5: Showing the Analysis of *Gomutra*.

Times of <i>sodhana</i>	<i>Gomutra</i> before <i>Sodhana</i>		<i>Gomutra</i> after <i>Sodhana</i>	
	pH	Total Soluble Solids (T.S.S)	pH	T.S.S
<i>Sodhana</i> 1	6.50	4.75	5.68	11.6
<i>Sodhana</i> 2	6.52	4.5	5.73	7.25
<i>Sodhana</i> 3	8.06	4.75	7.00	4.75

Table 6: Showing the Physical Characters of *Vatsanabha*.

Tests	<i>AsuddhaVatsanabha</i>	<i>SuddhaVatsanabha</i>
Consistency	Hard tuberous root	Soft fine powder
Colour	Black	Light brown
Odour	No specific odour	Characteristic of <i>gomutra</i>

Practical No: 3

Name of the Practical	: Preparation of <i>TriphalaKashaya</i> (for <i>bhavana</i>).
Reference	: <i>Bhaishajyaratnavali</i> - 4/119.
Date of beginning	: 01/ 07/ 2015

Date of Completion	: 01/07/2015
Ingredients	Quantity
1) <i>Haritaki</i>	: 80 gm
2) <i>Vibhitaki</i>	: 80 gm
3) <i>Amalaki</i>	: 80 gm
4) Water	: 1920 ml (8 times)

Method: Open pan boiling.

Apparatus: Pounding machine, gas stove, vessel, cotton cloth, measuring cylinder, stainless steel ladle and stainless steel vessel.

Procedure: *Triphala* was cleaned and separately pounded to coarse powder. Then this powder was taken in a vessel containing 1920 ml (8 times) water and boiled over mild flame till the volume of water reduced to its 1/8th, i.e. 240 ml. Then the vessel was taken out of fire and the content was filtered into another

vessel through a clean cloth. This *Triphalakashaya* was taken for *bhavana* of *Swasananda Gulika*⁷.

Result

- Time taken for practical: 1 day
- Quantity of *Triphala* taken: 240 gm
- Quantity of water added: 1920 ml
- Quantity of *Triphalakashaya* obtained: 240 ml
- Loss in weight: 1680 ml

Table7: Showing the Organoleptic & Physico-Chemical characters of *Triphalakashaya*.

Organoleptic characters	Observations	Physico-Chemical characters	Observations
Colour	Blackish brown	pH	2.79
Odour	Pleasant	Total Soluble Solids (T.S.S)	17
Taste	Astringent	Refractive index	1.359

Practical No: 4

Name of the Practical	: Preparation of <i>SwasanandaGulika</i>		
Reference	: <i>ArogyarakshaKalpadruma- 6/ 23-24.</i>		
Date of beginning	: 01/ 07/ 2015		
Date of Completion	: 06 /08 /2015		
Ingredients	Quantity		
1) <i>SodhitaHingula</i>	: 40 gm		
2) <i>SodhitaVatsanabha</i>	: 40 gm		
3) <i>Karpura</i>	: 40 gm		
4) <i>Triphalakashaya</i> (for <i>bhavana</i>)	: 240 ml		

Method: Trituration.

Apparatus: *Khalwayantra* and porcelain tray.

Procedure: First *sodhitahingula* powder was added in a *khalwayantra*. To this finely powdered *shodhitavatsanabha* added and mixed

well. Then powdered *Karpura* was added and mixing continued. This mixture was levigated by adding *Triphalakashaya* little by little and trituration was continued for 24 hours. Then rolling of the *gutika* was done. After that dry-

ing of *gu ika* was done and continued till there was no more weight difference. Then the tablets were counted and preserved in air tight glass bottles⁸.

Observation

The *Gu ika* was found to be round in shape and reddish brown in colour.

Result

- Time taken for practical: 37 days
- Quantity of ingredients taken: 120 gms
- Quantity of *Triphalakashaya* added: 240 ml
- Quantity of *SwasanandaGulika* obtained: 142 gm or 1333 number.
- Wt. gain: 22 gm (18%).

DISCUSSION

A) *HingulaSodhana*

➤ Three important *Sodhana* (purification) methods of *Hingula*, are explained in classics:

1. *Bhavana* with *swarasa* of *ardraka* for 7 times and then drying. (R.R.S)
2. *Bhavana* with *swarasa* of *lakuca* for 7 times and then drying. (R.R.S)
3. *Bhavana* with *swarasa* of *nimbu* for 7 times and then washing with water repeatedly up to the removal of *amlata* (acidity) and finally drying in sunlight. (*Rasatarangini*)

Literary study revealed that, in first 2 methods, the material used for *bhavana*, is dried along with *hingula* itself. But in the third method, after *nimbuswarasabhavana*, repeated washing is done to achieve *niramlata* (deacidification). Hence, in this method *Hingula* becomes physically more pure. This was the reason for selecting this procedure for *rHingulasodhana*.

➤ During *Hingulakshalana*, the pH of decanted water was checked and in each time the pH was found to be increased. But after the fourth time, it became neutral, i.e. equal to the pH of normal water. From this it can be concluded that after *kshalana* with water for 4 times, *hingula* became *niramlata* (de-acidified). In *Rasatharangini*, *kshalana* of *hingula* with *bahushovari* (repeated washing with water) is mentioned. The purpose of the procedure might be deacidification of *hingula*. To standardize the procedure this method of pH estimation of decanted water can be used.

➤ The weight of purified *Hingula* after complete drying was found to be increased by 1.4gm (3%). The reason for weight gain may be due to the presence of organic matter which was added during *sodhana* in the form of *bhavanadravya*. It may be starch or other particles.

B) *Vatsanabha Sodhana*

➤ During purification, *sodhanadrugs* will attribute some properties to the drugs to be purified. There are 3 important methods for *Vatsanabhasodhana*. But, for the preparation of the medicine for *swasa*, the drug of choice of *vatsanabhasodhana* was *gomutra* compared to *gougdha*, since *gomutra* has *Vatakaphahara* property. This was the reason for choosing this method for *Vatsanabhasodhana*.

➤ During *Vatsanabhasodhana*, each time after *gomutranimajjana*, analysis of *gomutra* was done. pH of *gomutra* was found to be decreased (became more acidic) after each *sodhana*. T.S.S of *gomutra*, after first and second *sodhana* was found to be increased compared to fresh *gomutra*. But after third *sodhana*, T.S.S was same as that

of fresh *gomutra*. This indicated that no other soluble solids were present in *vatsanabha* after third *sodhana*. From this it can be concluded that *nimajjana* in *gomutra* for 3 times, mentioned in the classics was found to be more accurate method for *vatsanabhasodhana*.

C) Preparation of Swasananda Gulika

➤ The total weight of the finished product, i.e. *Swasanandagulika* (142 gm) was found to be increased, compared to the total weight of ingredients (120 gm). The weight gain was 22 gms (18 %). 240 ml *Triphalakashaya* was taken for *bhavana*. T.S.S of *Triphalakashaya* was found to be 17% and it can contribute 21% to *Swasanandagulika*. From this it can be concluded that, weight gain of *Swasanandagulika* may be from the *Triphalakashaya*.

CONCLUSION

Pharmaceutical procedure adopted in the present study was 'Sodhanasamskara' by 'Bhavana' method. *Samskara* is defined as 'Gu antaradhana' i.e. enhancement of the qualities of a drug⁹. The ultimate objective of *Sodhana* process is to increase the bio-availability of the drug and further potentiating the biological efficacy. Various *sodhana* methods are mentioned for the purification of the ingredients of *Swasanandagulika*. But to choose a proper method, suitable for medicine preparation is a difficult task. To standardize a process, proper analysis should be done in each step. So a detailed analytical study of each procedure during the preparation of *Swasanandagulika* was conducted in present study and observations were noted carefully. In current study, best method for *Hingulasodhana* was done, in which *hingula* became physically

more pure. After *sodhana*, the weight of purified *Hingula* was found to be increased by 1.4 gm (3%). The reason for weight gain may be due to the presence of organic matter which was added during *sodhana process*. It may be starch or other particles. In case of *Vatsanabha*, it has been found that *nimajjana* in *gomutra* for 3 times, mentioned in the classics was found to be more accurate method for *sodhana*. For the preparation of the medicine for *Swasa*, the drug of choice of *vatsanabhasodhana* was *gomutra* compared to *godugdha*, since *gomutra* has *Vatakaphahara* property. In present study it has been found that, there was a weight gain of *Swasanandagulika* (18%), compared to the total weight of ingredients which may be from the *Triphalakashaya* added for *bhavana*.

ACKNOWLEDGEMENT:

The authors would like to acknowledge Dr .K. Unnikrishna Pillai, (Former Professor & HOD), Dr Ramesh. N.V. (H.O.D), Dr. Vineeth P.K.(Assistant Professor) & Bri. Sailaja. M (Head of QC), P.G. Dept. of Rasashastra & Bhaishjyakalpana, Amritha School of Ayurveda, Kollam, Kerala, for their valuable suggestions.

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RAW DRUGS OF SWASANANDA GULIKA

1: Raw *Hingula*



2: Raw *Vatsanabha*



3: *Karpura*



4: *Haritaki*



5: *Vibhitaki*



6: *Amalaki*



PHARMACEUTICAL STUDY

Hingulasodhana

7: Addition of *nimbuswarasa*



8: Trituration (*bhavana*)



9: Washing of *Hingula*



Vatsanabha sodhana

10: Pouring of *gomutra*



11: Soaking in *gomutra*



12: Drying of *Vatsanabha*



Preparation of *Triphalakashaya*

13: *Kashaya* processing



14: *Triphalakashaya*



PREPARATION OF SWASANANDA GULIKA

15: *Shodhita* raw drugs
(from left *Karpura*, *Vatsanabha* & *Hingula*)



16: Addition of *Triphalakashaya* 17: Trituration (*Bhavana*)



18: Rolling of *gulika*

19: Finished product (*SwasanandaGulika*)



Source of Support: Nil

Conflict Of Interest: None Declared

How to cite this URL: Remya.A Et Al: Standardization Of The Preparation Of A Herbo-Mineral Formulation Swasananda Gulika. International AyurvedicMedical Journal {online} 2017 {cited September, 2017} Available from: http://www.iamj.in/posts/images/upload/3579_3589.pdf