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RASPUSHPADYA MALHAR - A LEAST EXPLORED FORMULATION OF PARAD

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ABSTRACT

Background: Malhar kalpana is classified under Bahya kalpana(external application). Malhar word has been derived from the words 'Malham' or 'Marham' which are Unani in their origin. Malhar kalpana was described by Yogratnakar for the very first time in Ayurved. Malhar means the one which removes mala ie. debris or dead cells and dirt from the skin. They are similar to the ointments and creams in modern pharmaceutics. Rasapushpa is a nirgandha kalpana of Parad and its malhar which was firstly mentioned in Rasatarangini is indicated in eczema occurring around anus and wounds caused due to syphilis. **Materials and Methods:** After authentication of the raw materials, Rasapushpa a nirgandha kupipakva kalpana of parad was prepared in 2 batches followed by the malhar preparation using sikta tail by Rasatarangini reference. The malhar too was prepared in 2 batches. These batches of both Rasapushpa and Rasapushpadya malhar were then analysed. **Results:** The mercury percentage of both Rasapushpa batches was in the range of 40-45 which is lesser than the standard limits. Chloride values were in par with their standard limits. Rasapushpadya malhar prepared was a lemon yellow coloured soft malhar. Its pH was between 6-6.5. It had nil peroxide value and its Acid value was within accepatable limits.

KEYWORDS: Rasapushpadya Malhar, Parad, Nirgandha.

INTRODUCTION

Medicines are broadly classified into two categories one for internal usage such as tablets, capsules, syrups, choorna, avaleha, etc and the other for external usage such as lepa, powders, varti, ointments, creams, lotions, malhar, etc. In external wounds, skin deformation, skin

diseases, fungal infections, warts or pain in any part of the body external usage of medicines plays a very crucial role. Traditionally in Ayurveda many external medicines were being prepared such as lepa (from choorna or wet drugs), varti, malhar, upanaha. Amongst these malhar has an extended expiry date as compared to the other formulations. Malhar has two chief ingredients one is the aadheya dravya ie. the medicine and the other is the upadhan dravya ie. the dravya which converts the medicine into malhar such as shatdhaut ghrut, sikta tail, sikta, raal, teel oil, etc. This formulation is easy to apply and easy to store. Rasapushpa is a Nirgandha kalpana of Parad and possesses krimigna property.[1] It is used both internally and externally. Internally it is said to be a purgative, indicated in visuchika(cholera), syphilis, hikka and jalodar.[1] Externally its malhar is indicated in syphilis wounds and eczema around anus.[2] In one research paper it has also been proved that Rasapushpa shows total inhibition towards pseudomonas aeroginosa, streptococcus pyogenes and moderate inhibition towards staphylococcus aureus.[3] These organisms are responsible for causing various skin diseases. For any malhar to become smooth and soft the aadheya dravya should be very fine about 125-150 mesh size.[4] This study aims at preparing Rasapushpadya Malhar and conduct its analytical tests. Undertaking the clinical trial of the same could be the next step of this study.

MATERIALS AND METHODS

Materials

Ingredients: *Parad*(Mercury), *Kasis*(Ferrous sulphate) and *Saindhav*(Sodium chloride), Sikta(yellow bees wax) and Teel oil.

Instruments: Stone *Kharal*, Stainless Steel spatula, Kupi(7 layered), *Valuka yantra*, Gas-stove, Pyrometer, glass container and other analytical instruments.

Methods

Shodhan of raw materials

***Parad samanya shodhan*[5]** was done by HNO3 method. (70% conc. HNO3 =30ml, Water=70ml and Mercury =100gms & asbestos chips) Soaked together for an hour.

The above method was selected from Ayurvediya Rasashastra-Siddhinandan Mishra.

Parad before *shodhan*: 800gms. *Parad* after *shodhan*: 659 gms.

***Parad Vishesh shodhan*[6]:** *Chitrak mul kwatha, Triphala kwatha, Kumari, Nagvelli patra, Adrak swaras, haridra swaras, rason kalka and saindhav*(each 1/16th of *parad*) were added

and triturated until *parad* got completely homogeneous with these drugs. Time taken 24 hours.

The above drugs were selected as they are indicated in *vishesh shodhan* of *parad* and also since they possesse *kushtagna* properties. It was in the wake, if at all *Rasapushpa* had to be used in future for some skin disease.

Parad before *shodhan*: 815gms. *Parad* after *shodhan* : 780 gms.

Table 1: *Parad shodhan.*

Shodhan	**Parad samanya shodhan-HNO3 method**			**Parad Vishesh Shodhan**		
Time required	1 hour			24 hours		
Procedure	Soaking			Tirturation		
	Parad before shodhan	Parad after shodhan	Loss incurred	Parad before shodhan	Parad after shodhan	Loss incurred
	900gms	839gms	9%	815gms	780gms	9.5%

***Kasis shodhan*[7]**

Ashuddha kasis was taken and heated in *bhringaraj swaras* by *dolayyantra* method for 72mins(3 *ghatika*). *Kasis* dissolves in the *swaras* whereas impurities remain in the *pottali*. This mixture is then dried. *Ashuddha kasis* 500gms, after *shodhan* 450 gms.

Preparation of *Rasapushpa* mixture[8]

Purified mercury, Purified *Kasis* and *Saindhav* are taken 150gms each and triturated for 18 hours(until lustreless mixture was formed). *Pista* green mixture was obtained.

Mixture obtained: 420gms. Loss 30gms.

Preparation of *Rasapushpa*. Batch I[8]

Rasapushpa mixture 300gms was filled in a 7 layered *kupi* and this was then immersed in a *valuka yantra* and heated with constant *manda agni* for 6 hours on a Gas stove.

After stopping the heat the *kupi* was allowed to self cool overnight. The next morning *kupi* was removed from the *valuka yantra*, its layers scraped and broken midway to acquire flower like white coloured *rasapushpa* at the neck of the *kupi*.

Rasapushpa acquired : 95gms

A red coloured powder was obtained at the bottom of the *kupi* which was saline in taste.

Similarly batch II was prepared. Rasapushpa obtained 86 gms off 300gms rasapushpa mixture.

Table 2: Observations and temperature chart of *Rasapushpa* Batch I.

Duration	Temperature		Observations
	Valuka	Kupi	
½ hour	100^0C	80^0C	Mixture melted
45 mins	110^0C	86^0C	White fumes started coming out
1 ½ hours	130^0C	90^0C	Fumes continue coming out
2 ½ hours	140^0C	96^0C	Rasapushpa starts to form at the neck of kupi
3 hours	150^0C	100^0C	Fumes reduce
3 ½ hours	140^0C	110^0C	Fumes stopped, Cork applied
6 hours	200^0C	--	Heat stopped

Table 3: Observations and temperature chart of *Rasapushpa* Batch II.

Duration	Temperature		Observations
	Valuka	Kupi	
½ hour	100^0C	80^0C	No change
45 mins	110^0C	80^0C	Mixture melts
1 hour	110^0C	90^0C	White fumes start coming out
1 ½ hours	130^0C	100^0C	Fumes become dense
2 ½ hours	140^0C	100^0C	Rasapushpa forms at the neck
3 hours	140^0C	110^0C	Fumes are reduced
3 ½ hours	130^0C	100^0C	Fumes stop, cork applied
6th hour	200^0C	--	Heat stopped

Confirmatory Test of Rasapushpa[9]

A pinch of *Rasapushpa* was taken and dissolved in distilled water in a test tube.

Then 3 drops of ammonia was added to this solution.

Black precipitate was found at the bottom of the test tube.

This confirms that the compound formed is Mercurous Chloride ($HgCl/Hg_2Cl_2$) and *Rasapushpa* is also known as Calomel ie. Mercurous chloride.

Sikta tail preparation[10]

250ml of teel oil was heated in a pan then 50gms of yellow wax was added to it and stirred till the wax melted completely. The heat was then put off and the mixture was allowed to cool off. On cooling the mixture condenses.

This method was as per Rastarangini wherein 1:5 ratio of wax and teel oil are taken but it was found that due to high temperature of the atmosphere even at room temperature the oil separates out after few days and thus after numerous trial and error finally a ratio of 1:3 of

wax and teel oil for preparing sikta tail was selected and prepared for preparation of *Rasapushpadya malhar.*

***Rasapushpadya malhar*[11] preparation (Batch I and II)**

10gms of *Rasapushpa* was taken and triturated into a fine powder and then mixed with 200gms of *sikta tail*(1:3) in a *khalva yantra*. The mixture was triturated well till a homogeneous *malhar* was formed. A lemon yellow coloured soft *malhar* was formed.

Similarly Batch II was prepared.

Analytical study

Raw material analysis

2 samples each of *Kasis* and *Saindhav* were bought from the market and their quantitative analysis was done. The one having higher concentration of the compound FeSO4 and NaCl was selected for the drug preparation.

Teel oil having fssai approval was bought from the market.

Table 4: Analytical values of *Kasis* and *Saindhav.*

Kasis sample 1	FeSO4 -80%
Kasis sample 2	FeSO4 -84%
Saindhav sample 1	NaCl- 96.09%
Saindhav sample 2	NaCl- 98.34%

Namboori Phased spot test of Parad[12]

Namboori phased spot test was performed on the crude mercury brought from the market. Also the same test was performed post *parad shodhan* with HNO3 method. The crude mercury showed presence of *Naag* and *Vanga* metals and after shodhan, mercury showed the absence of these metals.

For this test 10% potassium iodide paper was taken. Samples of both crude and HNO3 purified mercury were prepared separately by adding 1ml of 5N HNO3 to 2 gms of mercury and kept still for 20 mins.

Later a drop of this solution was put on the potassium iodide paper(Whatman's paper no.1 & 10% potassium iodide solution) to see the immediate colour changes.

Table 5: NPST of *Ashuddha* and *shuddha Parad.*

Ashuddha Parad		***Parad* purified with HNO3**	
Observations	**Interpretations**	**Observations**	**Interpretations**
Yellow spot in the centre surrounded by a orange band of ring. Lastly a brown ring.	Yellow spot seen at the centre signifies the prescence of *vanga* and *naag*	Orange spot surrounded with brown	Absence of yellow spot signifies absence of *vanga* and *naag*.

Tests performed on *Rasapushpa*

Organoleptic characters such as colour, taste, odour and touch were observed.

Table 6: Organoleptic characters of *Rasapushpa.*

Characters	**Rasapushpa I & II**	**Standard[13]**
Colour	White	Pink
Odour	Odourless	Odourless
Taste	Salty	Saline
Touch	soft	---

Ash value, Acid insoluble Ash value, estimation of mercury and chloride were done and their values were compared with the standards.

Table 7: Analytical tests of Rasapushpa Batch I and II.

Standards	**Rasapushpa Batch I**	**Rasapushpa Batch II**	**Standards[13]**
Ash Value	2.2251	4.3442	--
Acid Insoluble Ash value	2.1494	3.9590	--
Mercury Content in %	40.40	45.26	83-85%
Chloride content in %	17.22	16	15-20%

Namboori Phased spot test of Rasapushpa[14]

Two *Rasapushpa* solutions were prepared, one by adding 0.5ml of 5N HNO3 and other by adding 0.5ml of distilled water to 0.125gm of *Rasapushpa*. These samples were then heated and allowed to settle for 48hours.

After that shake the samples well before adding 2 drops on the potassium iodide paper (Whatman's paper no.1 & 10% potassium iodide solution) and note the observations.

Table no. 8 Namboori phased spot test of *Rasapushpa.*

Rasapushpa Batch 1 and II			
Phase I : Immediate observation			
HNO3	**Standard observation**	**Distilled water**	**Standard observation**
Purple spot in centresurrounded by orange ring, then light orange band, cream coloured band and lastly brown ring.	Light purple central spot with brown periphery. In between both very light purple space.	Central orange with white spots in between, in periphery cream ring, white band and last greyish band.	Similar to that of HNO3 sample.

Organoleptic Characters of Rasapushpadya malhar

Organoleptic characters such as Colour, Touch and Odour of the malhar were observed.

Table 9: Organoleptic characters of Rasapushpadya malhar Batch I and II.

Characters	**Rasapushpadya Malhar. (Batch I)**	**Rasapushpadya Malhar. (Batch II)**
Colour	Lemon yellow	Lemon yellow
Odour	Odourless	Odourless
Touch	Soft	Soft

Analytical tests of Rasapushpadya malhar were also conducted. The results are given in the table below.

Table 10: Analytical tests of *Rasapushpadya malhar*. Batch I and II.

TESTS	**Batch I**	**Batch II**	**Standards**
Moisture Content	0.0101	0.0469	---
pH	6.50	6.56	4.5-6.2[15]
Acid Value	6.17	6.61	Not more than 8[16]
Peroxide Value	Nil	Nil	Not more than 6[16]

RESULTS

The results of the drug, both rasapushpa and rasapushpadya malhar have already been displayed in the tables given in materials and methods ie. table no. 7 and 10. The limits of mercury in both the batches of rasapushpa was found to be lower(40.40-45.26%) than the standard limits(83-85%). It actually came to 50% less than the permissible limits. The chlorides was within limits (15-20%). All the tests of the rasapushpadya malhar were within permissible limits. The malhar formed was a lemon yellow coloured soft mixture.

DISCUSSION

The lower limits of mercury could be because of the loss incurred during heating rasapushpa mixture. Yet it seems difficult to believe as the temperature of kupi never exceeded 110^0C as for the preparation of rasapushpa, mandagni (less than 400^0C) has been indicated. Also the standard limits given are specifically indicated for the version of rasapushpa selected by me.s Namboori phased spot test a tool to authenticate the given drug gives us a glimpse of mercury before and after purification. The absence of metals vanga and naag after shodhan shows how the purification yields in removing the doshas of parad. Naag and vanga are described as the yoigik and aupadhik doshas of parad.

It was also observed that the rasapushpa acquired off the rasapushpa mixture was 28 to 32%. Rasapushpa thus found was white coloured flower like soft structure formed at the neck of the kupi. It has to be stored in a glass container as it is corrosive in nature.

For the preparation of rasapushpadya malhar the aadhar dravya ie. the sikta tail had to be prepared using various ratios of teel oil and bee's wax. In Rasatarangini, 1:6 and 1:5 ratio have been described of wax: teel oil. Yet this ratio seems invalid for the temperature in Mumbai as the mixture prepared in the above ratio dissociated within a week. And so trial began to find the perfect ratio for the malhar preparation. 1:3 ratio was finally selected.

While preparing rasapushpadya malhar, 1: 20 ratio was taken of rasapushpa: sikta tail. For this firstly fine powder of rasapushpa must be prepared and then proper tirturation in khalva yantra needs to be done to form a homogeneous mixture. The rasapushpadya malhar finally prepared was a lemon yellow coloured, soft, semisolid compound.

CONCLUSION

Research needs to be done to find why the loss of mercury occurred in the given batches of rasapushpa by repeating the procedure number of times. The malhar prepared had all the tests within normal limits and thus its clinical trial to be carried out is the next step of this study. Although malhar kalpana has an expiry date of three years, the malhar prepared from rasa dravya could last even longer.

Nirgandha kalpana is rarely used nowadays especially in central India. But if we study the indications and usefulness of these kalpa we will find that they can give miraculous results if used properly.

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