

PARADA SHODHANA: A PHARMACEUTICAL STUDY

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ABSTRACT

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Rasa Shastra is a branch of preparation of Ayurvedic medicines that contain materials from natural sources which includes plants, minerals/metals and animals and significantly Parada(mercury). The name of this branch has been given after Parada called Rasa in Rasa Shastra indicates the use of Parada in various Ayurvedic medicines along with other metals/minerals known as Rasaushadhis. But before using it in formulations, purification process of Parada should be carried out so as to eliminate its adverse effects on the body. **Aims and objectives-** Purification of Parada (mercury) was carried out as per classical reference of the Rasa Tarangini and its organoleptic characters were observed. **Materials and Methods-** Different

references by different authors in ayurvedic books are available for Shodhana of Parada. For the present study, Ashudha Parada was triturated with equal quantity of Sudha Churna (limestone) in a mortar pestle for 36 hours. Further it was triturated again with Lashuna Kalka (garlic paste) and Saindhava (salt) mixture for 36 hours. For Naga dosha nivarana, again Parada was triturated with Ishtika churna, Grahadhuma, Haridra churna, fine cut wool, Ghritakumari swarasa. Then for Vanga dosha nivarana, Parada was triturated with Ankol, Indrayan, Haridra churna, Ghritakumari swarasa. Detailed observations and organoleptic

characters were noted during the procedure. **Result and conclusion-** Total quantity of Ashudha Parada was taken- 350g and obtained quantity of Parada from Sudha Churna was— 280g, further from Lashuna Kalka and saindhava lavan obtained quantity of mercury was 232g. After Naga and Vanga dosha nivarana obtained Parada was 212g and 195g respectively. Following this method of Shodhana (purification), mercury can be purified and used for various pharmaceutical procedures also as an ingredient in various Ayurvedic formulations making it therapeutically potent.

KEYWORDS: Parada, Mercury, Shodhana, Purification process, Trituration.

INTRODUCTION

Rasashastra is a branch of Ayurveda, dealing with the formulations involving drugs of metal/mineral origin. The name of this branch has been given after Parada called Rasa in Rasashastra indicates the use of Parada or Rasa in most of the Ayurvedic formulations along with other metals/minerals called as Rasaushadhis. Parada is used for Rasa/Rasayana(rejuvenation)chikitsa, balances all the three doshas (vata, pitta and kapha) of the body, also increases medicinal properties of other herbs in the compound medicines so it is the core ingredient of Rasaushadhis. But before using them in formulations and therapeutically these metal/minerals should undergo pre-treatment called as Shodhana(purification).

Concept of Shodhana: The literary meaning of 'Shodhana' is purification but in Rasashastra Shodhana is a Samskara (process or procedure) which essentially brings out modifications or alteration in properties along with purification. The main aim of this process is to enhance its physic-chemical properties so as to increase its availability in our body, enhances absorption in the body by reducing the particle size and to remove malas (toxins) from the drugs so as to eliminate possible adverse effects and converting the material for further processing. In this process, metals/minerals after mixing with drugs used for certain purpose, they are treated with various peshanadi (grinding, etc.) karmas.^[1] Mercury is considered as a heavy metal containing various impurities and causes toxic and adverse effect to the body hence purification of such metal is must.

Grahya Swarupa of Shuddha Parada^[2]

The superior quality of Parada should possess following properties such as "Antah-Sunilata" (bluish internally) and externally appears like "Madhyahna Surya Pratima Pariksha (brilliant shining like mid day sun).

Agrahya Swarupa of Parada^[3]

Mercury, which looks smoky, grayish, slight yellowish or having various shades of colour, contaminated or associated with impurities, is not recommended for therapeutic purposes.

Dosha (impurities) of Parada are classified as follows^[4]

1. Naisargika Doshas (natural impurities)
2. Yougika Doshas (physical impurities)
3. Aoupadika Doshas (chemical impurities in the form of coating).

Pharmacological and therapeutic properties of Parada	
Rasa	Shadrasa
Guna	Snigdha, Sara and Guru
Virya	Ushna
Vipaka	Madhura
Karma	Yogavahi, Rasayana, Vrishya, Balya, Vayastambhana, Pushtikaraka, Deepana, Agnivardhaka, Deha Loha Siddhikara, Ropana, Krimighna and Tridoshaghna, Vali, Palithya, Jara Roga, Krimi, Sarva Roga.

MATERIAL AND METHODS

Ashudha Parada(mercury) bought certified from Herbasia biotech, Amritsar by checking its Grahyalakshanas mentioned in classical texts. The study was conducted in the pharmacy of Govt. Ayurvedic college, Patiala as per the reference of Rasa Tarangini 5/27-30(Samanya shodhana) and R.T. 5/22-23(Vishesha shodhana). Type of procedure adopted was Mardana (trituration).

Equipments: Stone mortar and pestle, vessel, cloth, spatula, weighing machine.

Ingredients for Samanya Shodhan of Parada

- Asuddha Parada -350 gm
- Sudha (Lime powder) - 350 gm
- Lasuna(peeled garlic) -280 gm
- Saindhava Lavana - 140 gm
- Hot water- Quantity sufficient

Ingredients for Naga and Vanga dosha nivarana

- Samanya shodhit Parada -232 gm
- Grahadhuma, Ishtika churna, Haridra churna, fine cut wool-1/16th part
- Indrayana, Ankola, Haridra churna-1/16th part

- Ghritakumari swarasa- q.s.
- kanji- q.s.

Process of Parada shodhan

Samanya shodhana^[5]: Asuddha Parada and Sudha churna (lime powder) in equal quantity were mixed in Khalva Yantra and triturated for 36 hours. Then the mixture was added to double layered cloth to separate Parada from it. To separate remaining Parada in mixture, the mixture was slowly washed with warm water till the water becomes colourless and only Parada was remained. Weighed the Parada, added equal quantity of Lasuna paste with half the quantity of Saindhava Lavana together and triturated for 36 hours. Then this paste was slowly washed with hot water till the water becomes colourless and Parada was collected. Weighed the samanya Shodhit Parada and preserved for further use.

Vishesha shodhana^[6]: For Naga dosha nivarana of Parada, samanya shodhit Parada and Grahadhuma, Ishtika churna, Haridra churna, fine cut wool, Ghritakumari swarasa were mixed in Khalva Yantra and triturated for 12 hours. Then the Parada was separated from the mixture and washed it with kanji and weighed it. For Vanga dosha nivarana of Parada, Parada and Indrayana, Ankola, Haridra churna, Ghritakumari swarasa were mixed in Khalva Yantra and triturated for 12 hours. After that Parada was separated from the mixture and washed it with kanji and weighed it.

Precautions

- Mardana should be done very carefully as Parada may spill out of Khalva Yantra.
- Separation of Parada from mixture should be done carefully to avoid the loss in jalagati.

OBSERVATIONS AND RESULTS

Observations

- After one hour of trituration Parada started disintegrating into small globules and started mixing up with Sudha (lime powder). So lime powder became heavy.
- When Sudha was triturated with Parada for about 5 hours, the mixture turned to light grey colour.
- After triturating for 36 hours the mixture of Sudha turned to dark grey colour and no free Parada globules were seen in the mixture.
- When the trituration was over, mixture of Parada and Sudha was washed with hot water, it became light grey in colour but on repeated washing it gradually became colourless and

Parada settled at the bottom of water.

- When Parada was triturated along with lasuna paste and Saindhava Lavana, after 30 minute the Parada started disintegrating into small globules and paste turned to light black colour.
- After 36 hours of trituration, the paste turned into black colour and Parada in small globules form completely mixed with the paste.
- On washing, this paste with hot water, Parada globules started mixing with each other and regained its original state.
- After one hour of trituration, while Naga dosha nivarana, Parada was disintegrated into fineglobules and it was totally mixed up with the mixture.
- Obtained purified mercury was bright and shiny white in colour.

RESULTS OF PARADA SHODHANA

Date of starting: 27/12/2021

Date of completion: 11/1/2022

No. of days taken - 16 days

Total time taken for Mardana with Sudha - 36 hours

Total time taken for Mardana with Lasuna + Saindhava Lavana - 36 hours

Asuddha Parada taken - 350 gm

Sodhita Parada obtained -232 gm

Total Weight loss -118 gm

Total % weight loss-33 %

Parada	Quantity	Weight loss	%weight loss
Ashodhit Parada taken	350g		
Parad obtained after levigation with sudha(lime)	280g	70g	20%
Shodhit Parada obtained after levigation with lasun and saindhava lavana paste	232g	48g	17%

Parada Naga Vanga dosha nivarana(Vishesh shodhana)

Date of Starting: 12-1-2022

Date of Completion: 18-1-2022

No. of days taken - 7 days

Total time taken -24 hours(12hrs+12 hrs)

Samanya shodhit Parada taken - 232 gm

Weight of Parada after Naga dosha nivarana-212gm

Weight of Parada after Vanga dosha nivarana-195gm

Final weight of Parada obtained -195 gm

Total Weight loss -37 gm

Total % weight loss-15 %



Figure 1. Ashudha Parada 2.Trituration with Chunna 3. Chunna colour changed to dark grey 4 and 5. Filtration of Parada through cloth 6. Chunna dipped in water to obtain rest of mercury 7. Weighed mercury after shodhan with chunna 8. Equal quantity Lasun 9. Half quantity Saindav lavan 10. Lasun paste, Saindav lavana, mercury trituration 11. Mixture colour changed 12. Washing of mixture to obtain mercury 13. Shodhit Parada 14. Haridra churna 15. Grahadhum 16.Ishtika churna.

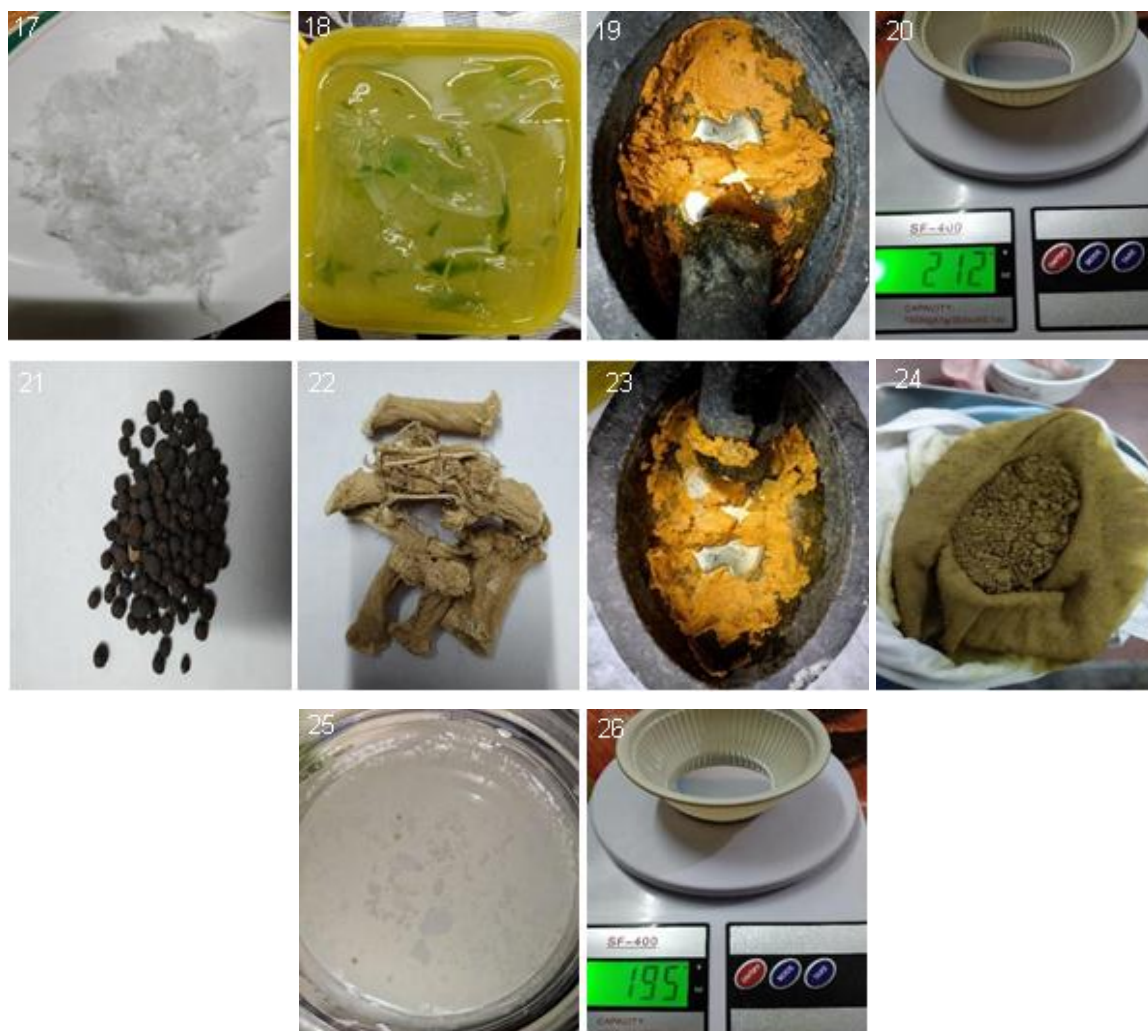


Figure 17.wool 18.Ghridakumari 19.Mixture of Parad, Ishtika churna, Grahadhuma, Haridra churna, fine cut wool, Ghridakumari swaras for trituration 20.Weighed Parad after Naga dosha nivarana 21. Indrayan 22.Ankola 23. Mixture of Parad, Haridra churna, Indrayan churna, Ankola churna, Ghridakumari swaras 24. Separation of Parada from mixture by cloth 25. Wash with kanji 26.Weighed Parada after Vanga dosha nivarana.

DISCUSSION

In order to remove Doshas (impurities) present in the Parada, various Shodhana procedures have been explained in the classical texts from which one was chosen in this study. Mercury was triturated with lime powder first then it was triturated again with garlic paste and rock salt mixture. By this Shodhit Parada was obtained. Parada may contain specially Naga(lead) and Vanga(tin)dosha in it because a salesman for his personal profit mix them in mercury. So samanyashodhit Parada was again triturated with Ishtika churna, Grahadhuma, Haridra churna, Fine cut wool, Ghridakumari swaras for Naga dosha nivarana and triturated with Ankola

churna, Indrayan churna, Haridra churna, Ghritakumari swaras for Vanga dosha nivarana. Total quantity of mercury taken was 350g and obtained was 195g lastly, loss observed was 155g (44% loss). The loss could be due to the spillage of Mercury during trituration process, evaporation of mercury from the limestone powder, due to removal or absorption of impurities of mercury in the ingredients and during washing procedure mercury may flow out with water due to its jala gati and also mercury is very unstable liquid metal and hard to handle so the loss is obvious. Mardan process mentioned for the purification, reduces the particle size of the dravya in turn increase the surface area of the dravya, helps in proper mixing of shodhya dravya with shodhan dravyas to get rid of impurities present in it by the heat produced due to continuous friction of mortar and pestle.

CONCLUSION

Shodhana (purification) of minerals/metals is must before using them in making various medicines as they are extracted from earth due to which they may contain unwanted substances and impurities in them. If they are used in raw form or unprocessed form, they will not get absorbed, metabolized and assimilated to the tissue cells of the body as a result will be therapeutically ineffective. Moreover, Ashodhit (unprocessed) mineral/metals are likely to produce detrimental effect in the body. By keeping these points in mind, attempt had been made for the purification process of Parada in this article.

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