World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 6.129

PHARMACEUTICAL PROCESSES OF LAUHA BHASMA AND AMALAKI GHANA

Dr. Pratibha Sharma[1*], Dr. Pankaj Sharma[2] and Dr. Manisha Singla[3]

[1]Reader, Department of Rasa Shashtra and Bhaishajya Kalpana, Abhilashi Ayurvedic College and Research Institute and Hospital, The Chachiot, Distt Mandi, Himachal Pradesh, India.
[2]Ayurvedic Practitioner at Ayurveda Healing Tree, Chandigarh, India.
[3]Ayurvedic Medical Officer, Government Ayurvedic Dispensary, Chamaru, Ghanaur, Patiala, Punjab, India.

Corresponding Author: Dr. Pratibha Sharma
Reader, Department of Rasa Shashtra and Bhaishajya Kalpana, Abhilashi Ayurvedic College and Research Institute and Hospital, The Chachiot, Distt Mandi, Himachal Pradesh, India.

Article Received on 23/01/2021 **Article Revised on 13/02/2021** **Article Accepted on 03/03/2021**

ABSTRACT
Rasashastra, the unique Ayurvedic Pharmaceutics which deals with the preparation of drugs from metals, minerals, poisonous herbal drugs and animal products. In their crude form these drugs are rarely administered but after combining with a number of substances through various pharmaceutical processes like Shodhana, Bhavana, Marana which transform these into a convenient dosage form that can be easily administered and assimilable to human body. These fundamental principles do not include only the drug manufacturing and enhancement of medicinal properties but also include drug dispensing to the patient in most suitable, attractive and palatable form. Due to increased global response towards Ayurvedic system of medicine there is increased demand of Ayurvedic preparations. It is a need of the hour and also a big challenge for manufacturing units of Ayurvedic drugs to produce Ayurvedic drugs with high standard quality, effective, genuine and safe drugs. So, the present study is done to introduce a standard operating procedure for preparation of Lauha Bhasma and Amalaki Ghana and also to validate the processes of Shodhana,Bhavana and Marana of Lauha and Ghana preparation of Amalaki.

KEYWORDS: Pharmaceutical Process, Shodhana, Bhavana, Amalaki Ghana.

INTRODUCTION

Knowledge of pharmaceutics is an essential base for the discovery of new and standard medicines. The main objective of pharmaceutical research is to produce a safe, effective and quality drug.[1] Safety and efficacy of a drug depends upon the quality of the raw material and standard operating procedures of drug and finished product standardization.

Rasashastra, the unique Ayurvedic Pharmaceutics which deals with the preparation of drugs from metals, minerals, poisonous herbal drugs and animal products.[2] Rasashastra is a branch of Ayurveda in which metals & minerals are converted into acceptable form, which includes Bhasma, Kupipakva rasayana, Parpati kalpana etc. for internal administration.[3] It is done by the various pharmaceutical processes of Shodhana, Marana, Jarana, Murchana, Amrutikarana etc.[4] Rasashastra and Bhaishajya Kalpana, also emphasizes on S.O.P. during drug development for specific aims and objectives regarding safety and efficacy of Rasaushadhis. The fundamental principles of Rasashastra and Bhaishajya Kalpana like Shodhana, Jarana, Marana, Bhavana etc. are the integral part of drug development. These fundamental principles do not include only the drug manufacturing and enhancement of medicinal properties but also include drug dispensing to the patient in most suitable, attractive and palatable form. In this phase of study, the aim is to introduce a standard operating procedure for preparation of Lauha Bhasma and Amalaki Ghana which was prepared as per the description mentioned in Texts and also to validate the processes of Shodhana, Bhavana and Marana of Lauha and Ghana preparation of Amalaki.

OBJECTIVE

To Validate and prepare the SOP for Lauha Bhasma and Amalaki Ghana.

MATERIALS AND METHODS

Pharmaceutical Study Design

Preparation of Lauha Bhasma

A. Samanya Shodhan of Lauha Churna.[5,6,7,8]
B. Vishesha Shodhan of Lauha Churna.[8,9]
C. Bhavana of Lauha.[10]
D. Marana of Lauha.[11]
E. Filling of the end product Lauha Bhasama in capsules.

❖ **Preparation of Amalaki Ghana**

A. Preparation of Amalaki Kwatha.
B. Preparation of Amalaki Ghana.

01. PREPARATION OF LAUHA BHASMA

A. Main Processes

❖ Samanya Shodhan of Lauha Churna
❖ Vishesha Shodhan of Lauha Churna
❖ Bhavana of Lauha
❖ Marana of Lauha

B. Sub Processes

❖ Preparation of Takra
❖ Preparation of Kanji
❖ Preparation of Kulatth Kwath
❖ Preparation of Triphala Kwath

01. Preparation of Takra: Four liter of curd was procured from local shop. Then it was put in a stainless steel vessel & two liter of water was added to it. The contents were then churned well resulting in the formation of Takra. This Takra was used at the day of Shodhan of Lauha.

02. Preparation of Kanji: After washing Rice and Kulmasha both were cooked properly by adding four times of water. After cooking both were mixed properly in a porcelain jar of ten gallon capacity (20 L) by continuous and vigorous stirring. 2/3rd of the jar got filled and 1/3rd space were remained empty. Mouth of the jar was properly closed by the lid and wrapped by mud smeared cloth to resist entry of air. It was kept as it is for 30 days as in winter it took more than 21 days to complete the Sandhana Kalpana, on 31st day of completion tests were performed after opening the lid. Kanji was collected by straining and used for Shodhana.

03. Preparation Of Kulatth Kwath: 2 kg of Dolichos biflorus seeds were taken. Kulatth seeds were screened, washed and dried properly and then crushed to coarse powder form. They were then added to 16 L of water in a SS vessel & kept overnight. By opting general rules of making decoction, decoction was prepared on next day by heating & reducing the liquid to 1/4th of its original volume. The decoction was filtered & used for Shodhana of raw Lauha.

04. Preparation Of Triphala Kwath(For Shodhana): 16L Water was taken in a big stainless steel vessel and 2kg coarse powder of Triphala was poured into the vessel. Both were mixed and kept for overnight. On next day it was boiled at mild fire till the liquid part was reduced to ¼ th i.e 4L, it was strained by clothes and used for Vishesha Shodhana of Lauha.

05. Preparation Of Triphala Kwath(For Bhavana and Marana): 16L Gomutra was taken in a big stainless steel vessel and 2 kg coarse powder of Triphala was poured into the vessel. Both were mixed and kept for overnight. On next day it was boiled at mild fire till the liquid part was reduced to ¼ th i.e 4L, it was strained by muslin clothes and used for Bhavana & Marana of Lauha .

06. Samanya Shodhan of Lauha Churna: Raw Lauha was taken in ladle and was heated on LPG upto red hot and quenched in one of the liquid media (Tila Taila (sesame oil)**,** Takra (butter milk)**,** Gomutra (cow s urine)**,** Arnal / Kanji (sour gruel)**,** Kulatth Kwatha (decoction of Dolichos biflorus)), which was taken in a stainless steel vessel .After cooling down Lauha was taken out from the vessel, again taken on ladle and heated and quenched. This process was repeated 7 times in each media. Every time fresh, gravimetrically same amount of one of the above mentioned liquid media was taken. Time for attaining red hot stage, weight of Lauha, volume of media and time taken for each process was noted and all the data was recorded.

07. Vishesha Shodhan of Lauha Churna

Media : Triphala Kwatha =500 ml,
Ingredients: Samanya Shodhita Lauha: 235g
Procedure, Equipments & Precautions are same as Samanya Shodhan.

08. Bhavana of Lauha: Samanya and Vishesha Shodhita Lauha with its weight 228 g was taken in Khalva Yantra. Freshly prepared Triphala Kshaya was added and levigated properly for 6 hours. Levigated doughy mass was taken in saucer with the help of spoon and dried in sunlight and oven before its next Bhavana. Same procedure of Bhavana was repeated for 21 times.

09. Marana of Lauha: 264 gm of Shodhita Lauha was levigated in Kharal with Triphala Kwatha for 6 hours. Then it was subjected to made pallets and dried till completely get moister less. After that, these pallets were collected into small earthen pot (Sarava) and placed uniformly, after this earthen pot was covered by same size another earthen pot and junction was sealed by double folded mud smeared cloth and allowed for complete drying. Then this, the Samputa was kept in electric muffle furnace and temperature gradually increased up to maximum temperature of 850^{o} C and maintained for one hour (Max. Temperature was gradually decreased up to 500 ^{0}C with increase of no. of Putas). Then the furnace was switched off and left for self-cooling. The next day after the Swangasitta the Samputa was collected and opened and pellets were collected. Putas was repeated till proper Bhasma was not prepared (total 37 times).

10. Filling of the end product Lauha Bhasama in capsules: Drugs and starch were weighed properly i.e. Lauha Bhasma 108 gm and potato starch 108 gm and mixed. Capsules were filled in the die with caps on the upper side. Caps were separated by the cam handle. Powder tray was placed on the die and a calculated quantity of drug and starch mixture was poured. Powder was distributed equally and completely in the capsules and compressed by pin plate. The caps were locked on

the body of the capsules by operating the liver. Loading tray was removed and capsules were collected.

02. PREPARATION OF AMALAKI GHANA BY HOT AQUEOUS EXTRACTION: The whole procedure was divided into two parts i.e.

Preparation of Amalaki Kwatha: Dry Amalaki pericarp with weight 3.5kg were taken and subjected to cleaning and washing with fresh clean water then dry Amalaki pericarp was kept in 8 times water i.e. 28 L of water for 24hrs to complete the process of soaking. Next morning Amalaki were subjected to mild heat on gas stove with stirring without covering its mouth. Water was evaporated slowly and reduced to (¼th part) 7 L of the original volume. Filter the decoction through single folded cotton cloth. This filtrate or Kwatha was collected as Amalaki Kwatha.

Preparation of Amalaki Ghana: Previously prepared Amalaki Kwatha was taken in steel vessel and subjected to heat on gas stove with continuous stirring to facilitate the process of evaporation. The heating process was carried out till the decoction converts into semi solid. This semisolid extract was poured into steel tray and kept in the oven at 50^0C till it converts into solid state. After 7 days the extract became completely dried and scraped out from the steel tray with the help of a scraper. This dried Ghana was collected as Amalaki Ghana.

OBSERVATION AND RESULTS

End Product Lauha Bhasma

- Touch -Soft and smooth powder
- Colour - Rusty red
- Taste -Tasteless
- Smell -No specific
- Rekhapooranta -100 %
- Varitartarta-100 %
- No. of puta applied- 37
- Weight of Lauha in starting of Marana = 264gm
- After completion of Marana=225gm
- Gross loss during Marana Process =39gm= 14.7%
- Net loss of material during preparation of Bhasma = 9 %

Result of Amalaki Ghana

1. Total time taken for preparation of Amalaki Kwatha = 8 hrs.
2. Final quantity of Kwatha obtained = 7L
3. Final quantity of residue obtained = 3.8 kg
4. Time taken for preparation of Amalaki Ghana from Amalaki Kwatha =10 hours
5. Total time taken for preparation of Amalaki Ghana =18(8 +10) hrs
6. Final quantity of dried Ghana obtained = 500g
7. Percentage of Ghana obtained = 14.2%

DISCUSSION

Tila Taila have Snigdha, Sukshma and Ashukari properties,[12] by these properties it may easily and rapidly enter into the material through the cracks and intermolecular space, and makes film coating and further heating causes chemical reaction, compound formation and breaking of the material. Organic contents present in Tila Taila may induce organic property to Lauha. Takra is having Tikshna, Samghata-Bhedana and Shaithili karan properties. It is acidic in nature and it removes Snigdhata imparted by Tila Taila. By these properties it may cause softening and breaking of the material. Gomutra have Ksharana and Pachana properties.[13,14,15] So it may cause worn-out of the material, and this way it may cause eradication of undesired substances from the material. Kanji is also having Tikshna, Bhedana properties and may cause softening and breaking of the material. Kulattha Kwatha have Ashmari Bhedana property.[16] By this property it may cause breaking of the material. It also induces organic nature to the material. Triphala Kwatha possesses antioxidant property,[17,18,19] it induce the organic nature to the Bhasma**.** Each liquid Dravya used in Samanya or Vishesha Shodhana has Vishesha Gunas which improves the properties of Dhatus and removes Visha. S-adenosyl-1-methionine is one of the many important substances which can be found in all the five Dravyas of Samanya Shodhana. They may also act as source of inorganic traces. Repeated levigation during the bhavana helps in reducing the particle size due to the action of comminution force. After 15 Puta during marana it was observed some decrease in weight which may be due to handling loss occurring in preparation of pellets and repeated testing for Bhasma Pariksha at various stages.

CONCLUSION

There is the need of Standard operating Procedure for the preparation of herbomineral formulation in ayurveda which enhanced of medicinal properties as well as make the drug more attractive, palatable, safe and efficient.

REFERENCE

1. Woodcock, Janet. the concept of pharmaceutical quality. American Pharmaceutical Review, 2004; 7: 10-15.
2. Savrikar, S. S., & Ravishankar, B. Introduction to 'Rasashaastra' the Iatrochemistry of Ayurveda. African journal of traditional, complementary, and alternative medicines: AJTCAM, 2011; 8(5 Suppl): 66–82. https://doi.org/10.4314/ajtcam.v8i5S.1.
3. Sudarshan, Ambika & Hussain, Gazala. SHONITARGAL RASA-A UNIQUE FORMULATION, 2020.
4. Hussain, Gazala. Concept of Satvapatana: a review. Journal of Drug Delivery and Therapeutics, 2019; 9: 271-272. 10.22270/jddt.v9i1.2187.
5. Kumar Dash,Manoj, Joshi N. PHARMACEUTICAL PREPARATION OF LAUHA BHASMA . Int J Ayu

Pharm Res [Internet]. [cited 2021Feb.22], 2019; 7(3): 26-4. Available from: https://ijapr.in/index.php/ijapr/article/view/1160
6. Singh, N., & Reddy, K. R. Pharmaceutical study of Lauha Bhasma. Ayu, 2010; 31(3): 387–390. https://doi.org/10.4103/0974-8520.77157.
7. Raman S. Belge , Archana R. Belge. Ayurvedic Shodhana Treatments and Their Applied Aspect with Special Reference to Loha.IOSR Journal of Pharmacy and Biological Sciences (IOSRJPBS) ISSN: 2278-3008 Volume, 2012; PP 45-49.
8. Rasa Vagbhata, Rasa Ratna Samuchchaya. Shastri Ambika Datta; Chowkhamba Amarabharati Prakashan, 10st ed, 2015; pp.117.
9. Singh, T. R., Gupta, L. N., & Kumar, N. Standard manufacturing procedure of Teekshna lauha bhasma. Journal of Ayurveda and integrative medicine, 2016; 7(2): 100–108. https://doi.org/10.1016/j.jaim.2015.08.003
10. Sharma, R., & Prajapati, P. K. Liquid media's in Bhavana Samskara: A pharmaceutico-therapeutic prospect. J Phytopharm, 2015; 4: 49-57.
11. Joshi, Namrata & Dash, Manoj & Dwivedi, Laxmikant. CRITICAL REVIEW AND CONCEPT OF MARANA WITH SPECIAL REFERENCE TO LAUHA, 2019.
12. Goud, S., & Sridurga, C. PHARMACEUTICAL STANDARDIZATION OF YASHADA BHASMA. International Journal of Ayurveda and Pharma Research, 2019; 13-20.
13. Ranjan, G. R., Yadav, S. S., Goswami, P. K., & Gaur, R. R. DISCUSSION AND POSSIBLE INTERPRETATIONS OF THERAPEUTIC PROPERTIES OF ASHTA MUTRA (URINES), MENTIONED IN AYURVEDA.
14. Panigrahi, Debasis. An Ayurvedic approach to general purification methods of metals w.s.r. to Silver, 2014.
15. Karunanidhi Sharma, S. P., Kumar, S., & Rajput, D. S. Pharmaceutical Study of Trivanga Bhasma.
16. Acharya, S. A comprehensive review on Urolithiasis an Ayurvedic perspective. Journal of Ayurveda and Integrated Medical Sciences (ISSN 2456-3110), 2020; 5(4): 262-269.
17. Baliga, M. S., Meera, S., Mathai, B., Rai, M. P., Pawar, V., & Palatty, P. L. Scientific validation of the ethnomedicinal properties of the Ayurvedic drug Triphala: a review. Chinese Journal of Integrative Medicine, 2012; 18(12): 946-954.
18. Nariya, M. B., Shukla, V. J., Ravishankar, B., & Jain, S. M. Comparison of gastroprotective effects of triphala formulations on stress-induced ulcer in rats. Indian journal of pharmaceutical sciences, 2011; 73(6): 682.
19. Jagetia, G. C., Baliga, M. S., Malagi, K. J., & Kamath, M. S. The evaluation of the radioprotective effect of Triphala (an ayurvedic rejuvenating drug) in the mice exposed to γ-radiation. Phytomedicine, 2002; 9(2): 99-108.