

PHARMACEUTICAL STANDARDISATION OF VANGA BHASMA

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Article Received on 27/06/2017

Article Revised on 17/07/2017

Article Accepted on 07/08/2017

ABSTRACT

Bhasmas are potent Ayurvedic medicaments, biologically active and powerful healing preparations in all aspects. Properly prepared bhasmas have not reported any serious untoward effects in clinical practice. Vanga Bhasma is an effective Ayurvedic medicine among various bhasmas which are classically explained and advised specially in genitourinary disorders. In the present work Vanga Bhasma prepared from Vanga, which comes under dhatuvarga as per rasa literature, is taken up and studied from standardisation point of view. Pharmaceutical study was conducted to know the changes during the preparation. Bhasma Pariksha was done to prove the fitness of the Bhasma.

KEYWORDS: Vanga, Shodhana, Jarana, marana, Vanga Bhasma.

INTRODUCTION

Vanga is used extensively in Ayurvedic literature for the management of Prameha, Kilaibya, Shwasa etc. It is grouped under Putiloha. In Rasashastra texts it is mentioned that Vanga be taken in the form of Bhasma for the medicinal use. Administration of ashudha Vanga leads to many untoward complications. So Vanga should undergo Shodhana, Jarana and marana to make its use as medicine. To know the changes during the process of preparing Vanga Bhasma and also to bring the genuine product this study is undertaken.

AIM AND OBJECTIVES

- To identify genuine raw material considering Graahyagrahyatwa lakshana.
- To subject Vanga for samanya and vishesha shodhana
- To subject shodhita Vanga for Jarana
- To subject shodhita Vanga for marana after the process of Jarana
- To conduct pharmaceutical study and Bhasma Pariksha of Vanga Bhasma.

MATERIALS AND METHODS

The raw material Vanga (tin) is procured from Kajrekar Pharmacy Belgaum and examined for Graahyagrahyatwa lakshana. Associated materials like TilaTaila, Takra, Gomutra, Kanji, Kulattha Kwatha, Nirgundi Patra Swarasa, Apamarga, Kumari and other materials

procured from local market Ballari and Vanga Bhasma was prepared in the P.G dept. of Rasashastra and Bhaishajya kalpana T.G.A.M. college Ballari.

Preparation of Vanga Bhasma

Preparation of Vanga Bhasma includes three stages viz.

- a) Shodhana (purification)
- b) Jarana (conversion of metal into powder form)
- c) Marana (incineration)

Shodhana^[1]Samanya Shodhana^[1]: (General Purification)

Materials: Raw Vanga, Iron Pan, Pithara Yantra, treating dravays like TilaTaila, Takra, Gomutra, Kanji and Kulattha Kwatha.

Method: The raw drug Vanga was subjected to dhalana^[2] i.e. melting and pouring in liquid. This procedure was repeated seven times by using fresh treating liquids each time. The treating liquids used were Tila Taila (sesame oil), Takra (butter milk), Gomutra (cow's urine) Kanji (sour gruel) and Kulattha Kwatha (decoction of horse gram).

Vishesha Shodhana^[3,4](Specific Purification)

Materials: Samanya shodhita Vanga, Iron Pan, Pithara Yantra, Nirgundi patra Swarasa and Haridra Choorna-1/16th part of total Swarasa.

Method: The solid material obtained after general purification was subjected to similar dhalana in

nishayukta nirgundi patra Swarasa. This procedure was repeated for three times by using fresh swarasa each times.

Jarana:^[5,6] (conversion of metal into powder form)

Materials: Shudha vanga, Iron pan, Loha darvi, Apamarga panchanga churna-1/4th of total vanga.

Method: The shodhita Vanga was taken in an iron pan and heated till it melts, then it was rubbed by adding little amount of Apamarga (achyranthus aspara L.) panchanag choorna. This process was continued till the total Vanga converts to fine powder form. When all the metal converted into powder form, the powder was collected in the centre of the pan and covered with an earthen lid and maximum heat was given till the bottom of the vessel becomes red hot and then heating was stopped and left for self-cooling.

Maraan:^[7,8] (incineration)

Materials: Jarita Vanga, Khalwa Yantra, Kumari Swarasa, Sharava, cow dung cakes and camphor balls.

Method: Jarita Vanga was mixed with water properly and allowed the mixture for sedimentation. After 12hr when the entire Vanga particle was sediment at the bottom, the upper part was decanted carefully. This kshara nirmoolana procedure was repeated until pH of the water became neutral i.e. around 7. This material was subjected to bhavana with Kumari Swarasa and then made into round pellets of equal size. These were dried under shade and taken in an earthen sharava covered with another earthen sharava with interface between them sealed with a clay smeared cloth. Then it was subjected to heating through ardhagajaputa using cow dung cakes.

OBSERVATIONS AND RESULTS

Total weight of Vanga taken for Shodhana: 800 gm.

Table 1: Showing result of Weight of Vanga Before and After Samanya Shodhana.

Sl. No	Media	Average time taken to melt	Method	Liquid media quantity	Weight before Shodhana	Weight after Shodhana	Weight Loss
01.	Tila taila	5-6min	Dhalana	850 ml	800 g	790 g	10 g
02.	Takra	6-7min	Dhalana	1100 ml	790 g	750 g	40 g
03.	Gomutra	7-8min	Dhalana	950 ml	750 g	710 g	40 g
04.	Kanji	9-10min	Dhalana	950 ml	710 g	685 g	25 g
05.	Kulatha kwatha	10-12min	Dhalana	950 ml	685 g	660 g	25g

Total Vanga taken before Samanya Shodhana - 800 g
 Total Vanga after Samanya Shodhana - 660g
 Total weight loss - 140g
 Weight loss in percentage during Shodhana - 17.5%
 Total quantity of Vanga remaining after Shodhana in % - 82.5 %

Table 2: Showing changes in liquid media before and After Samanya Shodhana.

Media used	Colour changes		pH value changes	
	Before	after	before	after
Tila taila	Light yellow	Slight blackish	7	7.5-8
Takra	White	Dull white	3	4
Gomutra	Yellow	Blackish yellow	9	10
Kanji	Off white	Blackish	4	4.5-5
Kulatha kwatha	Brick red	Dark brown	6	7.5-8

Table 3: Showing result of Weight of Vanga Before and After Vishesha Shodhana.

Sl. No.	Media	Method	Liquid media quantity	Weight before Shodhana	Weight after Shodhana	Weight Loss
01	Nishayukta Nirgundi Swarasa	Dhalana	900ml	660 g	650 g	10 g

Total Vanga taken before Vishesha Shodhana - 660 g
 Total Vanga after Vishesha Shodhana - 650 g
 Total weight loss - 10 g
 Weight loss in percentage during shodhana in % - 1.6%
 Total quantity of Vanga remaining after Shodhana in % - 98.4 %

Table 3.2: Showing Observations during Jarana of Vanga.

Time	Approx. Conversion of Vanga to powder form	Apamarga churna Used	Observations.
½ hr.	Vanga in molten state no conversion,	10 g	Light smoke after adding apamarga churna, rubbing was done.
1 hr.	5 %	10 – 15 g	During burning of churna smoke appeared, Rubbing was smooth, Greyish black powder on sides of cauldron.
2 hrs	15-20%	20 -30 g	Thick black fumes which was ceased after sometime
3 hrs.	25-35%	40 – 50 g	Sluggishness increased, Blackish white ash was seen.
5 hrs.	40 %	70 – 90 g	More pressure was applied, colour whitish black.
7 hrs	50%	90-100 g	More pressure was applied, colour whitish black.
9 hrs	60%	110-120 g	Colour of churna whitish black, few globules of tin.
11 hrs	75%	125-130 g	Colour of churna whitish black, few globules of tin.
13 hrs	90%	135-150 g	Quantity of Vanga powder was increased. Colour greyish white.
15 hrs	Almost all	155-162 g	Even with pressure no tin globules seen, gradually Vanga was converted to ash colored powder.

- Total weight of Vanga before and after Jarana was 650 g and 700 g respectively. (Weight gain 50 g)
- pH of jarita Vanga was 12 .
- Five days required for kshara nirmulana.
- After kshara nirmulikan colour of Vanga became more whitish & weight was 680 g.(loss of 20g in kshara nirmoolana, pH was 7.5)
- No odour to the product.
- Partial Rekhapurnata obtained.

Table 4: Showing result of Weight of Vanga Before and After Jarana.

Sl. No	Method	Weight before process	Weight of Apamarga panchanga choorna used	Weight after process	Weight gain
01.	Jarana	650 g	162.5 g	700 g	50 g

Weight gain in percentage after Jarana in % - 1.83%

Total quantity of Vanga remaining after Jarana in % - 98.17%

Table.5: Showing result of Weight of Vanga Before and After prakshalana.

Sl. No.	Method	Weight before process	Weight after process	Weight Loss
01.	Ksharanirmulana	700 g	680 g	20 g

Loss in percentage after Kshara nirmulana in % - 2.85%

Total quantity of Vanga remaining after Kshara nirmulana in %- 97.15%

Table 6: Showing result of Weight of Vanga before and after Marana and loss/gain during each Ardha Gaja Puta.

Putra	Weight before Marana	Qty. of Kumari Swarasa used for bhavana	Weight after bhavana	weight of cow dung cakes used	Weight after Marana	Weight	
						Gain	Loss
First	610g	250ml	615g	10kgs	607g	-	3g
Second	607g	250ml	623g	10kgs	620g	13g	-
Third	620g	200ml	624g	10kgs	624g	4g	-
Fourth	624g	200ml	631g	10kgs	628g	4g	-
Fifth	628g	190ml	635g	11kgs	628g	-	-
Sixth	628g	180ml	636g	11kgs	627g	-	1g
Seventh	627g	170ml	629g	11kgs	627g	-	-
Eighth	627g	150ml	628g	9kgs	626g	-	1g
Ninth	626g	150ml	630g	5kgs	626g	-	-
Tenth	626g	150ml	630g	4kgs	625g	-	1g

Total quantity of Vanga remaining after Kshara nirmulana in % - 97.15%
 Vanga Bhasma obtained after 10putas in % - 78.12%

Table 7: Showing result of organoleptic characters and Bhasma Pariksha lakshana after each puta.

Putra no.	Touch	Colour	Odour	Taste	Rekha purnatwa	Varitara	Unaama	Nirutha
First	Rough	Greyish white	No typical odour	Slight Alkaline	Partial	Negative	Negative	Negative
Second	Rough	Greyish white	No typical odour	Slight Alkaline	Positive	Negative	Negative	Negative
Third	Rough	Dull white	Odourless	Tasteless	Positive	Partial	Partial	Negative
Fourth	Rough	White	Odourless	Tasteless	Positive	Partial	Partial	Negative
Fifth	Soft	White	Odourless	Tasteless	Positive	Partial	Partial	Negative
Sixth	Soft	White	Odourless	Tasteless	Positive	Partial	Partial	Negative
Seventh	Soft	White	Odourless	Tasteless	Positive	Partial	Partial	Negative
Eighth	Soft	White	Odourless	Tasteless	Positive	Partial	Partial	Negative
Ninth	Fine	White	Odourless	Tasteless	Positive	Positive	Positive	Negative
Tenth	Very fine	White	Odourless	Tasteless	Positive	Positive	Positive	Positive

Images



Raw Vanga



Melting of Vanga



Dhalana



Samanya Shodita Vanga



Nirgundi Patra



Vishesh Shodita Vanga



Vanga Jarana



Jarita Vanga



Adding Kumari Swarasa

After 1st PutaAfter 5th PutaAfter 10th Puta

Rekhapurnatwa



Varitara Test



Niruttha Test

DISCUSSION

Vanga classified under Dhatuvarga and sub-classified as Putiloha indicating its low melting point. If we consider the Grahya Laksanas for vanga in the Rasa classics they project a demand for the Dhatu to be guru, shubhra varna, mridu and sheeghra dravi. The process of shodhana is designed for the very alteration of the original properties of a substance and to convert them into consumable, assimilable form.

Five different medias are used for Samanya Shodhana because, slower the quench rate, longer the thermodynamic forces have a chance to alter the microstructure and vice versa. After quenching in all media and washing with water each time may remove the water soluble impurities present with Vanga.

During quenching it was observed that quantity of different media required for complete immersion of Vanga was of varied quantity. Tila taila was the least (850 ml) amount because there was no spilling of Vanga and it became a flat disc like, when poured into Taila and Takra was the highest quantity (1100 ml). The other 4 Medias viz. Gomutra, Kanji, Kulattha Kwatha and Nishayukta Nirgundi swarasa were same (950 ml). The reason for taking more quantity of takra was to avoid spillage and there by checking loss of Vanga.

Gradual increase in melting time is seen while quenching in various liquid media.

This may be due to- conversion of some part of Vanga into powder form during successive quenching.

While quenching in the taila media, there was no spilling of Vanga. And more loss was seen during shodhana in succeeding. During this procedure spilling of Vanga was more. During washing, after each dhalana, due to the small particle size of vanga loss was more. During successive quenching, some part of Vanga gets converted into powder form. After dhalana in Gomutra, majority of Vanga is converted in to powder form. This is due to the formation of Tin dioxide.

The process of Jarana goes hand in hand with the Poling, wherein, the process being more of a redox reaction in which oxidation and reduction take place simultaneously.

The reactive components of Apamarga helped in further disintegrating of tin particles into tin compounds in open air / atmosphere. After the combustion of Apamarga during Jarana, its burnt remains mainly composed of highly alkaline calcium carbonate will be admixture with Jarita Vanga.

To remove this excess alkalinity, the product is repeatedly washed with water till the red litmus paper stops turning to blue.

This process of Marana provides an absolute extraordinary form of metals and minerals called 'Bhasma' in which a metal and mineral can be

administered internally, as it is in its most assimilatory form. Specific liquid media is advised for Bhavana for different Bhasma preparations. Here Kumari Swarasa was used as liquid media for bhavana. Bhavana was done continuously till specific time period and even size chakrikas were prepared by which a large quantity of drug can be easily accommodated in a small place of Sharava.

Generally earthen Sharavas are used, because it is inert, does not readily react with any material, it is moderately heat stable and it is not a good conductor of heat, so that the atmosphere within the Samputa is maintained for a longer duration.

Accordingly, 7 putas have been specified for preparing Vanga Bhasma.

Practically, a total of 10 Ardha Gaja puta were given to obtain all siddhi lakshanas.

CONCLUSION

Conclusions are drawn based on the observation and interpretations made during Pharmaceutical study. Vanga is a dhatu, pootiloha which is in practice since Samhita period for external use. It has come into internal use in Rasashastra period, where Vanga has been used for Prameha, Medoroga, Shleshmaamaya etc. after shodhana and marana. Raw Vanga was selected by seeing Grahya laxanas. Vanga samanya shodhana was done by dhalana in TilaTaila, Takra, Gomutra, Aranala, and Kulattha Kwatha for 7 times in each media. Vishesh shodhana was done by dhalana in nishayukta nirgundi swarasa for 3 times. Jarana process carried out using apamarga yava kuta choorna and Marana using Kumari Swarasa as liquid media. The Bhasma was white coloured fine powder, and not having any typical taste. The prepared bhasma has got all the bhasma siddhi lakshanas viz.- Rekhapurntwa-when taken between the index finger and thumb on spread it was so fine as to get easily into the finger lines. Varitara-when a small quantity of the bhasma sprinkled on water, it floated on surface. And Niruttha- no gain in weight if Rajata was seen when quantity of Rajata and Vanga Bhasma equal are heated together in a musha. Yield of Vanga Bhasma was 78.25%. These procedures may be considered as standard procedures for obtaining the good quality Vanga Bhasma.

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