

Standard Manufacturing Process of Peeta and Shwetakapardikabhasma

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ABSTRACT: In Rasashastra, all the Dravya are categorised into different group. Kapardika (Cowrie) is the mineral drug of animal origin which is categorised under SadharanaRasa, Uparasa and SudhaVarga according to different classical text of Rasashastra. On the basis of colour, three types of Kapardika have been mentioned in Rasashastra texts i.e. Peeta (yellow), Shweta (white) and Dhusara (grey). PeetaKapardika is considered as Shreshtha (best), Shweta as Madhyama (medium) and Dhusara as Hina (inferior). In present study, an attempt has been made to develop standard manufacturing procedure (SMP) of PeetaKapardikaBhasma and ShwetaKapardikaBhasma. Shodhana and Marana of both varieties of Kapardika was done as per the reference of the text Rasatantrasaraevumsiddhaprayogasangraha. No weight loss was observed during PeetaKapardika and ShwetaKapardikaShodhana. After Marana, average weight loss found was 12.66 g i.e. 11.06 % in PeetaKapardikaBhasma while in ShwetaKapardikaBhasma, it was 13 g i.e. 11.79 %. Both the Bhasma were passed through classical parameters like Rekhapurnatva, Sukshmatva, Slakshantva, Mridutva and Sharadaindunibhama.

KEY WORDS: Kapardika, Marana, Shodhana, Standard manufacturing process.

I. INTRODUCTION

Rasashastra, an integral part of Ayurveda, exclusively deals with different types of metals, minerals, their origin, processing techniques, properties, therapeutic uses, possibilities of their adverse effects and their management in a comprehensive way. There is one group of marine originated drugs which considered as rich source of calcium mentioned in classical text of Rasashastra. Kapardika is one among that mineral drug comes

under SudhaVargiyaDravya (Calcium content group) which is identified as the external shell of sea animal Cypraea moneta Linn. Kapardika is widely used in form of Bhasma in various diseases conditions i.e. Agnimandhya, Parinamashoola, Grahani, Rajyakshma, Karnasrava, Netraroga, Sphota, Raktavikara and Kshaya. Bhasma is an ayurvedic metallic or mineral preparation treated with herbal juices or decoction and exposed for certain quantum of heat. Bhasma has higher therapeutic values because of their micro fineness they get absorbed easily in the body in smaller dose.

In Rasashastra, before preparation of any dosage form, the selection criteria of raw material are very important. For Kapardika, acceptable characters as well as acceptable varieties are mentioned on the basis of its weight and colour. According to Rasaratna Samuchchaya, Kapardika which is Peetabha (yellowish in colour), Granthi on Prushtha (nodules on the back) and DirghaVrutta (large in shape) taken as GrahyaKapardika (acceptable variety). Other than these is considered as Guru and increases Kapha and PittaDosha. On the basis of colour, there are three varieties i.e. Peeta (yellow), Shweta (white) and Dhusara (grey). Out of these, Peeta (yellow) colour Kapardika is considered as best, Shweta (white) colour as medium and Dhusara (grey) colour as unacceptable. On the basis of weight, three varieties mentioned in classics i.e. SardhaNishka (4.5 g), Nishka (3 g) and PadonNishka (0.75 g). Kapardika which is of SardhaNishka in weight is considered as Shreshtha (best); one Nishka in weight is Madhyama (medium) and PadonNishka in weight is Hina (inferior). By screening of available research work on Kapardika it was found that very few research work has been carried out on the aspect of selection criteria of Kapardika. One dissertation work done on chemical standardization

of KapardikaBhasma prepared by three colour varieties i.e. Peeta, Shweta and Dhusara and their acute toxicity study. Another research work done on pharmaceutical standardization of three different varieties of PeetaKapardika based on weight i.e. SardhaNishka, Nishka and PadonaNishka. In both work, they concluded that pharmaceutically and analytically there was no significant difference found in all three varieties of Kapardika.

By taking all above concept in mind its need to revalidate further research work on KapardikaBhasma. Thus, this study has been carried out to find the difference between colour varieties i.e. Peeta and Shweta mentioned in classical text and also aimed to develop standard manufacturing process of KapardikaBhasma.

II. MATERIALS AND METHOD:

Procurement of Raw material:

Main drug:

Raw Kapardika (Peeta and Shweta varieties) were procured from Zam Shell Craft, JanakPuri, Gaziabad, Uttar Pradesh.

Associated drugs:

Nimbukawas purchased from local market. Kumari was collected from DhanvantariUddhyana of Government Ayurved College, Vadodara.

Equipment: Electric weighing balance, S.S Vessel, measuring beaker, Gas stove, Iron pan, TambadaKhalvaYantra, Earthen Sharava, Infrared thermometer, Pyrometer, Cow dung cakes, Sieve (200 mesh), Air tight container.

Identification and Authentication:

PeetaKapardika: It was identified by comparing acceptable characters i.e. Peetabhavarna (yellow colour), Granthi on Prushtha (nodules on back) and DirghaVrutta (large in shape) with different varieties of Kapardika available in market. Hence *Cypreamoneta Linn.* was taken as PeetaKapardika.

ShwetaKapardika: *Procalpurnuslacteus* was identified as ShwetaKapardika.

Nimbuka and Kumari: Both the drugs were identified and authenticated by Pharmacognosy department of Food and Drugs Laboratory, Vadodara, Gujarat by comparing it with standard given in the text quality standard of Indian Medicinal Plants.

Batch coding:

PeetaKapardika: PK

ShwetaKapardika: SK

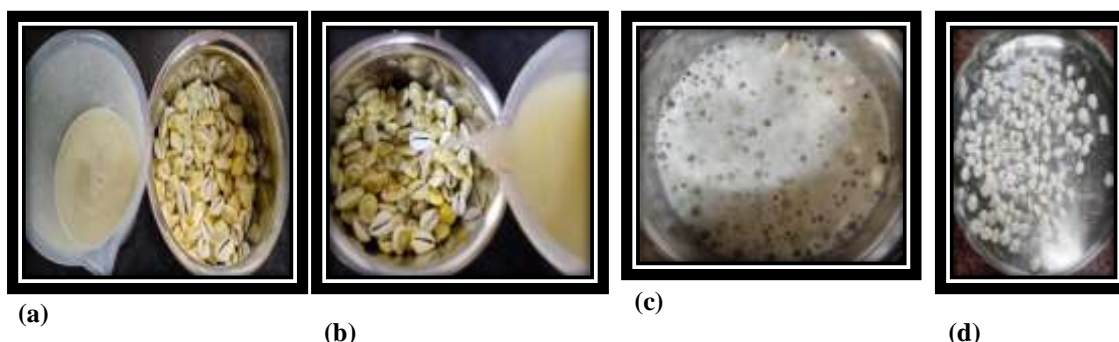
PeetaKapardikaBhasma: PKB

ShwetaKapardikaBhasma: SKB

Pharmaceutical processing:

Shodhana of Kapardika:

KapardikaShodhana was done as per the reference from *RasatantrasaraevumSiddhaprayogasangraha* by the principle of Nimajjana (dipping). 500 g of Raw Kapardika was taken and three batches were prepared from both varieties. Firstly Raw Kapardika was washed with water and dried properly. 500 ml of NimbukaSwarasa was taken in s. s. vessel and Kapardika was dipped in it for the duration of seven days. Based on pilot study, NimbukaSwarasa was changed on each day during Shodhana procedure. On 8th day, Kapardika was separated from NimbukaSwarasa and washed with hot water. After that it was dried properly and used for further pharmaceutical procedure. (Fig. 1 and Fig. 2)



(a) Raw materials (b) Addition of NimbukaSwarasa in vessel contains Kapardika (c) Dipping of Kapardika in NimbukaSwarasa (d) ShuddhaKapardika

Figure 1: Shodhana of PeetaKapardika



(a) Raw materials (b) Addition of NimbukaSwarasa in vessel contains Kapardika (c) Dipping of Kapardika in NimbukaSwarasa (d) ShuddhaKapardika

Figure 2: Shodhana of ShwetaKapardika

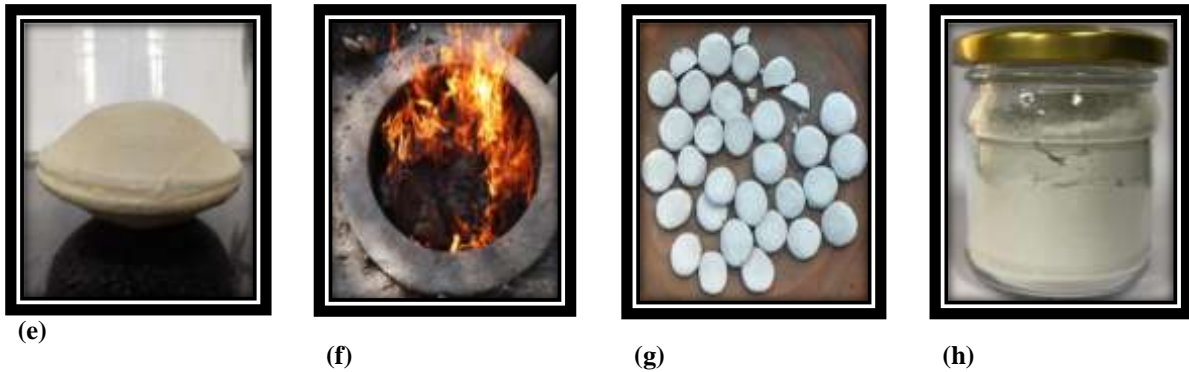
Marana ofKapardika:

KapardikaMarana was done as per the reference of RasatantrasaraevumSiddhaprayogasnagraha by using principle of Agnisamyoga. 150 g of ShuddhaKapardika was taken in each batch of both varieties and heated in iron pan by using gas stove till material got swollen properly. Temperature of Flame and Kapardika were recorded by using infrared thermometer at regular interval of 5 min. for the duration of 15 minutes. After that swollen Kapardika was dipped in Kumariswarasa and levigation was carried out for the duration of 1 hour and when the mixture attained proper dough like consistency, Chakrika (pellets) were made having

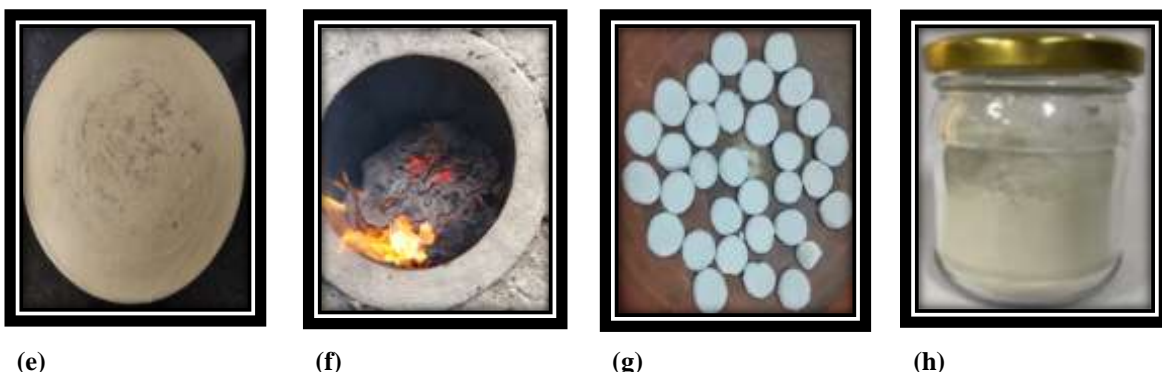
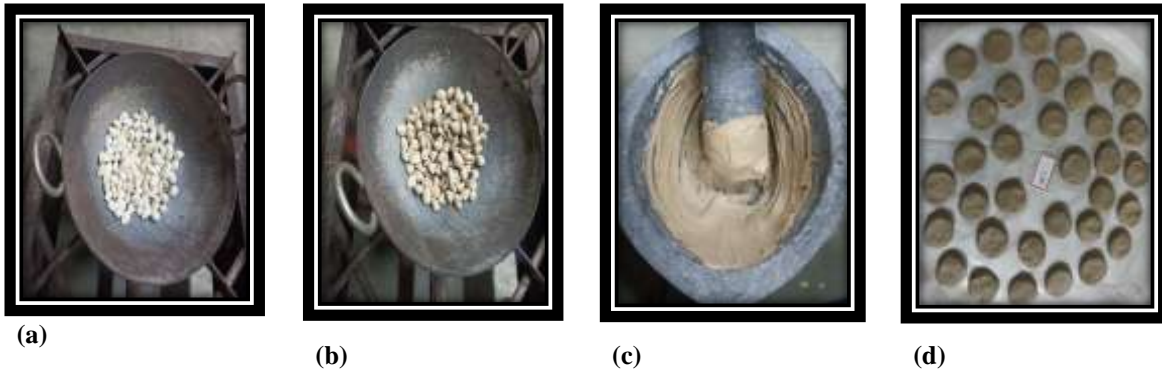
uniform size and shape and dried in the shade. After proper drying, Chakrikawere weighted and kept in an earthen Sharava. Junction between two Sharava was sealed by double folded cotton cloth smeared with MulataniMitti and again allowed for complete drying. Then, SharavaSamputa was subjected for PutaPaka in the conventional Puta i.e. VarahaPut. Fixed 20 kg of cow dung cakes were used for PutaPaka and for that VarahaPut was sufficient to prevent heat loss. After self-cooling, Bhasma was collected carefully, triturated and sieved through 200 mesh. (Fig. 3 and Fig. 4). Temperature pattern was mentioned in Graph 1 to 4.



(a) (b) (c) (d)

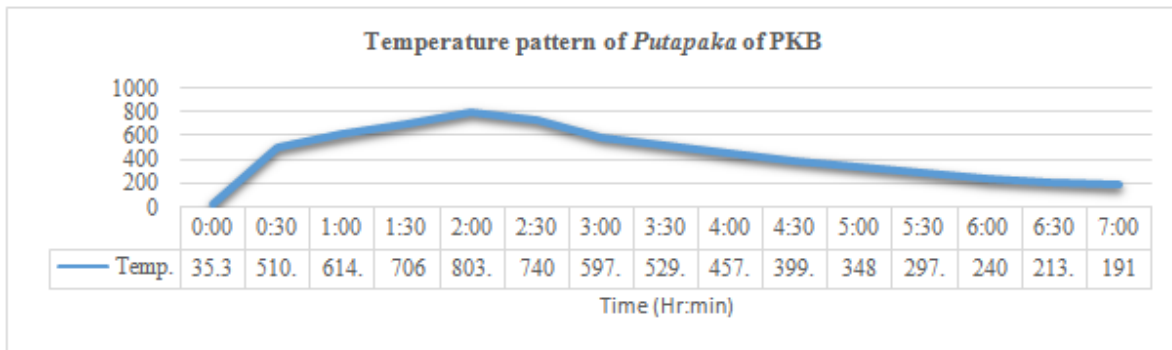


(e) (f) (g) (h)
 a)Utdfullana of Kapardika (b) Appearance of Kapardika after Utdfullana(c) Levigation with KumariSwarasa (d)ChakrikaNirmana(e) SharavaShamputa (f) PutaPaka (g) Colour of Chakrika after Putapaka (h) PeetaKapardikaBhasma
 Figure 3: Marana of PeetaKapardika

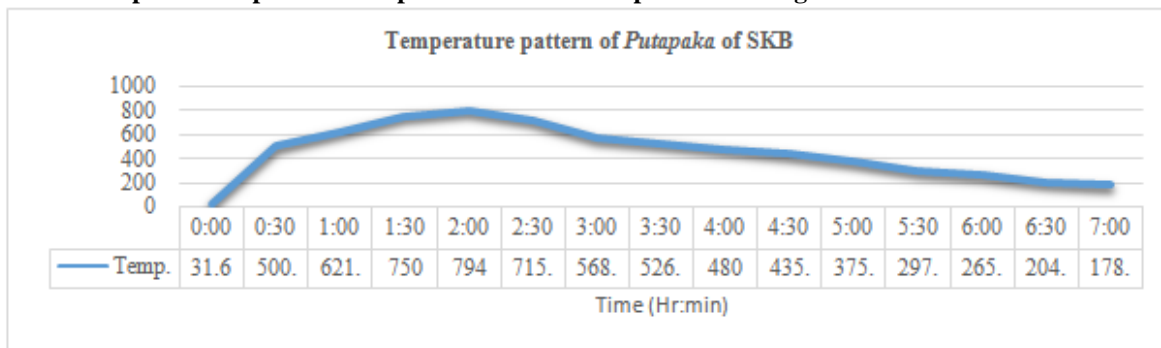


(e) (f) (g) (h)
 a)Utdfullana of Kapardika (b) Appearance of Kapardika after Utdfullana(c) Levigation with KumariSwarasa (d)ChakrikaNirmana(e) SharavaShamputa (f) PutaPaka (g) Colour of Chakrika after Putapaka (h) ShwetaKapardikaBhasma
 Figure 4: Marana of ShwetaKapardika

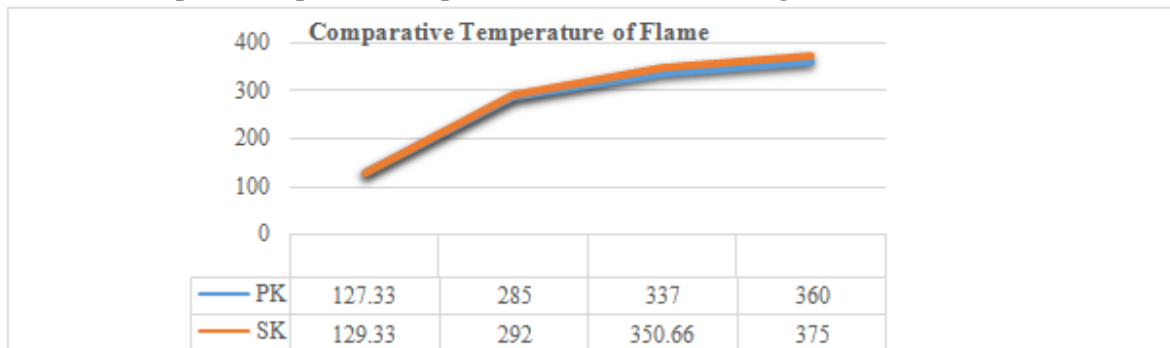
Average Temperature Pattern:



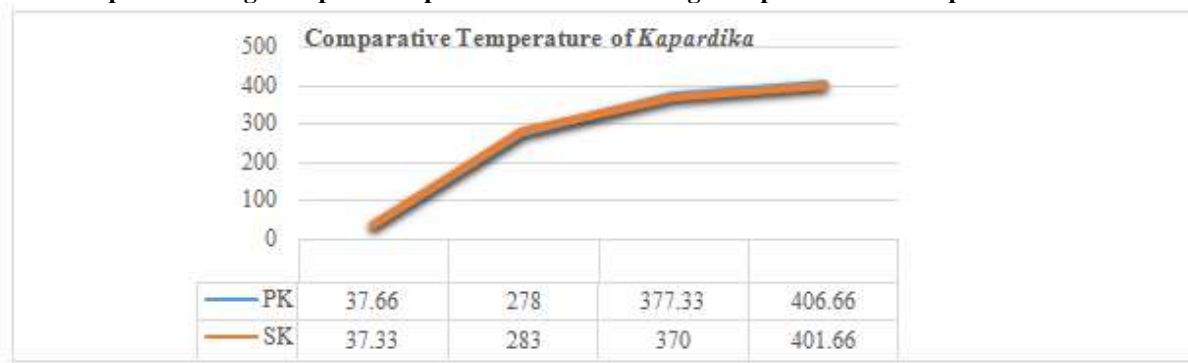
Graph 1: Comparative temperature chart of Kapardika during Ufullana of PK and SK



Graph 2: Comparative temperature chart of Flameduring Ufullana of PK and SK



Graph 3: Average temperature pattern observed during Putapaka of PeetaKapardikaBhasma



Graph 4: Average temperature pattern observed during Putapaka of ShwetaKapardikaBhasma

III. RESULT

Table 1: Quantitative results of NimbukaSwarasaused forShodhana

Weight of Nimbuka Fruit (g)	Obtained Swarasa	
	In ml.	In %
42000	21500	51.19

Table 2: Results obtained during the process of PeetaKapardikaShodhana

Sr. No.	Parameters	PK1	PK2	PK3	Avg.
1	Weight before Shodhana (g)	500	500	500	500
2	Weight after Shodhana (g)	500	500	500	500

Table 3: Results obtained during the process of ShwetaKapardikaShodhana

Sr. No.	Parameters	SK1	SK2	SK3	Avg.
1	Weight before Shodhana (g)	500	500	500	500
2	Weight after Shodhana (g)	500	500	500	500

Table 4: Results obtained during Marana of PeetaKapardika

Sr. No.	Parameters	PKB1	PKB2	PKB3	Avg.	Avg. weight loss (g)	Avg. weight loss (%)
1	Weight before Utpullana(g)	150	150	150	150	12.66	11.06
2	Weight after Utpullana(g)	142	142	143	142.66		
3	Initial weight of UtpullitaKapardika taken for PutaPaka (g)	112	113	113	112.66		
4	Weight of Chakrika before Puta (g)	109	110	108	109		
5	Weight of Chakrika after Puta (g)	103	104	102	103		
6	Weight of Bhasma pass through 200 mesh	99	101	100	100		

Table 5: Results obtained during Marana of ShwetaKapardika

Sr. No.	Parameters	SKB1	SKB2	SKB3	Avg.	Avg. weight loss (g)	Avg. weight loss (%)
1	Weight before Utpullana(g)	150	150	150	150	13	11.79
2	Weight after Utpullana(g)	140	141	140	140.33		
3	Initial weight of UtpullitaKapardika taken for PutaPaka (g)	110	111	110	110.33		
4	Weight of Chakrika before Puta (g)	112	110	110	110.66		

5	Weight of Chakrika after Puta (g)	100	105	100	101.66		
6	Weight of Bhasma pass through 200 mesh	95	101	96	97.33		

Table No. 6: Classical BhasmaPariksha of bothBhasma

Sr. No.	Parameters	PKB	SKB
1	Rekhapurnatva	Pass	Pass
2	Sukshmatva	Pass	Pass
3	Slakshantva	Pass	Pass
4	Mridutva	Pass	Pass
5	Sharadaindunibhama	Pass	Pass

IV. DISCUSSION

Kapardika is a mineral drug included under SudhaVarga, Uparasa and SadharanaRasa. KapardikaBhasma has been widely used in the diseases like Agnimandhya, Parinamshoola, Grahani, Rajyakshma, Karnasrava, Netraroga, Sphota, Raktavikara and Kshaya. In the field of Rasashastra, before preparation of any drug the selection criteria of raw material has prime important which are given in classical text of Rasashastra. According to that Kapardika having PeetabhaVarna, Granthi on Prushtha and DirghaVrutta is considered as acceptable variety of Kapardika. Based on colour there are three types of Kapardika i.e. Peeta(yellow), Shweta (white) and Dhusara (grey) out of which PeetaKapardika is considered as Uttama, Shweta as Madhyama and Dhusara as Hina. Keeping all these criteria these study was taken to find difference between Peeta and Shweta varieties of Kapardika and also aim to develop Standard manufacturing process of KapardikaBhasma.

KapardikaShodhana was done according to reference given in the text RasatantrasaraevumSiddhaprayogasangraha. According to that method, 500 g of raw Kapardika was dipped in NimbukaSwarasa for seven days and every day fresh NimbukaSwarasa was used. Fixed 500 ml of NimbukaSwarasa was added on each day. Total 3500 ml of NimbukaSwarasa was required for the Shodhana of each batch. After completion of Shodhana, both varieties of Kapardika became white in color having rough surface and easily breakable which may be due to corrosive nature of citric acid found in NimbukaSwarasa. 100% yield was obtained for both varieties of Kapardika. There was no weight loss found in any batch after

completionofShodhana. Only organoleptic changes were observed in both varieties of Kapardika.

KapardikaMarana was also done as per the reference given in RasatantrasaraevumSiddhaprayogasangraha. As per the reference, firstly 150 g of ShuddhaKapardika was heated over gas stove in iron pan till it swollen and after that it was levigated with KumariSwarasa for the duration of 1 hour and Chakrika was prepared. Fixed 100 ml KumariSwarasa was used in each batch. For the PutaPaka procedure fixed 20 kg of cow dung cakes were taken and for that VarahaPuta was used. Average 803.33 °C and 794.00 °Cpeak temperature was observed during PutaPaka of PeetaKapardika and ShwetaKapardika respectively. The average loss observed for the PeetaKapardikaBhasma and ShwetaKapardikaBhasma was 11.06% and 11.79% respectively. Both the Bhasma were passed from classical BhasmaPariksha indicates the formation of appropriate chemical compound and micro fineness of Bhasma.

V. CONCLUSION

3500 ml of NimbukaSwarasa was required for Shodhana of 500 g of Kapardika in each batch. For the preparation of KapardikaBhasma having batch size of 150 g, 20 kg of cow dung cakes and Varahaputa is sufficient. Peak temperature observed for PeetaKapardikaBhasma and ShwetaKapardika was 803.33 °C and 794.00 °C respectively. Average 88.75% and 88.20% yield were obtained in the preparation of PeetaKapardikaBhasma and ShwetaKapardikaBhasma respectively. Both the Bhasmawere passed through classical parameters like Rekhapurnatva, Sukshmatva, Slakshantva, Mridutva and Sharadaindunibhama. There was not

any major pharmaceutical difference found in both

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