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Pharmaceutical Preparation of Kapardika Bhasma

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Abstract: ***Introduction: Rasashastra is a science of Ayurvedic pharmaceutics which deals with the drugs of mineral origin, their varieties, characteristics, processing techniques, properties and therapeutic uses. The Shodhana and Marana are two basic concepts of Rasashastra. Almost all drugs are advised to be processed with specific Shodhana and Marana methods before their internal uses, to remove their harmful effects and to convert it into absorbable form. By the application of various Shodhana and Marana processes prescribed in Rasa classics various physical and chemical changes takes place in the purified drug, which will be analyzed by applying some modern analytical test parameters. Materials and methods: In the present study Kapardika was purified and incinerated with reference mentioned in Rasatarangini and observations were documented. Results: Organoleptic characters didn't show any variation in three puta and heating pattern also similar. Discussion and conclusion: Kapardika shodhana and Marana was done by following the method prescribed in Rasatarangini and observations during Shodhana and Puta and after Shodhana and Puta were documented. A detailed work is discussed in article. After three puta Kapardika bhasma passed all bhasmapariksha.***

Keywords: *Shodhana, Marana*, pharmaceutical study, *Kapardika* etc.

1. Introduction

Ayurveda is a holistic life science. It covers all aspects of human life. The subject matter of Ayurveda is experienced based and practical.

Rasaoushadhis have unique place in *Ayurvedic* therapeutics because of their qualities like *Alpamatropayogitvat* (used in less dose), *Arucher-aprasangata* (no incidence of bad taste) and *Kshipramarogayadayitvat* [1] (fast acting).

Drug manufacturing part of Ayurveda is dealt in Rasashastra. Rasashastra is a branch which deals with pharmaceutical technology in which process like *shodhana* , *marana* was carried out. *Marana* is most important pharmaceutical process applicable to the drugs of mineral origin for their conversion into ash form. As it is considered suitable for absorption and assimilation into the body.The process of making the metals into a fine powder by applying required quantity of heat is known as *marana.* [2]

Kapardika was subjected to*Shodhana* and *Marana*as per *Rasatarangini* .Whitecolored *Kapardikabhasma* was obtained after three *Gajaputa* (classical heating system with 1000cowdungcakes) which passed all the classical *bhasma parikshas* i.e. *Rekhapurnata* (the *bhasma* should enter the furrows of finger), *Varitara* (the *bhasma*should float on the still water surface), *Nirdhuma* (the prepared *bhasma* should not emit any fumes when exposed to fire), *Niswadu* (the *bhasma* should not possess any taste), *Dantagrakachakachabhav* (*bhasma* when kept on tongue it will not produce *kachakacha* sensation) [3].

2. Materials and Methods

Raw *Kapardika* which was procured from S.G. Phytopharma pharmacy, Kolhapur

Associated drugs

Kumari and *Nimbu*. *Kumari* was taken from herbal garden of PMT's Ayurved College, Shevgaon and *Nimbu* from local market. Fresh *Nimbu swarasa* was used for *Kapardika shodhana* and fresh *Kumari swarasa* was used for *Kapardika marana*.

Equipments

Dolayantra was used for *Kapardika shodhana*,*Khalva yantra* (Mortar and Pestle) was used for levigation during *Chakrika* (Pellet) formation, *Gajputa* was used for *Kapardika bhasma*nirmana, and Digital pyrometer was used to record the temperature during *puta.*

Pharmaceutical processing

Shodhana of Kapardika

Kapardika shodhana was done with the reference from *Rasa tarangini* [4] (12/89). *Dolayantra* was used for *Kapardika shodhana*. *Dolayantra* was filled with fresh *Nimbu swarasa* and a *potalli* prepared with raw *Kapardika* was immersed in this *swarasa*.This *Dolayantra* was kept on medium flame for three hours. While *Swedana* process precaution should be taken that, *pottali* should not touch the bottom, but completely dipped in *Nimbu swarasa.* [5] After three hours *Kapardika* was taken out and washed with hot water and observations were documented.

Table 1: Showing Organoleptic characters of *Kapardika shodhana*

Features	Before shodhana	After shodhana
Appearance	Solid, Heavy	Solid, Light weight
Odour	No specific odour	No specific odour
Colour	Yellow : Shiny	Light yellow, Less shining
Taste	Kshariya	Amleeya
Weight	500 gms	480 gms

Kapardika Marana

Kapardika marana was done with reference from *Rasatarangini* [6] (12/91-93) .*Shuddha Kapardika* was triturated with fresh *Kumari Swarasa* for 6 hours and when the mixture attained proper consistency, pellets were made and dried in the shade. They were then transferred to *Sharava Samputa* (sealed in earthen crucibles) and subjected to *Gajaputa* [7] using average 260 cowdung cakes. Total three *puta* were given to form *Kapardika bhasma*. For first *puta* highest temperature noted was 1020°C after 1 hour and the total duration of heat treatment was 6.5 hours (table 2). For second *puta* highest temperature was noted at 1087 ^{0} C after 1.15 hour and the total duration of heat treatment was 6.5 hours (table 3). For third *puta* highest temperature was noted at 1042 ^{0} C after 1.15 hour and the total duration of heat treatment was 6.15 hours (table 4).

Table 2: Showing temperatures and time of- 1st *Gajputa.*

Time (min.)	*Temp. in ^{0}c*	*Observation*
0	25	No fumes
15	63	Fumes were appeared
30	189	Very dense grayish white fumes, Flames appeared
45	522	Flames increased, Fumes were decreased
60	1020	Flames were stable, intermittent, fumes were absent
75	933	Flames were decreased, red hot color inside pit
90	886	Flames disappeared, Red hot color inside pit
105	873	Pit was emptied ¼ from the upper margin
120	847	Red hot colored pit, *Sharava samputa* was seen
135	846	*Sharava samputa* were also became Red hot
150	782	Color of the pit was became slight black
165	702	Pit inside pit was became dark black
180	562	Upper layer of Cow dung cakes were became grayish black forming ash
195	455	With upper grayish layer pit was ½ parts emptied
210	325	Grayish layer of ashes were on upside
225	266	*Sharavas* were easily seen as the pit was ½ emptied
240	200	Beneath the sharavas there was fire without fumes
255	171	*Sharava* was completely exposed as pit was ½ emptied
270	144	Absence of flames, fumes, red hotness etc
285	117	Absence of flames, fumes, red hotness etc
300	95	Absence of flames, fumes, red hotness etc.
315	92	Absence of flames, fumes, red hotness etc
330	89	Absence of flames, fumes, red hotness etc.
345	80	Absence of flames, fumes, red hotness etc
360	74	Absence of flames, fumes, red hotness etc.
375	64	Absence of flames, fumes, red hotness etc
390	51	Absence of flames, fumes, red hotness etc.
405	30	*Sharavas*& pit were cooled, *Sharava* were taken out

Table 3: Showing temp. and Observation in 2nd *Gajputa*

Time (min.)	Temp. in ^{0}c	Observation
0	28	No fumes
15	34	Fumes were appeared
30	260	Very dense grayish white fumes, Flames appeared
45	754	Flames increased, Fumes were decreased
60	900	Flames were stable, intermittent, fumes were absent
75	1087	Flames were stable, intermittent, fumes were absent
90	1058	Flames were stable, intermittent, fumes were absent
105	970	Flames were decreased, red hot color inside pit
120	893	Flames were disappear, red hot color inside pit
135	800	*Sharava samputa* were also became Red hot
150	733	Color of the pit was became slight black
165	644	Pit inside pit was became dark black
180	593	Pit inside pit was became dark black
195	513	Upper layer of Cow dung cakes were became grayish black forming ash.
210	446	With upper grayish layer pit was ½ parts emptied
225	359	Grayish layer of ashes were on upside
240	309	Grayish layer of ashes were on upside
255	267	*Sharava* was completely exposed as pit was ½ emptied
270	228	Beneath the *sharavas* there was fire without fumes
285	198	*Sharava* was completely exposed as pit was½ emptied
300	160	Absence of flames, fumes, red hotness
315	127	Absence of flames, fumes, red hotness
330	102	Absence of flames, fumes, red hotness
345	83	Absence of flames, fumes, red hotness
360	63	Absence of flames, fumes, red hotness
375	41	Sharavas were cooled, pit was also cooled
390	25	Sharava were cooled and taken out

Table 4: Showing temp and Observations in 3rd *Gajputa:-*

Time (min.)	Temp. in ^{0}c	Observations
0	26	No fumes
15	45	Fumes were appeared
30	200	Very dense grayish white fumes, Flames appeared
45	613	Flames increased, Fumes were decreased
60	975	Flames were stable, intermittent, fumes were absent
75	1042	Flames were stable, intermittent, fumes were absent
90	990	Flames were stable, intermittent, fumes were absent
105	960	Flames were decreased, red hot color inside pit
120	890	Flames were disappear, red hot color inside pit
135	810	*Sharava samputa* were also became Red hot
150	740	Color of the pit was became slight black
165	672	Pit inside pit was became dark black
180	600	Pit inside pit was became dark black
195	592	Upper layer of Cow dung cakes were became grayish black forming ash.
210	465	With upper grayish layer pit was ½ parts emptied
225	372	Grayish layer of ashes were on upside
240	290	Grayish layer of ashes were on upside
255	525	*Sharava* was completely exposed as pit was ½ emptied
270	212	Beneath the *sharavas* there was fire without fumes
285	184	*Sharava* was completely exposed as pit was½ emptied
300	139	Absence of flames, fumes, red hotness etc.
315	104	Absence of flames, fumes, red hotness etc
330	186	Absence of flames, fumes, red hotness etc.
345	62	Absence of flames, fumes, red hotness etc
360	43	*Sharavas* were cooled, pit was also cooled
375	26	*Sharava* were cooled and taken out

Table 5: Showing results of *Kapardika bhasma*

Puta	Colour	Lustre	Odour	Weight	Touch	Taste
1st	Light yellowish	Dull	Faint	460 g	Slight soft	Astringent
2nd	White	Dull	Faint	450 g	Soft fine	Slight Astringent
3 rd	White	Dull	Faint	440 g	Soft fine	Slight Astringent

***Bhasma pariksha*:**
After 3rd *Puta Bhasma pariksha* was done and *bhasma* shows *Sookshmatva, Shlakshnatva, Varitaratva, Mrudutva, Rekhapurnatva, Dantagreakachikachitatva*.

3. Discussion

Selection of raw material is the most important step in the pharmaceutics of *Rasaushadhis*. Authentic raw material with high quality assures of producing safe and efficacious finished product. In this regard, raw materials selected to prepare *Kapardikabhasma* were authenticated and procured from S.G. Phytopharma, Kolhapur. All the associated drugs like *Kumari swarasa,Nimbu swarasa* etc. which were used at various stages, were prepared under surveillance.

Kapardika shodhana was done according the specification mentioned in *Rasatarangini*. Here fresh *Nimbu swarasa* was used for *shodhana* process. *Swedana* by *Dolayantra* vidhi was applied for *shodhana*. *Nimbu swarasa* was taken in the quantity that*Kapardika pottali* should dip completely in it. While giving the heat level of *Nimbu swarasa* in *dolayantra* vessel should be maintained by adding fresh and warm *Nimbu swarasa* time to time. At the end of *shodhana* process 480gms of *shuddha Kapardika* was obtained. Here loss of 20 gms was observed, it may be due to the impurities of raw *Kapardika*. The concept behind using *Nimbu swarasa*(acidic nature) as media may probably be to reduce hardness and particle size of the drug.

Kapardika marana also done with reference of *Rasatarangini*. During *Marana*, *Shodhita Kapardika* (480 g) was triturated with*Kumari swarasa*for 6 hours and *chacrika*(pellets) prepared. *Marana*was carried out by the classical *puta* method by adopting *Gajaputa*. Total of 760 cow dung cakes, each weighing average 100 g with 19 cm diameter and 2 cm thickness at the center were used.Total three *puta* were given for proper *bhasma* preparation. The % loss observed after first *puta* was 4.16, after second *puta* 2.17 and that of third *puta* was 2.22%. This loss in yield may be due to handling during preparation.

4. Conclusion

Shodhana by *Swedana* method using *Dolayantra* in *Nimbu Swarasa* and *Marana* by three *Gajaputa* are sufficient to obtain white colored *Kapardika Bhasma* which passed all *bhasmapariksha*.

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