WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 8, Issue 10, 1366-1373. Research Article ISSN 2277– 7105

PHARMACEUTICAL AND ANALYTICAL STUDY OF KAPARDIK BHASMA PREPARED BY THREE DIFFERENT METHODS

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Article Received on
08 July 2019,

Revised on 29 July 2019,
Accepted on 19 Aug. 2019

DOI: 10.20959/wjpr201910-15717

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ABSTRACT

Bhasmas are unique ayurvedic metallic or mineral preparations widely recommended for treatment of a variety of ailments. Animal derivatives such as horns, shells, feathers, metallic, non-metallic and herbal are normally administerd as *Bhasmas*. *Kapardik Bhasma* is the choice of drug having various therapeutic uses in day today practice. In the present study, *Kapardik Bhasma* was prepared by three different methods. *Kapardika* was subjected to *Shodhan* in *Dolayantra* with *Nimbu Swaras*. Then *Bhasma* of these *Shuddha Kapardika* was obtained by three methods *a. Dhamana, b. Gajputa* method, *c.* Triturating with *Kumari swarasa* and then subjected to *Gajaputa* for seven times. To assure the quality of *bhasma*, classical tests like *Rekhapurna, Varitara, Nishchandra*, were used. Then the *Bhasma* was subjected to Analytical Tests like loss on drying, total ash, acid insoluble ash, calcium content, etc. Studies revealed that *Kapardik Bhasma* prepared by *Dhamana* method contained 37.78% calcium whereas by *Gajaputa* method contained 44.92% calcium and by trituration with *Kumari swaras* and then subjecting to *Gajaputa* method contained 49.60% calcium.

KEYWORDS: Bhasma, Shodhana, Marana, Gajaputa, Kapardika Bhasma, Calcium content.

INTRODUCTION

Bhasmas are unique ayurvedic metallic or mineral preparations widely recommended for treatment of a variety of ailments. This group of medicines can work even in smaller doses and may even control incurable diseases effectively.[1] Animal derivatives such as horns,

shells, feathers, metallic, non-metallic and herbal compounds are normally administerd as *Bhasmas* which are used after adopting proper purification process employing various purifying agents.

Theses detoxification processes remove the toxic potentials from minerals and metals and im part a very high grade therapeutic efficacy. It is very clear and evident from long history of usage of herbomineral and metallic preparations in Ayurveda and Siddha medical system that properly processed herbomineral preparation can contribute significantly to the health care of the society. To understand the science involved in the process of *Bhasma* Formation, a simple preparation of *Kapardik Bhasma* was selected for the study. *Kapardik*, is categorised under *Sadharana Rasavarga*[2] and also under *Shuklavarga*[3] by Rasa scholars. *Kapardik* is identified as the external shell of sea animal Cyprea moneta linn. It occurs in the coastal areas of the sea. Cypraea moneta, commonly known as the money cowry, because the shells were historically widely used in many Pacific and Indian Ocean countries as a form of exchange.

Chemically, *Kapardik* is identified as Carbonate of Calcium. Since ancient days *Kapardik* is used for playing as well as for medicinal purposes. In the present paper *Kapardik Bhasma* whose main indications are in *Agnimandya* (Loss of appetite), *Parinamasula* (Duodenal ulcer), *Grahani* (Malabsorption syndrome), *Rajayakshma* (Tuberculosis), *Karnasrava* (Ottorhoea), *Netraroga* (Diseases of the eye) and *Sukraksaya* (Oligospermia) was prepared by three different methods and studied from standardization point of view.

AIMS AND OBJECTIVES

1. To prepare *Kapardik Bhasma* by three different methods.
2. Standardization of *Kapardik bhasma* prebared by three different netods.
3. Comparative analytical study of *Kapardik Bhasma* prepared by three diffent methods.

MATERIALS AND METHODS

The experiment was worked out as follows:

1. Pharmaceutical Study
2. Analytical Study

1. Pharmaceutical Study

1. Collection of Raw materials
2. Shodhan – Kapardik
3. Maran - Kapardik

1. Collection of Raw materials

All the ingredients were collected from the local market.

2. Shodhan – Kapardik

Reference[4] - Rasa Tarangini 12/89

Type of Procedure - Swedan

Purpose – Marana of Kapardik

Ingredient

1. Ashudha Kapardik – 750 gms
2. Nimbu Swarasa – q.s

For *Shodhan*, 750 gms of *Ashudha Kapardik* was taken and *Nimbu Swarasa* was used as a media for swedan. *Ashudha kapardik* was kept in clean white cotton cloth and *Pottali* was prepared. This *Pottali* was then suspended in *Dolayantra* containing Nimbu Swarasa and water. Mild heat was applied for 3 hours. After completion of 3 hours, heating process was stopped and it was left for self cooloing. Then the *Pottali* was opened and *Kapardik* was washed thoroughly with luke warm water and dried. After drying, *Churna of Kapardik* was prepared in *Khalva Yantra*.

RESULTS

Samples	A	B	C
Initial weight	750 gm	750 gm	750 gm
Final weight	745 gm	742 gm	740 gm
Weight loss in gms	5 gm	8 gm	10 gm
% Weight loss	0.66	1.06	1.33

3. Marana of Kapardik

Kapardik Bhasma was prepared by 3 different methods-

1. Dhamanavidhi Marana (Bhasma I)

Reference[5] - Rasa Tarangini 12/94

Type of Procedure - Dhamana

Purpose - to prepare Bhasma of Kapardik

Ingredient

1. Shudha Kapardik

First charcoal was put on fire to become red hot. Then pieces of *shudha Kapardik* were placed on red hot charcoal and were heated till each piece swelled up. Then it was allowed to self cool. Next day, after self cooling of Kapardik, Kapardik pieces were collected carefully and weighed.

2. Marana with Single Gajaputa (Bhasma II)

Reference[6] - Rasa Tarangini 12/92-93

Type of Procedure - Putapaka

Purpose - to prepare Bhasma of Kapardik

Ingredients: 1. Shudha Kapardik

Shudha Kapardik was kept in earthen *Sharavas*. That *Sharava* was covered with another *sharava* and the junction between the two *Shravas* was sealed by cotton cloth smeared with *Multani Mitti* and allowed to dry completely (*Sharava Samputa*). This *Sharava Samputa* was then subjected to *Gajaputa.* After burning of all cow dung cakes, the pit was allowed to self-cool. Next day the *Sharava Samputa* was opened and *Kapardik* pieces were collected and weighed. The final product was powdered and sieved through 120# mesh to obtain fine *Bhasma*.

3. Marana with Kumari Swarasa Bhavana and 7 Gajaputas (Bhasma III)

Reference[7] - Rasaushadhin Nirman

Type of Procedure - Putapaka

Purpose - to prepare Bhasma of Kapardik

Ingredient: 1. Shudha Kapardik

2. Kumari Swarasa

Shudha Kapardik was levigated with *Kumari swarasa* in a porcelain motor until it forms a thick paste and becomes suitable for making *Chakrika*s. The prepared *Chakrikas* were kept in plastic sheat for drying. After proper drying of *Chakrikas*, they were weighed and kept in another *Sharava*. That *Sharava* was covered with another *Sharava* and the margin at the junction was sealed with *Multani Mitti* and it was allowed to self cool. This *Sharava Samputa*

was subjected to *Gajaputa*. After burning of all cow dung cakes, the pit was allowed to self-cool. Next day the *Sharava Samputa* was opened and *Kapardik* pieces were collected and weighed. The same procedure was repeated for seven times. The final product was powdered and sieved through 120 meshes to obtain fine *Bhasma*.

3. **Analytical study**

A] Ayurvedic Parameters[8,9,10]

1. *Rekhapurna* – bhasma fills the spaces in between the fingers
2. *Varitara* – bhasma floats on the surface of water
3. *Slakshna* – smooth
4. *Sookshma* – very fine
5. *Laghu* – light

B] Physicochemical Parameters[11]

1. pH
2. Total Ash Value
3. Water Soluble Ash
4. Acid Insoluble Ash
5. Bulk Density
6. Assay of Calcium
7. Moisture content
8. Elemental Percentage

OBSERVATION AND RESULTS

Changes in weight of *Kapardik* during *Shodhan*

Samples	A	B	C
Initial weight	750 gm	750 gm	750 gm
Final weight	745 gm	742 gm	740 gm
Weight loss in gms	5 gm	8 gm	10 gm
% Weight loss	0.66	1.06	1.33

Changes in weight of *Kapardik* during *Bhasma* Preparation

Batch	Initial Weight (Shudha Kapardik)	Final Weight (Kapardik Bhasma)	Loss in gm	% loss in weight
Bhasma I	500 gm	438 gm	62 gm	12.4
Bhasma II	500 gm	409 gm	91 gm	18.2
Bhasma III	500 gm	386 gm	114 gm	22.8

Organoleptic Parameters of Kapardik Bhasma

Parameters	Bhasma I	Bhasma II	Bhasma III
Shabda	Nil	Nil	Nil
Sparsha	Soft and Fine	Soft and Fine	Soft and Fine
Varna	Whitish	Whitish	Whitish
Rasa	Slightly Alkaline	Slightly Alkaline	Slightly Alkaline
Gandha	Non Specific	Non Specific	Non Specific

Classical Analytical Parameters of Kapardik Bhasma

Parameters	Bhasma I	Bhasma II	Bhasma III
Rekhapurnatva	++++	++++	++++
Varitaratva	-	-	-
Slakshnatva	++++	++++	++++

Analytical study of Ashudha Kapardik, Shudha Kapardik and Kapardik Bhasma

Compound	pH	TAV	WSA	AIA	BD	A of Ca	MC
Ashudha Kapardik	9.24	39.42	1.39	2.14	2.386	38.46	9.24
Shudha Kapardik	9.48	41.65	1.18	1.08	2.708	39.02	9.48
Kapardik Bhasma I	9.16	96.57	0.21	1.14	2.724	39.17	0.88
Kapardik Bhasma II	9.33	95.24	0.37	1.39	2.529	39.67	0.81
Kapardik Bhasma III	9.27	96.88	0.29	1.03	2.706	39.82	0.64

*TAV- Total AshValue, WSA- Water Soluble Ash, AIA- acid Insoluble Ash

BD- Bulk Density, A of Ca- Assay of Calcium, MC- Moisture Content

Elemental Percentage (%w/w) of Raw Materials and Bhasma

Compound	Ca^{++}	$CaCo3^{++}$	Mg^{++}	Na^{++}	K^{++}	Fe^{++}	Silica
Ashudha Kapardik	37.88	94.55	0.95	0.51	0.012	0.10	2.0
Shodhit Kapardik	36.88	92.05	0.95	0.43	0.0009	0.069	4.5
Bhasma I	36.88	93.70	1.10	0.49	0.021	0.098	4.8
Bhasma II	44.92	70.18	1.45	0.24	0.012	0.18	4.01
Bhasma III	49.92	55.97	1.45	0.31	0.018	0.17	4.20

DISCUSSION

Kapardika are used in many areas of ayurvedic medicine. In the present study *Ashudha Kapardik* were first subjected to *Shodhan*. Then *Kapardik Bhasma* was prepared scientifically by three different methods. *Bhasma* I was prepared by *Dhamana Vidhi*. *Shudha Kapardik* was directly placed on red hot coal till each piece swelled up. After self cooling *kapardik* were powdered and used as bhasma I. In the second method i.e. *Bhasma* II *Shudha Kapardik* were subjected to single *Gajaputa*. Then after it was powdered and used as Bhasma II. In the third method the *Kapardik* were levigated with *Kumari Swarasa* and the subjected to seven *Gajaputa*. In the present study, it was observed that the *Bhasma* I requires less time and is economically cheaper than the other two methods. Third *Bhasma* III consumes more

time and is economically costly. All the three *Bhasma* passed the classical parameters of *Bhasma i.e Rekhapurna, shlakshnatva.* There was not much difference in the elemental percentage of the three *Bhasma*. Ca^{+} % was relatively more in *Bhasma* III whereas the $CaCO_3$ % was relatively less as compared to others.

CONCLUSION

There is not significant colour difference in the three varieties of *Kapardik Bhasma* i.e the colour of all three *Bhasma* is white. *Rekhapurna pariksha* was positive in all the three varities. *Bhasma I* requires less time. *Bhasma III* requires more time and is economically costly. The data of present study suggests that the inclusion of analytical techniques becomes a necessary prerequisite to evaluate the quality of *Bhasma* preparation and formulation. Further animal study and clinical study needs to be done to evaluate the absorption and elemental effects.

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