

Contents lists available at [bostonsciencepublishing.us](http://bostonsciencepublishing.us)

# World Journal of Plant Science & Research Technologies



## Preparation and Standardization of *Mayurchandrika bhasma*

Aniketh B.Surve, Aishwarya U.Phutane, Vinaya V.Jadhav, Manohor J.Patil, Prasad V.Kadam

Department of Pharmacognosy, Marathwada Mitramandal College of Pharmacy, Pune

Department of Pharmacognosy, Eklavya College of Pharmacy, Tasgoan

### ARTICLE INFO

#### Article history:

Received 12 March 2022

Revised 14 April 2022

Accepted 16 April 2022

Published 20 April 2022

#### KEY WORDS:

Pavo cristatus feather,

Mayurchandrika bhasma,

Physico-chemical analysis,

Physico-analytical study.

### ABSTRACT

Mayurchandrika bhasma (calx of peacock feather) is widely used in Ayurveda to treat diseases like vomiting, hiccup, respiratory disorders. Classical texts such as Siddhayoga Sangraha and Bhaisaiya Samhita mention distinct procedures for the preparation of mayurchandrika bhasma. In Siddhayoga Sangraha we find in detail the method of burning the peacock feathers on ghee flame whereas bhaisaiya Samhita suggests application of four Gajaputas (burning the peacock feathers at about 1000°C for four times in various media by using a thousand dung (cakes) to get the mayurchandrika bhasma. As per the GMP standard the scientific communities always prefer evidence based research protocols if good rasashastra practice (GRP) is blended with super-scientific physico-chemical and instrumental gadgets for up to data analysis, the drug designing/pharmaceutical field can excel to the top. Keeping these things in mind the present study entitled pharmaceutico-analytical study and formulation of mayurchandrika Bhasma is taken for its basic standardization and preparation protocol. X-RD, SEM, IR done.

©2022, Aniketh B.Surve. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

### INTRODUCTION

#### Birds parts as in Ayurveda

Birds have been used in ayurvedic in various forms. Poultry eggs, bird flesh. Oil. Feathers, nests etc. Have been employed in medicine but detailed scientific Research in this direction is not yet done. Septic wounds are cured by wrapping peacock feathers around them in Punjab. The smoke of peacock feathers is considered as an antidote to snake-bites. The smoked 'eye' of the long train feathers is also used as an excellent antidote to rat Bite. Oscillated feathers are also used for ophthalmic diseases. The burnt ash of these feathers is used as antiemetic.

#### Special test

A technique known as phased spot test designed by the investigators of central council for research in Ayurveda and Siddha (CCRAS), To identify bhasma.

The traditional formulations though effective are at times non-responsive too and this can be attributed to the lack of unit dosage forms of these formulations. Considering this aspect, it is utmost rational to formulate them into unit dosage forms for better efficacy

and patient compliance. Here we designed these oral formulations, containing these active metabolites with a better perception of patient compliance and ease of administration for the elderly patients and hiccup patients, now in pursuit of the best oral formulation with natural ingredients, the present research work was aimed towards development of easy to use and palatable for formulations of Mayurchandrika bhasma.

The pharmaco-therapeutic activity of a drug exclusively depends on the presence of active ingredients and their concentrations. There is an increasing prevalence of non-crystalline, partially crystalline or crystalline or crystalline materials used in solid state pharmaceutical ingredients (API). Analysis of the drug is a must to know these active principles to ensure safety and efficacy [1,2,6,7].

### MATERIALS AND METHODS

#### Pharmaceutical Study

The study related to manufacturing medicinal drug is called pharmaceutical study. The purpose of this branch is to produce standardized, reproducible clinically effective medicine and mass scale production of Ayurvedic medicines or health care production is now the need of present era. Considering increased demand and commercialization of Ayurvedic products' standardization is a must or assure the products are reliable in terms of quality. Efficacy performance, safety and protect consumer for exploitation [8-15].

\* Corresponding author:

Aniketh B.Surve, Department of Pharmacognosy, Marathwada Mitramandal College of Pharmacy, Pune;

E-mail address: [anikethsurve268@gmail.com](mailto:anikethsurve268@gmail.com)

To standardize any drug careful and keen observation is very essential in each and every step

1. Identification of genuine raw drugs.
2. Proper method of processing.
3. Quality control of finished product.

By considering above steps preparation Mayurchandrika bhasma is carried out in this particular study.

**PHARMACOGNOSTIC INVESTIGATIONS**

**Bird Part**

Based on the Ethano-medical information and literature survey, the colorful part for the present study was *pavo cristatus* [16-21].

**Bird feather collection and authentication of birds feather:**

The peacock feather was collected in month of November to march 2019 in own farm at Khambhale (BHA) Tal- Khanapur Dist-Sangli, it found naturally and it is authenticated by zoologist from the department of zoology, Pune University, Pune [19,20].

Ghee flame method (burning peacock feathers on ghee flame): peacock feathers were burnt on ghee flame (sample put in earthen pot) and the ash so obtained by putting burned sample into muffle furnace until it got converted into a black powder. The powder was then collected and preserved in an air tight glass container.

**ANALYTICAL PHARMACOGNOSY**

**Macroscopic Characterization:** *Pavo cristatus* was subjected to macroscopic studies which comprised of organoleptic characteristics of the drug [13,24].

**Organoleptic Characters:** Colour of different colour in feat X-Ray Diffraction (XRD) The *Mayurchandrika Bhasma* was subjected to XRD at Department of physics PUNE university [25-30].

**Scanning Electron Microscopy and Electron Dispersive X-ray Spectroscopy (SEM &EDX):** The *Mayurchandrika Bhasma* was subjected to SEM and EDX at Department of Botany, Shivaji University, Kolhapur. FTIR (Fourier Transform Infrared Spectroscopy) was performed to detect the Presence of functional groups or organic legends in *Mayurchandrika bhasma* [31].

**Procedure:** 5 gm *mayurchandrika bhasma* was macerated with 100 ml of solvent in a closed flask for twenty-four hours separately, shaking frequently during six hours and allowed to stand for eighteen hours. It was filtered, taking for UV spectroscopic study. The Spectra was taken at 200-800 nm from the peak obtained the  $\lambda$  max value was calculated [10].

**ORGANOLEPTIC EVALUATION[11]**

- A. Color- The color of the different bhasma is specified. Like Mayurchandrika Bhasma black in color.
- B. Odor- Generally the well prepared bhasma has no odor.
- C. Taste- Generally the well prepared bhasma are tasteless.
- D. Touch- In touch the bhasma will be soft and smooth [11].

**RESULT**

S. No.	Character	Interpretation
1.	Length of peacock feather	12 cm
2.	Width of peacock feather	8 cm
3.	Colour	Greenish
4.	Texture	Smooth

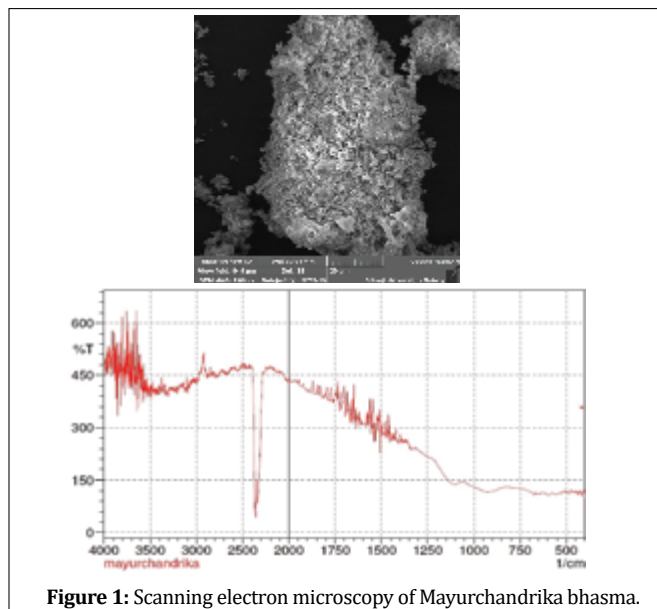
**Table 1:** Macroscopical character of peacock feather.

S.No.	character	Interpretation
1	color	Black
2	Touch	Soft
3	Appearance	Black Amorphous Powder
4	odour	unpleasant

**Table 2:** Macroscopical character of Mayurchandrika bhasma.

Sr.No	2	Intensity
1.	25.1408	479
2.	31.0528	357
3.	26.243	258
4.	28.0437	255

**Table 3:** X-RD value of Mayurchandrika bhasma.



**Figure 1:** Scanning electron microscopy of Mayurchandrika bhasma.

S. No.	Group	Type of vibration	region in cm <sup>-1</sup> and intensity
1	Alkyne Di-substituted	C $\equiv$ C str	2260-2200
2	Aldehyde	C-H str	2900-2820

**Table 3:** Infrared value of Mayurchandrika bhasma.

**DISCUSSION**

The study revealed the various parameters of Mayurchandrika bhasma and it is evaluated by traditional and modern analytical technique like X-RD, SEM, IR etc. Role of Sodhana, Bhavana and Marana is important in Bhasma preparation. Sodhana and Marana are considered highly necessary for converting the metals, sub metals and minerals into the suitable form in which they could be administered internally for achieving their therapeutic values. One of the aims of the Bhavana is to make the particles finer and to induce the new properties into the main drugs through the various liquids used during the Bhavana process. Bhasmikiranana process converts the metal into its specially desired chemical compound which eliminates the toxicity of the metal and has the necessary medicinal benefits. Bhasmikiranana helps dravya to get sendriyatwa from nirindriyatwa, and also helps for easy absorption and assimilation in the body due to its reduced particle size. Bhasma pariksha signifies- genuinity of Bhasma Through the modern parameters qualitative and quantitative analysis as well as structural analysis is possible which helps to analyze the changes that Takes place from raw drugs to the final product. This not only helps to interpret the knowledge laid down by our ancient Acharyas but also helps in assuring its toxicity level. FT-IR of Mayurchandrika bhasma shows two peaks 2260-2200 cm<sup>-1</sup> and 2900-2820 cm<sup>-1</sup> intensity. FT-IR reveals with presence of aldehydes and alkyne substituted group.

Scanning electron microscopy (SEM) is an analytical technique to know the surface morphology of the drug. It uses electron beam rather than light to form a Figure. It is capable of producing high resolution figures of a sample surface, which means that closely spaced features can be examined at a high magnification. Due to the manner in which the Figure is created, SEM Figures have a characteristic three dimensional appearance and are useful for determining the surface structure of the sample i.e. topography. It can magnify objects to extreme levels where even structure of nano particles could be clearly visible. The distribution of particles in *Mayurchandrika bhasma* shows crystalline particles which are smaller in size.

**Conflict of interest:** No Conflict of Interest to Authors

**Acknowledgements:** Thankful to Indoco Remedies, Mumbai, Central Instrument Lab, Dept of

Botany, Shivaji University, Kolhapur, Dept of Zoology, Pune University, Pune; Central Instrument

Lab, MMCOP, Pune.

**Ethical Consideration:** No Ethical Consideration.

**Source of funding:** Nil

## REFERENCES

1. Chatwal. Anand, *Instrumental Methods Of Chemical Analysis*, Himalaya publishing house, 13<sup>th</sup> edition, (1997), 455-466.
2. Vilas. Dole, *A Text Book Of Rasashastra*, Choukhamba Oriental Publication Delhi, 9<sup>th</sup> Ed, (1999), 444.
3. SRN, Murthy, Prasad, Narasimha ., *Minerals Of Indian System Of Medicine*, Chaukhamba Sanskrit Publication, Bangalore, 2<sup>th</sup> Ed, (2008), 92.
4. Vilas A, Dole , Prakash, Paranjpe, *A Text Book Of Rasashastra*, English Edition, Chaukhamba Sanskrit Pratishtan , 3<sup>th</sup> Edition, (2004) , 339.
5. Sarkar, PK, Choudary, AK, *Ayurvedic Bhasma; The Most Ancient Application Of Nanomedicine*, Journal of science and technology 10( 2010) no.2;90.
6. Jagtap, CY, Prajapati, P, Pargiri, B, Shukla, UJ, *Quality Control Parameters For Bhasma*, Ancient Scilife 10, (2001) no 2; 164-170.
7. Pal, D, kumar, CK, *Bhasma ; The Ancient Indian Nanomedicine*, National Seminar On Advances In Molecular Pharmaceutics, Nanomedicine, Nanobiotechnology And Drug Research 4, (2013); 93-113.
8. Kappor , RC. *Some Observations on The Metal Based Preparations In the Indian System Of Medicine*. Indian J Traditional Knowledge 9 (2010):562-75.
9. *The Ayurvedic Pharmacopoeia Of India*, Department Of Indian System Of Medicine And Homeopathy, Government Of India, Part-2, Vol-1 (2001):246.
10. *The Ayurvedic Pharmacopoeia of India*, Ministry of Health and Family Welfare, Department of Indian System of medicine and Homeopathy, New Delhi, Part-3, Vol-4 (2001):233-40.
11. Rugmimi, R.K, Sridurga, C.H, Venkata, Subbaiah, K; *Analytical Study Of Tamra Bhasma*; International Ayurvedic Medical Journal, vol- 6, issue 9, (2018); 1932-1941.2
12. D. A. Skoog, FJ Holler, TA Nieman, *Principles Of Instrumental Analysis*, Thomson Learning. Crawfordville, 5<sup>th</sup> Edition (1998); 543-567
13. G. W. Ewing, *Instrumental Method of Chemical Analysis* macaw's publication, New York, 5<sup>th</sup> Ed (1985); 453-457.
14. J, Kenkel, *Analytical Chemistry-Refresher Manual*, Lewis Publishers, Boca Raton 4<sup>th</sup> Ed (1992); 232-240.
15. Mishra, KK, Tasneem, K, Jain V, Mahajan, SC, *Formulation and evaluation of herbal lozenges*, Journal of Drug Delivery and Therapeutics 7 (2017):87-89.
16. Pothu, R & Yamsani, MR, *Lozenges formulation and evaluation: A review*, IJAPR 7 (2014); 290-294.
17. Maheshwari, R, Jain V, Ansari R, Mahajan SC, Joshi G, *A review on lozenges*, BBB 5 (2013); 19
18. Shinde SG, Kadam V, Kapse GR, Jadhav SB, Zameeruddin , Bharkad VB, *A review on lozenges*, IAJPR 4, (2014); 567-570.
19. [www.ayupharm.com](http://www.ayupharm.com).
20. [www.ccras.nic.in](http://www.ccras.nic.in).
21. Pal Sourav, Saokar, Reshma, Savkar, Madhav, kadibagil Vinay, R, *Modern parameters for Bhasma Analysis; Unique journal of Ayurvedic and Herbal Medicines* 6(2016); 16-24.
22. *Global Health Estimates 2016: Disease burden by Cause, Age, Sex, by Country and by Region, 2000-2016*. Geneva, World Health Organization; 2018.
23. *Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016*. Lancet 2017; 390: 1211–59
24. *Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2016*. Geneva, World Health Organization; 2018
25. Acharya Sadanada Sharma, Rasa Tarangini, Translated by Shri Kashinatha Shastri, 1, Motilala Banarsidas, New Delhi, vol-14, (2007); 48.
26. Rasavagbhata, Rasaratna, samucchaya, vizyanabodhini commentary of Datatraya Ananta Kulkarni, Meherchanda Lachamandas Publications 4, (2007); 44.
27. Pandita Kashinath Shastry, Rasa Tarangini by Pranacharya Sri Sadananda Sharma, Motilal Banarasidas, New Delhi, Reprint 2(2014); 34-35.
28. Pandita Kashinath Shastry, Rasa Tarangini by Pranacharya Sri Sadananda Sharma, Motilal Banarasidas, New Delhi, Reprint 6 (2014); 360.
29. Pandita Kashinath Shastry, Rasa Tarangini by Pranacharya Sri Sadananda Sharma, Motilal Banarasidas, New Delhi, Reprint 4 (2014); 16.
30. Dr. Ashok D. Satpute, Rasendra Sara Sangraha by Sri Gopal Krishna, Chowkhamba Krishnadas Academy, Varanasi 6 (2012); 57.
31. AyurvedaPrakash



**Submit your manuscript to Boston science publishing journal and benefit from:**

- ▶ Convenient online submission
- ▶ Rigorous peer review
- ▶ Immediate publication on acceptance
- ▶ Open access: articles freely available online
- ▶ High visibility within the field
- ▶ Retaining the copyright to your article

Submit your manuscript at † [bostonsciencepublishing.us](http://bostonsciencepublishing.us) †

Email: [submission@bostonsciencepublishing.us](mailto:submission@bostonsciencepublishing.us)