Mystery of *Chapala* – Case is not solved yet!

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Submission: 25.02.2025 Acceptance: 25.02.2025 Publication: 28.02.2025

https://www.doi.org/10.63778/PDEASIJRAAS-ARJCPL/2025_22824

Abstract:

The importance of accurate identification of raw drugs in *Ayurvedic* compositions for safe and effective therapeutic use is undebated. It highlights the efforts towards standardizing raw and finished *Ayurvedic* pharmaceuticals to ensure their quality and safety. The article addresses the issue of identification of *chapala*, a *Maharasa* group of *Dravya*, by physical characteristics, its organoleptic properties, its therapeutic benefits and toxicokinetic analysis with a focus on the debate surrounding their identification. In conclusion, our thorough analysis leads us to assert that selenium, not bismuth, emerges as the decisive element based on the comprehensive examination of the data.

Keywords: Bismuth, Chapala, Controversy, Selenium

Introduction:

The *Rasa Shastra* is an essential component of *Ayurveda*, it covers the use of medicines with a mineral origin and provides in-depth information on their different types, traits, processing methods, therapeutic applications, potential for developing side effects, management of those effects, etc. With the introduction of *Rasa Shastra* during the mediaeval era, the usage of specific metals and minerals in *Ayurvedic* medicine increased. For every *Ayurvedic* composition, accurate raw drug identification is crucial[1,2]. According to *Rasashastra,* the raw drug must be properly identified in order to be used as directed for both *Lohavedha* (the process of changing lower metals into higher metals) and *Dehavedha* (therapeutic action), as well as to prevent negative effects. Significant efforts to standardize both raw and finished *Ayurveda* pharmaceuticals are now the focus of in-depth study on a variety of fronts. These endeavors would, however, unavoidably require determining the precise nature of the raw drugs.The *Grahya Lakshanas* of various *Rasadravyas* are provided by the classical references to *Rasashastra* that may be found in various textbooks. Acharyas attempted to identify the type of medicine to be used therapeutically from among the various variations available based on these *Grahya Lakshanas.* This may also be used as a criterion to assess the distinctiveness of a drug. These standards should be used to determine which market sample is the best. Owing to the absence of scientific nomenclature in the original texts, different plants with the same names are known in various regions of the nation, which makes the drug controversial.[3,4] These disputes result in deterioration in the standards and quality of *Ayurvedic* pharmaceutical preparations. The interpretation of drug names and descriptions given in historical texts like the *Charaka Samhita* and *Susrutha Samhita*, among others, reflects the uncertainty in *Ayurveda.* The Ayurvedic discipline of *Rasashastra*, which focuses on elemental biology, has used virtually every material found in nature, from the most basic materials like mud and glue to the most priceless diamonds and metals. These substances are divided into many groupings, such as *Maharasa, Uparasa, Sadharanarasa, Dhatu Upadhatu, Ratna*, and so on. According to many *Rasashastra* textbooks, the *Maharasa* group of drugs is the closest to *Parada* (Mercury). They are utilised in various *Dehavedha* (therapeutic action) and *Lohavedha (*Process of conversion of lesser to higher metals) aspects. Yet, there are more controversies around the drugs identified as *Maharasa* in the treatises and those currently available in the market.[5,6] *Chapala* is one of the *Maharasa* drugs that have generated much discussion due to its lack of identity and unavailability, making the drug controversial. With this article, we tried to solve the mystery.

Based on physical properties:

Dr. V. G. Desai[9] identifies the substance mentioned in Bharatiya Rasashastra as bismuth based on its physical characteristics and availability as described in ancient texts, but the melting point of *Chapala,* as mentioned in these texts, does not match that of bismuth. Another author, Acharya Narendranath Mishra, believes that the substance is selenium based on its appearance, but again, the melting point of *Chapala* and selenium do not exactly match.[10]

The article by P. S.Pandey[11] mentions *Chapala* as bismuth, according to physical properties which match with bismuth like metallic luster, high specific gravity, hexagonal structure and unseen fracture. These physical properties match with bismuth rather than selenium according to him.

Based on organoleptic properties and symptoms experience by person doing purification process:[12]

The article by method describes *Chapala* as selenium based on organoleptic properties and symptoms experienced by the person during the purification process. According to Lakshmishwara tantra and RasarajaLakshmi it is mentioned that, during purification of chapalA the person who is doing trituration he will feel a rise in body temperature, Thirst, burning of eyes and nose, weakness. The symptoms experienced by a person during the purification process may be very much subjective and hence cannot be considered for scientific scrutiny.

Based on toxicokinetic analysis:

In an article by the same author,[12] Safety profile study of Chapala bhasma (clax) with reference to Bismuth and Selenium through oral toxicity was done which concludes as Bismuth showed some markable changes, and selenium showed more safety profile. Hence Selenium was safer than bismuth. The author concluded that it is better to consider selenium as chalapa than bismuth on the basis of less toxicity.

Then what is the answer?

Chapala and metal bismuth have a lot in common, including both being heavy, bright, and easily flammable. Nonetheless, digestive problems are bismuth's main medical application. Many amorphous forms of metal selenium are used as potent antioxidants and commonly in the therapy of sexual diseases. Selenium is one of the key supplements in multivitamins in contemporary pharmaceutics.[8] The management of infertility in both males and females involves the use of these medications as antioxidants, rejuvenators, and nutritional supplements. As *Chapala* is said to be "*Ateevrushyam*," it resembles selenium more closely than bismuth does.*Goura Chapala*, one of the four varieties of *Chapala*, is better physically suited to selenium.[8] *Maharasa dravya* have *Rasayana* (Rejuvenating) and *Yogavahi* (Synergistic) property and Seeing that *Maharasa* are considered important, selenium taking as *Chapala* will solve the controversy.

It's worth noting that different *Ayurvedic* texts may have varying classifications and interpretations of *Chapala*. While both selenium and bismuth offer potential health benefits, research has found that selenium is the more beneficial of the two. This is supported by ancient texts that describe selenium as possessing physical properties that are more compatible with *Maharasa dravyas*. On the other hand, bismuth does not possess these same properties. Based on this information, it would be more appropriate to classify *Chapala* as a form of selenium rather than bismuth.

Discussion:

Chapala, according to Rasa Kamadhenu, is descended from Shiva's Nasarandhra. Also, it is known as Shiva's Nasa Mala. In the Vedas, the word "Chapala" is used to emphasise the Parada rather than the Chapala. There is no more proof that Chapala is a Maharasa or Uparasa except from this. There was no explanation found in Brihatrayi samhita about Chapala. Rasarnava and Rasopanishad are the first treatises in Rasavargas that explain Chapala. The first textbook to specifically address Chapala was Rasarnava[7] In this text, Acharya provided a detailed explanation of the Shodhana (purification), Marana (incineration), Satwapatana, pharmacological action, and therapeutic indication of Chapala, as well as its origin, types, attributes, and qualities. But, use of Chapala decreased over time and eventually vanished. No specific metal or mineral by the name of Chapala is available today. The functions of Chapala described are the Gulma nashaka, Amahara, Shoolanashaka, Shoshanashaka, Prameha nashaka, Jwaranashaka, swetapradara, and Rakta pradara nashaka.[8] The drug Chapala, which is described in the Ashta group of Maharsa, has generated discussion due to its lack of identity and unavailability. There are various theories in the Rasashastra of today regarding Chapala [8] some think it is selenium (Se), while others think it is bismuth (Bi). Given that the Maharasha category contains drugs that are structured like minerals or metal ores. Some researchers think that Chapala must have come from a mineral or metal resource; hence, metals like selenium or bismuth cannot be classified as Chapala. Chapala is referred to as selenium in the Rasatarangini chapter on Chapala Nirnaya by Acharya Harisharanand sharma. Chapala is still noted as a contentious medication in any edited or newly written text book on Rasashastra. While Chapala is a Lupta Dravya, Acharya Siddhinandan Mishra stated in the Bhasma Vignana that there is no need to study it in great detail.

Conclusion:

In conclusion, we emphasize the importance of accurate identification of raw drugs in *Ayurvedic* compositions and the challenges posed by the lack of scientific nomenclature about some drugs in the original texts. The controversy surrounding the identification of *Chapala*, one of the *Maharasa* drugs, highlights the need for further research and standardization in the field of *Ayurvedic* pharmaceutical preparations. Our study indicates that it is preferable to consider Chapala as selenium given its potential health benefits and *Maharasa* classification.

Source of Support: Nil

Conflict of Interest: Nil

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