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COMPARATIVE ANALYSIS OF SĀMĀNYA ŚODHANA METHODS FOR LOHA: A REVIEW OF CLASSICAL REFERENCES AND SCIENTIFIC PERSPECTIVES

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ABSTRACT

Sāmānya śodhana is a crucial purification process in Ayurveda, particularly in the preparation of *loha bhasma* (iron) for therapeutic use. This process eliminates physical and toxic impurities while enhancing the bioavailability and medicinal potential of the metal. The procedure involves heating the metal until it is red-hot and then repeatedly quenching it in specific liquid media, including *tila taila* (sesame oil), *takra* (buttermilk), *gomūtra* (cow's urine), *kāñji* (fermented gruel), and *kulattha kvātha* (horse gram decoction). Various ayurvedic texts provide different procedural variations, yet all emphasize the necessity of *sāmānya śodhana* for ensuring the safety and efficacy of *loha*-based formulations. This review explores the principles, methods, and significance of *sāmānya śodhana* in ayurvedic pharmaceutics.

KEYWORDS: *Sāmānya śodhana*, *loha*, purification, *nirvāpa*, *bhasma*.

INTRODUCTION

Ayurveda, one of the oldest holistic medical systems originating from the vedas in india, emphasizes lifestyle choices, herbal medicines, food, yoga, and meditation for health promotion and disease prevention. *Rasaśāstra*, a specialized branch, focuses on preparing

metallic, mineral, and herbo-mineral formulations, while *Bhaiṣajya kalpana* deals with the formulation of herbal medicines.

Post-samhita literature highlights the medicinal potential of *bhasma,* a herbo-mineral preparation with potent therapeutic properties used in treating various health conditions. The preparation of *bhasma* involves the purification of metals through the process of *loha śodhana*, which is crucial for eliminating impurities and enhancing therapeutic benefits. *Sāmānya śodhana* and *viśeṣa śodhana* are essential stages in this purification process, involving general and specific cleansing, respectively. These methods result in significant physical and chemical modifications, rendering the material suitable for medicinal use.

Bhasma, also known as a herbo-mineral or herbo-metallic preparation, is renowned for its therapeutic action. However, concerns about heavy metal concentrations in some traditional formulations persist. The foundation of contemporary medicine relies on experimental findings, toxicological information, and clinical studies, raising questions about the chemical composition, safety, and pharmacological activities of ayurvedic formulations.

In *sāmānya loha śodhana*, various liquid mediums such as *tila taila, takra, gomūtra, kāñji,* and *kulattha kvātha* are used to purify raw metals. The *loha* undergoes *nirvapa* (specific heating and quenching processes) to achieve purification. These mediums are selected based on their properties and effectiveness in removing impurities from metals. The selection of specific *sāmānya śodhana dravya* for *sāmānya loha śodhana* may vary depending on different ayurvedic references. While the liquid media remain the same across different references, their sequence of usage may differ. In this paper, we aim to review and analyse the different references for *sāmānya śodhana* by examining the available literature.

AIM

To review and analyse the different references for *sāmānya loha śodhana* in Ayurvedic texts, highlighting variations in methodology, their impact on the purification process.

OBJECTIVES

- To explore the concept of *loha śodhana* – Understanding its significance in *Rasaśāstra* and its role in the detoxification and therapeutic enhancement of metals.

- To examine the different classical references – Comparing various Ayurvedic texts regarding *sāmānya śodhana*, focusing on the selection and sequence of *śodhana dravya's* (Media used for purification).
- To analyse the rationale behind different liquid media – Evaluating how *tila taila, takra, gomūtra, kāñji,* and *kulattha kvātha* contribute to the purification process.
- To identify similarities and differences in procedural approaches – Highlighting variations in heating, quenching, and media selection across different references.

METHODS

The literature search was conducted using Ayurvedic Samhitas, as well as databases such as Springer, PubMed, ScienceDirect, and Google Scholar.

For conducting the review on *sāmānya śodhana of loha*, the following materials were used:

- Primary Ayurvedic Texts: The classical texts that describe the *sāmānya śodhana* process of *loha*, including:
  - *Rasa Ratna Samuchaya (R.R.S)*[2]
  - *Rasa Tarangini (R.T)*[1]
  - *Rasendra Chintamani (R.Chi)*[5]
  - *Rasendra Sara Samgraha (R.Sa.Sam)*[3]
  - *Sharangadhara Samhita (Sa.Sam.Ma)*[4]

RESULTS

The choice of liquid media for *Sāmānya Śodhana* is based on its ability to detoxify and potentiate the metal. The following five substances are traditionally used

- *Tila Taila* (Sesame Oil)
- *Takra* (Buttermilk)
- *Gomūtra* (Cow's Urine)
- *Kāñji* (Fermented Gruel)
- *Kulattha Kvātha* (Horse Gram Decoction)

Nirvāpa (Heating and Quenching)

- The metal is heated until it becomes red-hot.
- It is then quenched in the selected liquid media sequentially.
- This process is repeated multiple times (usually 3 to 7 cycles) for each medium as per textual references.

The collected data from various classical Ayurvedic texts highlight the different approaches to *sāmānya śodhana* of *loha*. The key findings are summarized below.

SL. NO.	PROCEDURE	DURATION	REFERENCE
1	*Nirvāpa* (heating and quenching) in the following *dravya* respectively: *I. Tila Taila* *II. Takra* *III. Gomūtra* *IV. Kāñji* ***V.*** *Kulattha kvātha*	7 times in each liquid	R. R. S 5/13 R. Chi 6/3-4 R. Sa. Sam 1/245-246
2	*Nirvāpa* (heating and quenching) in the following *dravya* respectively: i. *Tila Taila* *ii. Takra* *iii. Kāñji* *iv. Gomūtra* **v.** *Kulattha kvātha*	3 times in each liquid	Sa. San. Ma 11/2-4
3	Nirvāpa (heating and dipping) in the following dravya respectively: *i. Kāñji* *ii. Takra* *iii. Kulattha kvātha* *iv. Gomūtra* **v.** *Tila Taila*	3 times in each liquid	R.T 5/4-6

Role of *shodhana dravyas*

- *Tila Taila (Sesamum indicum* - Sesame Oil, Family: Pedaliaceae)**:** Provides lubrication, removes physical impurities, and enhances the metal's smoothness.
- *Takra* (Buttermilk**)**: A mild acidic medium that helps in detoxification by leaching out water-soluble impurities.
- *Gomūtra* (Cow's Urine): An alkaline medium with strong detoxifying properties, facilitating the removal of toxic substances.
- *Kāñji* (Fermented Liquid): Enhances the dissolution of unwanted elements due to its acidic nature.
- *Kulattha Kvātha* (Macrotyloma uniflorum - Horse Gram Decoction, Family: Fabaceae): Astringent and detoxifying in nature, helping to further purify the metal.

DISCUSSION

Effectiveness of different *sāmānya śodhana* methods

- 7-cycle *nirvāpa* vs. 3-cycle *nirvāpa*

- The classical texts provide variations in the number of heating and quenching cycles. The 7-cycle process, as per *Rasa Ratna Samuchaya* and other texts, appears to ensure a more thorough purification compared to the 3-cycle method described in *Sharangadhara Samhita* and *Rasatarangini*.
- Higher cycles might lead to better detoxification and structural refinement of *loha*, making it more bioavailable for medicinal use.

❖ Order of *shodhana dravya's*

- The order of quenching in different texts follows slight variations, but all include the five primary liquids. This suggests that the sequence might influence the effectiveness of impurity removal and structural modifications in *loha.*

Physicochemical changes in *loha* after *sāmānya śodhana*

❖ Structural Changes

- Reduction in impurities and foreign matter due to repeated heating and quenching.
- Increase in porosity and surface area, making Loha more receptive to further processing in Ayurvedic formulations.

❖ Chemical Alterations

- Possible oxidation-reduction reactions leading to changes in the chemical composition of *loha*.
- Enhancement of *loha's* medicinal properties due to interaction with different *shodhana dravyas.*

CONCLUSION

Sāmānya Śodhana of Loha is a fundamental purification process in Ayurvedic pharmaceutics, ensuring the detoxification, enhancement, and bioavailability of metals for medicinal use. The review of classical texts highlights procedural variations in the number of *Nirvāpa* cycles and the order of purification media, each contributing uniquely to the refinement of Loha. While the 7-cycle method appears more rigorous in impurity removal, the 3-cycle method remains significant in traditional practice. The physicochemical changes observed post-*Śodhana* suggest increased porosity, reduced toxicity, and improved medicinal properties of *Loha*, reinforcing the importance of standardizing these techniques for safe and effective therapeutic applications.[6] Further experimental studies are required to validate the efficacy of different *Sāmānya Śodhana* methods in contemporary Ayurvedic formulations.

Author contribution

Dr. Varshanath B and Dr. Harikrishnan G: Jointly conceptualized and authored the article on *Comparative Analysis of Sāmānya Śodhana Methods for Loha: A Review of Classical References and Scientific Perspectives*. Dr. Varshanath B contributed to the original draft, structured the article, and developed the review concept based on classical references and scientific perspectives. Dr. Harikrishnan G analyzed and evaluated existing experimental studies from multiple research articles, providing an in-depth understanding of the impact of *Sāmānya Śodhana* methods on the purification and therapeutic efficacy of *Loha*.

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Conflict of interest

There is no conflict of interest.

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