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## Diversified Uses of Mineral Origin Substances in Sushruta Samhita: An Overall Review

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### ABSTRACT

*Ayurveda*, the science of life, is an *upveda* of *Atharvaveda*, one of the oldest scriptures of Hindus. Drugs used in *Ayurveda* are obtained from natural sources only i.e. from plants, animals or metals/minerals. Metals and minerals require some special techniques like *shodhana*, *marana*, *jarana*, *satvapatana* etc. before internal administration as they are mostly found associated with various impurities and toxic elements. These specific techniques are not as much elaborated and well documented in *Samhitas* as in classical texts of *Rasashastra*, so it is assumed that use of mineral origin substances were confined only upto the external application in *Samhita* period. *Sushruta Samhita* is one of the most ancient, authoritative classical book of Indian medicine especially of *shalya* and *shalakya*. In the present study an overall review of mineral origin substances regarding their therapeutic application and other uses in *Sushruta Samhita* is done and it is observed that the roots of this science are also embedded in *Samhitas*, the treasure of knowledge. Besides use of metals in manufacture of vessels, yantra, shastra, tongue scrapper and *vastinetra*, a good no. of references are also collected regarding therapeutic use of metals and minerals viz. 129 references regarding their use via other than oral route as compound formulation, 34 references via oral route as compound formulations, 21 references of oral route as a single drug and 9 references where single metal/mineral drug were used through other than oral route for treatment purpose by adopting different *Rasashastra* techniques. It clearly signifies the indepth knowledge of *Acharya Sushruta* in relation of application of metals and minerals in that period.

### KEYWORDS

Mineral, Metal, Sushruta Samhita



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## INTRODUCTION

*Ayurveda* is a traditional system of medicine in which drugs of plant, animal and herbal origin are used along with proper diet and code of conduct to maintain health in healthy and eradicating diseases in diseased. Use of mineral origin substances in treatment is a unique feature of it. *Rasaushadhies*, formulations containing purified and processed metals, minerals, herbs and other elements, when used internally in proper regime and dosage have proved highly effective in curing many acute and chronic diseases and aided in promoting health of an individual<sup>1</sup>. Processing techniques required for the internal administration of metals and minerals such as *shodhana*, *marana*, *jarana*, *satvapatana* etc. are documented with details in the texts of Rasashatra but roots of this science are also embedded in *Samhitas*, the treasure of knowledge. In *Charak Samhita* different type of minerals and metals were used in therapeutics through both external and internal application and for other purposes also<sup>2</sup>. *Sushruta Samhita* is one of the most ancient, encyclopedic and authoritative classical books of Indian medicine especially of *shalya* and *shalakya*. Treatment of many surgery treated diseases are well defined here compare to that of

*Charak Samhita* such as *Arsha*, *Bhagandar*, *Ashmari*, *Mudhagarbha*, *Vrna* etc. This paper attempts to screen *Sushruta Samhita* for references emphasizing the utilization of mineral origin substances for therapeutic and other purposes. *Sushruta Samhita* was scrutinised and the found references regarding use of mineral origin substances are grouped into different categories to have an clear idea about their diversified use. Obtained data is represented under following headings-

1. Classification
2. Utilization in therapeutics through oral route as Compound formulations
3. Utilization in therapeutics through oral route as Single drug
4. Utilization in therapeutics through other than oral route as Compound formulations
5. Utilization in therapeutics through other than oral route as Single drug
6. Use of metallic vessels for drug manufacture and storage.
7. Other uses

**1. Classification-** Mineral origin substances are placed in following vargas-  
Table 1

**2. Utilization of metals/minerals in therapeutics through oral route as Compound formulations-**



Many compound formulations containing mineral origin substances are used orally in *Sushruta Samhita* to treat various disorders and for rejuvenation. Obtained references are arranged in a Table 2.

### **3. Utilization of metals/minerals in therapeutics through oral route as Single drug-**

Intake of various mineral origin substances such as *Shilajatu*, *Suvarnamakshika*, *Suvarnagairik*, *Loha* etc. with suitable *anupana* is indicated to treat different disorders. Found references are arranged in tabular form. Table 3

### **4. Utilization of metals/minerals in therapeutics through other than oral route as Compound formulations-**

A large no. of references indicating use of mineral origin substances in therapeutics through other than oral route such as *lepa*, *abhyanga*, *pratisaran*, *avchurnan*, *nasya*, *dhumapana* and *vasti* are also represented in the table. Table 4

### **5. Utilization of metals/minerals in therapeutics through other than oral route as Single drug-**

References regarding use of mineral origin substances as single drug through *nasya*, *dhumapana*, *anjana*, *karnapooran* and *lepa* are collected in the table. Table 5

### **6. Use of metal vessels in drug preparation and storage-**

Specific metal vessels were used in drug preparation and for their storage also to improve their properties due to *Kalprakarsh* and *Bhajan samskara*<sup>3</sup>. Some of the examples are listed below-

1. Gold and Silver vessels are mentioned for storage of *Gangajala*<sup>4</sup>.
2. Vessels made from Gold, Silver, Copper, Bronze and *Manis* are used to keep drinking water treated with flowers<sup>5</sup>.
3. According to food serving rules, Iron vessels should be used to serve ghee, Silver vessels for drinking items, Gold vessels for dry and moistured items, Copper vessels for water, *Sphatik* vessels for water, *panaka*, *madhya* and *Vaidurya* vessels are mentioned to serve various types of *Raga*, *Shadava* and *Sattaka*<sup>6</sup>.
4. Gold and Silver vessels are mentioned to store *Shatpaka taila* indicated in *Vatavyadhi* of Kings<sup>7</sup>.
5. Copper lamp is mentioned to prepare *kajal* which is used in a formulation indicated in *Kilasa kushtha*<sup>8</sup>.
6. Iron vessels are mentioned to collect *Khadirasara* indicated in *Kushtha*<sup>9</sup>.
7. Gold and Silver vessels are indicated to store *Balataila* indicated in *Sutikaroga*<sup>10</sup>.
8. *Nili taila* indicated in *Palitya* should be kept in Iron vessel for one month<sup>11</sup>.
9. Iron vessel is mentioned to store *Dvitiya Vidangatandula yoga*<sup>12</sup>.



10. Different type of vessels are mentioned to keep various type of *Somas* such as Gold vessel for *Anshuman*, Silver vessel for *Chandramas* and Copper vessel for other types<sup>13</sup>.

11. Gold, Silver, Copper and *Mani* vessels are mentioned to keep *sneha* used in *nasya karma*<sup>14</sup>.

12. For preparation of *Netrapakhar anjana*, Ghee and *Saindhav lavana/ Maireya/ dadhi* are kept in a copper vessel (preferably made of a thin sheet) for one month and afterwards material along with vessel is subjected to trituration<sup>15</sup>.

13. Copper vessel is used in the preparation of various anjana indicated in *Aklinna* and *Praklinnavartma roga*<sup>16</sup>.

14. Different type of vessels are mentioned to keep various types of *anjanas* such as Gold vessel for *Madhuranjana*, Silver vessel for *Amlanjana*, Copper and Iron vessel for *Kashayanjana*, *Vaidurya* vessel for *Katukanjana* and Bronze vessel for *Tiktanjana*. For application of these *anjanas*, *shalaka* (applicator) must be of same metal<sup>17</sup>.

15. *Sphatik* vessel is mentioned to store *Bhadrodaya* and *Tagradhya anjana*<sup>18</sup>.

16. Ghee kept in *Kamsya* vessel for more than ten days is considered as *Karmavirudhha* and should not be consumed<sup>19</sup>.

## 7. Other Uses-

1. For *Paittik shoola* treatment, it is mentioned to put cold water filled Silver, Copper and *Mani* vessels at pain site<sup>20</sup>.

2. *Sparsha* and *dharan* of *Sphatikmani* is indicated in *Moorchha* treatment<sup>21</sup>.

3. *Ratnas* are used to worship God, *Brahmin* and *Vaidhyas*<sup>22</sup>.

4. Iron vessels are counted among the essential tools required for *shastrakarma*<sup>23</sup>.

5. *Yantras* and *Shastras* are manufactured with Iron<sup>24</sup>.

6. *Sphatik maniis* included in *Anushastra*<sup>25</sup>.

7. Gold, Silver and Copper metals are used as tools in *Agnikarma*<sup>26</sup>.

8. *Suvarna* and *Rajata nirvapita jala* is mentioned for *Trishna* treatment<sup>27</sup> and for neonatal bath<sup>28</sup>.

9. In *Jalodar* treatment, *Vanga nalika* (tin tube) is used to drain water from abdominal cavity<sup>29</sup>.

10. Iron rod is used for *vimlapana karma* in *Kaphaj granthi* and *gharshan karma* in *Medoj granthi*<sup>30</sup>.

11. *Agnikarma* by red hot iron rod is indicated in *Apachi*<sup>31</sup>.

12. Both sided open Iron rod is indicated for *prasaaran karma* in treatment of *Niruddhprakash*<sup>32</sup>.

13. *Jihvanirlekhni* (Tongue scrapper) made up of Gold and Silver metal<sup>33</sup> are indicated.



14. Gold, Silver, Copper, Iron, *Riti*, *Sphatik* are used to manufacture *Vastinetra*<sup>34</sup> and *Dhumanetra*<sup>35</sup>
15. Iron metal is included in the *vrna bandhan dravya*<sup>36</sup>.
16. *Kamsya* and *Lohapinda* is indicated in *Taap* and *Ushma sveda* respectively<sup>37</sup>.
17. *Hartala* and *Manahshila* are used as *Balidravya* in treatment of *Shakuni graha*<sup>38</sup> and *Hartala*, *Manahshila*, *Anjana* and *Parad* are mentioned as *balidravyas* for *Mukhmandika balgraha*<sup>39</sup>.

## DISCUSSION

From above data it is clear that many mineral origin substances like *Makshika*, *Shilajatu*, *Sasyak*, *Gairik*, *Kasis*, *Kankshi*, *Hartala*, *Manahshila*, *Anjana*, *Parada*, *Manis* and Metals like *Suvarna*, *Rajata*, *Tamra*, *Vanga*, *Kamsya*, *Lohakitta* are used in *Sushruta samhita* for therapeutic purpose with suitable anupana. Cow urine is used widely here for this purpose<sup>40</sup>. Different metal vessels are mentioned to prepare and store food items and medicines so as to impart their special properties indicates the scientific knowledge of that era. *Ayaskriti* method which enables the metals for internal administration by converting them in fine colloidal form with the help of *mardana* and *nisheka* techniques using different medias is described in *Sushruta*

*Samhita* with detail<sup>41</sup>. Metals are administered in the form of powder (*raja*) only prepared by *ayaskriti* method and the concept of processing *bhasmas* was not developed during this period. The word *bhasma* mentioned in *Sushruta Samhita* indicates only the ashes of vegetable drugs but the concept of *puta* appears to be developed for the first time by *Sushruta* and the references regarding *Tuvarak rasayana* reflects about it. The pulp of *Tuvaraka* is to be burnt in closed vessels without letting out the smoke and put into oil and used with rock salt and *strotanjana* as acollyrium<sup>42</sup>. *Suvarna* is an ingredient of various *rasayana* and *medhya yogas* mentioned for both children and adults. *Suvarna* with honey and ghee is used in *Suvarnaprashan sanskara*. Single reference of internal administration of *Tamra churna* is as an ingredient of *Salsaradi leha* used in treatment of *Prameha*. *Tamra churna* and *Tamra patra* is also used to prepare various *anjana yogas*. *Lohachurna* is used widely both in the form of single and compound formulations in *Pandu*, *Mandagni*, *Kushtha*, *Meha*, *Meda* and *Shotha*. Regarding other than oral routes *Loha churna* is also used for its *ranjak guna* (ingredient of *lepa* used in *Shvitra* and *Saireyakadi taila* used in *Palita* and *Khalitya*) and *lekhana karma* (ingredient of various *lekhana anjana* and *putapaka*).



*Naga* (lead) is placed in *trpvadi gana* along with other metals but no other reference related to its use could be found. Intake of *Vanga* rubbed in *dadhimastu* is mentioned in treatment of *Krimi*. Use of *Kansya* in therapeutics is done only through other than oral route such as in *anjana yogas*, *lepa yogas* for *Shvitra* and *avpidana naya* in *Shirogat krimi*.

Regarding use of *Parad* and other minerals, external use of *Parad* is mentioned here as an ingredient of *ghrita* used for facial massage in *Vyanga*, *Nilika* and *Sfota*. *Parad* is also mentioned as *balidravya* in *daivavyapashraya chikitsa* of *mukhmandika balgraha*. Many minerals like *Makshika*, *Shilajatu*, *Sasyak*, *Gairik*, *Kasis*, *Kankshi*, *Hartala*, *Manahshila*, *Anjana* are used here in therapeutics. No reference of *Gandhak* could be found out whereas it is mentioned in *Charak samhita* for skin disorder treatment. Intake of *Suvarna* and *Rajata makshika* is advised in *Pandu*, *Kushtha*, *Jara* and *Prameha*. *Makshika* is also an ingredient of two *anjana yogas*. Detail description of *Shilajatu* about its origin, types according to relationship with metals (*Naga* and *Vanga shilajatu* are addition to the types mentioned in *charak*), properties and approval features are in *chikitsa sthana*. Internal administration of *Shilajatu* as a single drug and as an ingredient of

compound formulations is advised in *Medogat kushtha*, *Madhumeha*, *Pandu*, *Sannipatik mutrakrichha*, *Urustambha*, *Ashmari*, *Antarvidradhi*, *Sthoulya* and *Kshya*. *Shilajatu* is also used in an *anjana* mentioned in *Raktaj abhishyanda*. *Tuttha* is used at various places due to its *vrna ropana*, *vrna shodhana* and *ranjak* property. It is used almost eleven times to prepare *anjana yogas* indicated in various eye disorders. *Kasis* secured an important place in *vrna* treatment owing to its various properties like *shodhana*, *ropana*, *avsadan*, *ranjan* and *romsanjanan*. It is also used in treatment of *Khalitya*, *Palitya* and *Indralupta* due to its *ranjak* and *romsanjanan karma*. Besides it is also used in various formulations mentioned in *Arsha*, *Ashmari*, *Sharkara*, *Nadivrna* and *Akshiroga*. In *Charak samhita*, internal administration of *Kasis* and *Tuttha* are not mentioned but here these both are used as *kalka dravyas* in a *snehapaka* used orally in *Kaphaj ashmari*. Single use of *Kasis* with *kapittha churna* and *madhu* is mentioned in *Hikka*. Oral intake of *Gairik churna* as single drug is indicated in *Garbhasrava* and *Hikka*. *Dushivishari agada*, *Mahasugandhiagadraj* and a *churna yoga* used in *Pandu* are orally administered *Gairik* formulations. *Gairik* is also used in various *Lepa yogas* (indicated in *Samyak dagdha*, *Pittaj visarpa*, *Vatrakta*, *Ksudra*



*roga*, *Akshiroga*, *Shiro-roga* and *Tvak roga*), *Anjana yogas* (specially for *Pittaj-raktaj akshi roga*) and in *Avchurnan yogas* (to check bleeding and in *Updansha vrna*). *Gairik* is also used as an ingredient of *niruha vasti dravya* at two places mentioned in *Pittaj jvara* and *Raktapitta* respectively. Externally *Sfatika* is used as an ingredient of *Churna*, *Varti* and *Rasakriya* indicated in *Vrna chikitsa* and in *Mahavajrak tailapaka* mentioned in *Kushtha*, *Bhagandar*, *Gandmala*. Oral administration of *Sfatika* is mentioned in *Medogat kushtha*. *Eladighritam* is also an *sfatika* containing formulation. *Hartala* and *Manahshila* both are used due to their properties like *vrna shodhana*, *vrna avsadana*, *vrna ropana* and *pandukarma* of *vrna*. *Hartala* and *Phenashma* (*Gauripashana*) are mentioned as *Dhatu visha*<sup>43</sup>. *Rompatana karma* of *Hartala* is also mentioned here which is not described in *Charak Samhita*. Both of these are also used to prepare *Lepa yogas* indicated in *Kshudra rogas*, *Kushtha* and *Shvitra*. *Manahshila* is used more in *Anjana yogas* in comparison to *Hartala*. *Manahshila* is also an ingredient of *Anjana* mentioned in *Vishama jvara*. *Mustaadi varti* mentioned in *kasa* contains both *Hartala* and *Manahshila*. *Manahshiladi dhooma* and use of *Manahshila* containing *dhumavarti* in *Hikka*, *Shvasa* shows that *Manahshila* is

used for its *Shvasahara* action. *Karnapoorana* with *Hartala churna* in *gomutra* in *Karnakrimi*, *Manahshila* containing *avpidana nasya* formulation in *Ardhavybedak* are the other mentioned routes. Regarding internal administration both are used as *kalka dravyas* in *snehapaka* which may be used orally in *Unmaada*, *Apsmara* and *Grahadosha* and are ingredients of a *Churna yoga* mentioned in *Mutravisha dushta lutatreatment*. *Mahasugandhiagadraj* is a *Manahshila* containing formulation indicated in *Sarpavisha*. *Anjana* is also used internally through various formulations mentioned in *Pandu*, *Raktapitta*, *Hikka*, *Kasa*.

## CONCLUSION

So, it may be concluded that minerals and metals are used in *Sushruta Samhita* in a diversified manner. In treatment of *Vrna*, mineral origin substances had secured an important place since that time. Various techniques like *Nisheka* (eg- Indication of *suvarna* and *rajata nirvapita jala* in *Trishna* and for neonatal bath, use of *Suvarna nishechita dugdha* in treatment of *Pravahika* and use of *Akshkashthadagdha mandoor* in *Pandu*), *Nimajjana* (Intake of *Lohakitta* which was kept in cow's urine for one month in *Pandu*), *Bhavana* (Use of *Salsaradi gana kvatha bhavit Shilajatu* in





Madhumeha) and Mardana are used here which are the markers of their pharmaceutical approach converting a substance more suitable for internal administration. Reference of *Riti* suggests that *Satvapatana* technique is also known in that period as *Riti (Pittala)* is a *mishra loha* formed by combination of *Tamra* and *Yashada* in a specific proportion. *Yashad* was not known in that period which indicates the use of *Kharparasatva* in its place. Use of metals and minerals are not only confined upto the external or other than oral routes like *lepa*, *anjana*, *varti*, *vasti*, *karnapooran*, *nasya*, *avchurnan*, *abhyanga* but a good number of references regarding their internal administration through single form or compound formulations certifies the fact that metals and minerals are an important part of *Ayurvedic* treatment since *Samhita* period.



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