Importance of Antardhuma Rasasindura: A rejuvenative compound W.S.R. to Sulphur

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Abstract

Rasasindura is a famous Ayurvedic rejuvenative compound prepared by Kupipakwa (sand bath) method containing Mercury and Sulphur as major ingredients. In this preparation Jarana (digestion) is the process and Murchana (swooning) is the result. Now a day’s Bahir dhuma Rasasindura is in common practice. The Sulphur fumes which come out during the preparation pollute the environment, final product is expensive and yield also less. Present study is focused to re-establish the importance of Antardhuma Rasasindura in classical Rasasastra texts and reveal the importance of Sulphur in Jarana process through literary work. Fifteen Rasasastra classical texts starting from Rasendra mangalam (8th AD) to Rasa tarangini (20th AD) were analysed for relevant references. Critical literary study revealed the superior attributes of AntardhumaRasasindura. Sulphur importance with respect to Mercury was sited. Advantages of Mercurial medicines containing Sulphur and side effects of non-Sulphur Mercurial medicines are mentioned. Moreover there are verses which say without Gandhaka Jarana Mercury cannot attain disease curing properties. Antardhuma process is also eco-friendly as it is a concealed procedure. The yield of the final Antardhuma product may be high due to the sublimate of Sulphur and cost effective when compared to Bahir dhuma. The forgotten Ambrosia, Antardhuma Rasasindura follows all the characteristics of a new drug research.

Keywords: Rasasindura, Antardhuma, Jarana, Murchana, Kupipakwa, Mercury

1. Introduction

Rasasindura is a famous Ayurvedic rejuvenating formulation used in achieving quick results in small doses. It is prepared by Kupipakwa in Valuka yantra (sand bath) which is one of the best methods adopted for medicinal metallic preparations, especially for Gandhaka (Sulphur) Jarana (digestion) as it imparts good colour to Parada (Mercury) \[^1\], Rasasindura is “Sa Gandha (with Sulphur), Sa Agni (heat applied), Murchana (swooning)” of Mercury \[^2\]. In this process Jarana of Sulphur takes place \[^3\] which make Mercury highly potentiated. Though Antardhuma (concealed fumes) Rasasindura is very common in classical literature, now a day’s Bahir dhuma (fumes going out) Rasasindura is practiced. The Sulphur fumes which come out during the Bahir dhuma process pollute the environment. Moreover preparation is expensive as Mercury is high in the end product and the yield is also less. So, an attempt has been made to illustrate the importance of Antardhuma Rasasindura in classical Rasasastra texts and reveal the importance of Sulphur in Jarana process through literary work.

Materials and Methods

Rasasastra classical texts starting from Rasendra mangalam (8th Cent AD) to Rasa tarangini (20th Cent AD) were analysed for relevant references. Jarana of Mercury is quite different from Murchana of Mercury in case of Abhraka (Mica) and other metals (like gold, silver, etc), but they are interlinked when dealing with Sulphur \[^4\-6\]. There are two definitions of Parada Jarana. Mercury retains its original state without being subjected to galana (washing) and patana (sublimation) after the Jarana process with Abhraka and other noble metals like gold \[^7\-8\]. Liquefied Grasa (material used for Jarana) getting transformed and digested in Mercury is also called as Jarana \[^9\-12\].
In *Murchana* Mercury attains disease curing capability [13-16], specifically when *Murchana* is done with Sulphur [17]. *Jarana* and *Murchana* are synonyms according to Ayurveda prakasha [18], which can be applied in case of *Murchana* and *Jarana* of Mercury with Sulphur only. Mercury becomes red coloured after *Gandhaka* *Jarana* [19], *Parada Bandhana* (solid state of Mercury) is the outcome of *Jarana* [20] and also after *Gandhaka* *Jarana* Mercury becomes Bahirdha (solid state) [21]. *Gandhaka* *Jarana* of Mercury is two types: [22] *Antardhuma* and *Bahirdhuma*. *Murchana* of Mercury with Sulphur are 2 types: [23] *Antardhuma* (concealed fumes) and *Bahirdhuma* (fumes going out); also 3 types: [24] *Nirdhuma* (no fumes like *Kajjali* preparation), *Antardhuma* and *Bahirdhuma*.

**Importance of Sulphur regarding Mercury**

In all *Rasa* and *Uparasa* Sulphur is superior [25]. Sulphur is best in imparting colour to Mercury, in *Parada Bandhana* (solidifying Mercury), in digestion (*Paka* and *Jarana*) of Metals in Mercury and also controls the fickleness of Mercury [26]. Even though Mercury is *Satavedhi* (hundred times penetrative in alchemy), *Sahasravedhi* (thousand times penetrative) or *Kotivedhi* (ten million times penetrative) one can only attain *Siddha* (success in treatment) by preparing paste of Mercury with Sulphur for internal use [27]. According to classics First *Jarana* for Mercury should be of Sulphur and physician who utilizes Mercury without *Gandhaka* *Jarana* is liable to be cursed by God [28]. Importance of *Sa-Gandha* (with Sulphur) *Murchana* and side effects of *Nir-Gandha* (without Sulphur) *Murchana* of Mercury has been cited in the texts [29]. Without *Gandhaka* *Jarana* Mercury cannot attain disease curing properties [30-32].

**Importance of Antardhuma Parada Jarana:**

In *Antardhuma Sa-Gandha* *Parada Murchana* mouth of the Kupi (flask) is sealed and *Gandhaka* *Jarana* is carried out in the process of *Sa-Gandha Parada Murchana* [33]. *Jarana* is the process and result is *Murchana*. The method of *Parada Jarana* where there is no loss in Mercury should be followed [34], which is only possible in *Antardhuma*. *Shadguna* (six parts) or *Sataguna* (hundred parts) Sulphur undergone digestion by *Antardhuma* method imparts colour (red) to Mercury and acquires *Sahasravedhi* for silver, copper and lead [35-36]. It is well known that Mercury which attains *Loha vedha* (Alchemy) property is also capable of *Deha vedha* (body transmutation).

Superior attributes of *Antardhuma Gandhaka Jarita* Mercury have been cited in classical texts. *Antardhuma Samaguna Gandhaka Jarita* Mercury (equal amount of Sulphur digested mercury in concealed method) acquires disease curing properties [37], whereas *Bahirdhuma Gandhaka Jarita* Mercury (Sulphur digested Mercury in open method) attains this quality after *Shadguna* (six parts of Sulphur) *Jarana* only. This variation is due to inadequate *Jarana* of Sulphur in *Bahirdhuma* method [38-39].

**Yantra (instruments) mentioned for Parada Jarana:**

The first yantra (similar to *Musha yantra*) for *Parada Jarana* was described in Rasendra mangalam in which *Antardhuma* *Gandhaka* *Jarana* was carried out [30]. Rasastra texts mentioned various yantras *Gandhaka* *Jarana* of Mercury like *Garbha yantra* [41], *Kurma/ Kacchapa yantra* [42], *Isikeya yantra* [43], *Tula yantra* [44], *Kostika yantra* [45], *Somamala yantra* [46], *Valuka yantra* [47], *Bhuhara yantra* [48-49], and *Musha yantra* [50], *kupiya yantra*, *Valukayantra*, *Nalikayantra*, *Mushayantra*, *Bhuharayantra*, *Somamala yantra*, *Nabh yantra*, *Chakraka yantra*, *Jala yantra*, *Vidhayadara yantra*, *Damarukayantra*, *Shahiyanta*, *Dhupayantra* all for *Antardhuma* process; except *Hamsa yantra* and *Palika yantra* [51] which are used for *Bahirdhuma Gandhaka Jarana*.

<table>
<thead>
<tr>
<th>S.no</th>
<th>Name</th>
<th>Colour</th>
<th>Process</th>
<th>Time</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Mruta Suta</td>
<td>Raktabha</td>
<td>Antardhuma (Angara paka)</td>
<td></td>
<td>RHT 14/2-6</td>
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<tr>
<td>2</td>
<td>Udaya Bhashara</td>
<td>Kamalacchavi</td>
<td>Valuka yantra Kupipakwa</td>
<td>3 days</td>
<td>RPS 3/10-12</td>
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<td>3</td>
<td>Rasa Bhasma</td>
<td>Rakta</td>
<td>Valuka yantra Kupipakwa (Adhastha)</td>
<td>1 ½ day</td>
<td>RPS 3/15-18</td>
</tr>
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<td>4</td>
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<td>Aruna kamalacchavi</td>
<td>Valuka yantra Kupipakwa</td>
<td>2 days</td>
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<td>5</td>
<td>Rasa Bhasma</td>
<td>Padmaraiva nibha prabha</td>
<td>Antardhuma Valuka yantra</td>
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<td>Balarka sannibham</td>
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<td>Daradena sama</td>
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<td>1 day</td>
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<td>Arunabha</td>
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<tr>
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<td>Kamkuma pinjara</td>
<td>Bahirdhuma</td>
<td>1 ½ day</td>
<td>AP 1/398</td>
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Discussion

Processing Mercury and Sulphur to form red coloured product similar to Rasasindura probably started from 10th century AD. They were prepared in Lohasamputa, Musha, Angarapaka, putapaka methods, etc. Valukayantra (sand bath) was first mentioned in Rasahridaya tantra (10th cent AD). Kachakupi (round bottomed glass flask) was first mentioned in Rasendra chudamani (12th cent AD) [52]. Kachakupi in Valukayantra for Kupipakwa was used from the period of Rasa prakasha sudhakara (13th cent AD). According to Rasendra cintamani Kupi can be made from glass, clay, gold, iron, silver [53]. Rasasindura word first appeared in Rasendra cintamani (15th cent AD) [54].

Maximum yantras mentioned for Gandhaka Jarana follow Antardhuma process. Although Bahirdhuma Gandhaka Jarana yantras called Palika yantra was first mentioned in Rasendra chudamani (12 cent AD) [55] and Hamsapakayantra [56] is first cited in Rasarumavam (12 cent AD), but the use of Hamsonyantara for Bahirdhuma Gandhaka Jarana was mentioned in Rasapadhati (15th cent AD) [57]. Readable reference of Bahirdhuma Gandhaka Jarana is seen in Rasendra Cintamani (15th cent AD) [58] and Rasa Tarangini (20th cent AD) [59]. Clear emphasis on Bahirdhuma Rasasindura started from 17th century AD onwards where the use of Salaka (rod) in cleaning the blocked mouth of Kupi is cited [60]. This reveals Antardhuma was the most common process frequently used in Rasasastra than Bahirdhuma for preparing Rasasindura or product similar in preparation with a different name.

Some references [61-66, 67, 68] did not mention any verse in their process which could be concluded as Antardhuma or Bahirdhuma. Basing on the superior attributes and predominant use of Antardhuma they can be placed under Antardhuma method. Many such preparations named as Parada Bhasma can also be correlated with Rasasindura. This can be justified from a quoted text which says, Parada Bhasma is actually Maha Murchana (mega swooning) of Mercury [69]. Gandhaka Jarana refers to the contact duration of melted Sulphur with Mercury followed by bond formation and subsequent burning or evaporation of free Sulphur depending on Bahirdhuma or Antardhuma process. In Bahirdhuma during Jarana process Sulphur reacts with oxygen and burns out, therefore final product is HgS (artificial Cinnabar). In Antardhuma during Jarana process Sulphur evaporates to form a sublimate and is evenly it may mix with the HgS compound physically (not chemically). Hence Antardhuma Rasasindura could be a well-blended mixture of Cinnabar and Sulphur. According to the theoretical estimation the final Antardhuma compound may also yield more than Bahirdhuma process.

Modern science listed Mercury under highly toxic metals. But the toxic levels of oral administered Mercury in the form of Cinnabar (HgS) are considerably low. Absorption of Cinnabar from the gastrointestinal tract is < 0.2%, very less compared to other non-Sulphur Mercurial compounds. Solubility of Cinnabar is 0.001g/L at 20 °C, which is quite low compared with other Mercurial compounds like Mercuric chloride (30-70g/L at 20 °C) [70]. Detoxification of Mercury is done with chelating agents like Dimercapto Succinic acid (DMSA) (C\textsubscript{6}H\textsubscript{5}O\textsubscript{3}S\textsubscript{2}). Dimercapto-propane sulfonate (DMPS) (C\textsubscript{8}H\textsubscript{17}N\textsubscript{3}O\textsubscript{4}S). All these compounds contain Sulphur. Food supplements containing Sulphur are also recommended. Mercury has higher affinity towards Sulphur especially to thiols which leads to detoxification. Our body’s natural detoxification system also works under this relation with the help of thiol complexes like glutathione (C\textsubscript{4}H\textsubscript{6}N\textsubscript{3}O\textsubscript{6}S). In Rasasastra advantages of Mercurial medicines containing Sulphur and side effects of non-Sulphur Mercurial medicines are mentioned [59], Sulphur may considerably decrease the
accumulation of Mercury in the body in addition increases the efficacy of Mercurial therapeutic attributes. Mercury is considered to be Yogavahi (fast acting), particularly as a stimulant which penetrates quickly to minute parts of the body and increases the properties of herbal drugs in the formulation with its catalytic activity even in minute quantities. So, Mercury need not be available for a longer period in the body to show its action. Rasa pushpa, Rasa karpura are non-Sulphur products which are toxic in higher doses compared to Rasasindura and cannot be used for a longer periods even in therapeutic doses due to the risk of accumulation of Mercury. Samaguna (equal quantity Sulphur) Gandhaka Jarana, Dwiguna (double), Shadguna (six times), Astaguna (eight times), dwadasaguna (twelve times) \(^{71}\), Sataguna (hundred times) and Sahasraguna (thousand times) are therapeutically superior in increasing order of Jarana. So, more the Sulphur content safer and effective is the Mercurial medicine especially in relation to Antardhuma Rasasindura.

**Conclusion**

As per the critical literary study Antardhuma method was most commonly followed by the practitioners for Jarana (digestion) and Sa Agni (heat applied) Murchana of Mercury with Sulphur. References on the importance and therapeutically superior attributes of Antardhuma Gandhaka Jarana are cited in the texts. Sulphur percentage could be higher compared to Bahiridhuma, which ensures the safety of Antardhuma Rasasindura. Antardhuma process is also eco-friendly as it is a concealed procedure. The yield of the final Antardhuma product may be high due to the sublimate of Sulphur and cost effective when compared to Bahiridhuma. Thorough Pharmacological, Analytical, Toxicology and Clinical studies should be conducted to standardise the therapeutic dose and usage of Antardhuma Rasasindura.

**6. References**
