Pharmaceutical, physico-chemical and clinical study on “Shuddha Manahshila” with special reference to Kasa Roga

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Manahshila (Realgar; Arsenic disulphide: \(\text{As}_2\text{S}_2\)), a bright red-orange coloured mineral, is a compound of arsenic and sulphur in 2:2 ratio, which has been described under Uprasa Varga in Rasa Shastra of Ayurveda. It is found in ore form in nature and can also be made artificially. Manahshila is one of the mineral drugs that has history of usage as old as Vedic period. In Rigveda, its usage has been mentioned for environmental purification; whereas, in Atharvaveda and Purana Granthas, its externo-internal usage is mentioned. Manahshila can therapeutically be used only after Shodhana (purification & detoxification). In the present study, the drug was prepared by processing (Bhavita) from approved area of Manahshila with Adraka Svarasa (ginger juice) for 7 days to make the drug more potent for Kasa Raga (cough/bronchitis). The physico-chemical parameters of the prepared drug were also established for the first time by comparing them with the crude drug, which was novel from pharmaceutical point of view. The clinical study of the drug was performed in 25 patients, at a dose of 10-25 mg, three times a day, for one month, with the adjuvant of Madhu (honey). The drug gave good results, particularly in Vataja Kasa (eosinophilia).

Keywords: Ayurvedic drugs, Shuddha Manahshila, Standardization, Kasa roga, Cough, Bronchitis.

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Manahshila, also known as Mainiil, Warangana, Jharanikha surkha, Realgar or Red opiment, is a deep red, lustrous monoclinic crystalline solid. On rubbing or crushing, it changes into a red-orange coloured fine powder. Manahshila (Arsenic disulphide, \(\text{As}_2\text{S}_2\)), occurs in nature as a mineral and can also be prepared artificially by fusing 49 parts Shuddha Melia (purified arsenic) and 16 parts Shuddha Gandhaka (purified sulphur) by processing in a Damaru Yantra (specific instrument). In Rasa Shastra, Manahshila has been described under Uprasa Varga. In Charak\(^{2}\), Sushruta\(^{3}\) and Vagabata\(^{4}\), it has been described under Parthiva (Bhauma) Dravya Varga; while Sharanggadhar\(^{5}\) placed it under Upadhita and Uparasa Varga. Manahshila is one of the
mineral drugs that has been known to mankind since Vedic period, where its psychological and therapeutic uses were well known. In Rigveda, it has been described as Rakshoghna (disinfectant/biocidal) drug in physical and mental diseases, where it was used for purification of environment. In Yajurveda and Atharvaveda, its usage has been mentioned in Agni Yavuavana Chikitsa, Bhutonnama Chikitsa (treatment of idiopathic psychotic syndrome) and Karmaja Vyadhi Nirodha. In Bodhha Satiya, Vinaya Ptsaka, it has been mentioned as Anjana (ophthalmic medication) and Dhurma Varti (medicated smoke); in Agni Purana as Kushtaghna Lepa (anti dermal-diseases/anti-leprotic paste for local application/ointment); and in Kautiliya Arthashastra as Agni Churna for fireworks.

In Samhitas, viz. Charaka, Sushruta, Vagishhata, Harita, Bhela and Kashyapa, its externo-internal usages were mentioned in various diseases, such as Hikka (hiccough), Svasa (dyspnoea), Kasa (cough/bronchitis), Chardi (leprosy and other dermatoses) etc. In Rasa Shastra treatises, it was used in the preparations of Dhurma Varti (medicated smoke), Ghrta (medicated clarified butter/fat based formulations), Taila (medicated oil), Lepa (paste for local application/ointment), Curna Nasya (powdered nasal insufflation), Anjana (ophthalmic medication) and in various Rasa Yoga (organo-mineral/mineral preparation). It has also been used for Rasa Karma (processing of organo-mineral/mineral preparation) and Dhatu Ranjana (colouring agent for metals) in Rasa Shastra.

Manahshila of three varieties has been described in most of the Rasa Shastra treaties, viz. Shyamangi, Kanaviraka and Khandakhya. However, the Khandakhya variety of Manahshila is widely accepted for therapeutic usage and also for Satva Patana (preparation of metallic extract of mineral ore).

Manahshila (Realgar) is used only in Shuddha (purified & detoxified) state for therapeutic purposes as internal medicine. With reference to the treatment of Svasa and Kasa use of drug Shuddha Manahshila has been described in various Rasa Yoga preparations, such as Rajamriganka Rasa, Trailokyachintamani Rasa, Shilasindura, Samirapannaga Rasa and Shvasakuthara Rasa. Moreover, there are references for the use of Manahshila in Kasa Roga but it has not been used so far independently as a single drug. Therefore, a study was undertaken to use Shuddha Manahshila as single drug for the treatment of Kasa Roga.

Shodhana of Manahshila is usually carried out by trituration with Ardrika (Zingiber officinale Rosc.) Svarasa, Bijaura Nimbu (Citrus medicina Linn.) Svarasa, Agstya(Sesbania grandiflora Poir.) Svarasa, Jayanti (Sesbania sesban Merr.) Svarasa, Bhngarja (Ecipta alba Hassk.) Svarasa and Lime water etc. In the present study Ardrika Svarasa was taken because Ardrika itself is used in the treatment of Kasa Roga and a number of references are available for shodhana of Manahshila with Ardrika Svarasa in Rasa Shastra treatises. In the present study Shuddha Manahshila was
standardized and evaluated for its physico-chemical parameters, along with its clinical study in patients of Kasa Roga.

**Methodology**

**Pharmaceutical Study**

The drug was prepared by taking Khandakhyya variety of Manahshila (400 g). It was processed (triturated) 7 times with Ardraka Svarasa (ginger juice) for 7 days. At the end of processing, an orange coloured, smooth, heavy, powder, the Shuddha Manahshila (pure realgar) was obtained. It was noted that the weight of Shuddha Manahshila was increased by 27.5% (110 grammes) after the completion of Shodhana (purification & detoxification), as shown in Table 1.

**Physico-Chemical Analysis**

Many physical and chemical changes occur during the processes of making the drug Shuddha Manahshila. Various steps involved in drug standardization have been applied to Shuddha Manahshila, as shown in Figure 1.

**Standardization of “Shuddha Manahshila”**

A very fine orange powder (Shuddha Manahshila) obtained after Shodhana of Manahshila, as mentioned in The Ayurvedic Formulary of India, was used for physico-chemical study.

<table>
<thead>
<tr>
<th>Weight of Manahshila (crude drug)</th>
<th>Weight Of Manahshila prepared drug (after processing)</th>
<th>Increase in weight of prepared drug</th>
<th>Percentage of weight increase in prepared drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 Grammes</td>
<td>510 Grammes</td>
<td>110 Grammes</td>
<td>27.5%</td>
</tr>
</tbody>
</table>

The physico-chemical parameters of the drug, Shuddha Manahshila are as follows:

**Physical parameters:**

- Colour: Orange
- Odour: Pleasant pungent
- Taste: Agreeable bitter
- Touch: Heavy & smooth powder

**Chemical parameters:**

- Qualitative analysis: Yielded the reaction characteristics of Arsenic (As) & Sulphur (S)
- Quantitative analysis:
  - Loss on drying at 110°C: 0.5325%, w/w
  - Loss on ignition at 450-550°C: 95.0686%, w/w
  - Ash value: 4.9544 %, w/w
  - Water insoluble ash: 4.1978 %, w/w
  - Acid insoluble ash: 0.5008%, w/w
- Elemental study: The quantitative element study was carried out through Atomic absorption spectrometry and Inductive couple plasma (Instrumental element test), as shown in Table 2.

**Therapeutic indication:**

- Kasa (cough/bronchitis)
- Dose: 10-25 mg
Figure 1—[A] Manahshila or Realgar (Crude drug)
[B] Shodhana of Manahshila (Processing or triturating of drug)
[C] Shuddha Manahshila (Prepared drug)
Table 2 — Percentage of element analysis in sample “O” & “A” of Manahshila

<table>
<thead>
<tr>
<th>Analyzed elements</th>
<th>Sample “O”</th>
<th>Sample “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manahshila (crude drug)</td>
<td>Manahshila (prepared drug)</td>
<td></td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>7.2989 %</td>
<td>7.0149 %</td>
</tr>
<tr>
<td>Sulphur (S)</td>
<td>17.000 %</td>
<td>12.9000 %</td>
</tr>
</tbody>
</table>

It is clear from the above physico-chemical study that many physical and chemical changes occurred in the drug after it was processed (triturated) with Ardrika Svarasa. The drug became detoxified and made the drug more potent. Moreover, the inorganic state of drug changed into organic state.

Clinical Study

The clinical study of Shuddha Manahshila was performed on 25 patients, at O.P.D. & Indoor Department of Kaya Chikitsa, Rishikul Government State Ayurvedic College & Hospital, Hardwar, Uttarakhand. The study was carried out in a particular “Proforma”, in which the selection of registered patients of Kasa Raga was done according to parameters of their definite symptoms of Kasa, pathological tests and other diagnostic examinations. The therapeutic effect of the drug was observed after 4 weeks of treatment. The effect of the drug was assessed in weekly follow-ups for 4 weeks, using the above-mentioned parameters. After follow-ups or cure of the disease, whichever is earlier, data were collected and analyzed statistically.

The drug: Shuddha Manahshila

Dose of drug: For adult – 25 mg, three times a day, with the adjuvant of honey.
For child – 10 mg, three times a day, with the adjuvant of honey.

The clinical effects of Shuddha Manahshila on the patients of Kasa Raga were observed for 4 weeks.

Results

During the treatment of Kasa Raga, the patients observed for the complications of Manahshila, such as Vamana (vomiting), Trisna (polydipsia/excessive thirst), Mandagni (dyspepsia/loss of appetite), Malabaddhata (constipation) and Mutra Vikara (diseases of the urinary system) etc., showed no complications.

The clinical effects of Shuddha Manahshila on the patients of Kasa Roga

Table 3 — Result of clinical study of Shuddha Manahshila on patients of Kasa Roga

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Results</th>
<th>Male</th>
<th>Female</th>
<th>Total no. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cured</td>
<td>10</td>
<td>9</td>
<td>19</td>
<td>76%</td>
</tr>
<tr>
<td>2.</td>
<td>Improved</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>16%</td>
</tr>
<tr>
<td>3.</td>
<td>Not Improved</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>4.</td>
<td>Total</td>
<td>14</td>
<td>11</td>
<td>25</td>
<td>100%</td>
</tr>
</tbody>
</table>
ATULKUMAR: “MANAHSHILA” AND KASA ROGA

were observed on the basis of progress of their symptoms of Kasa and pathological tests, e.g. TLC, DLC, Hb% and E.S.R. parameters, every week for 4 weeks of drug treatment. The prognosis was observed on the basis of subjective & objective relief.

76% patients of Kasa Roga were cured and 16% improved with the treatment of Shuddha Manahshila; however, 8% did not show any change in their conditions as shown in Table 3. Differential leukocytes counts (DLC) were carried out as a part of clinical study. In Ayurveda, Vatika Kasa is correlated with eosinophilic cough and according to modern medicine, eosinophills count usually rises during respiratory ailments. The effect of the drug was studied with respect to eosinophills percentage change in one-week interval. Out of 25 patients of Kasa Roga, eosinophills percentage reduced significantly in 20 patients, no significant change was observed in 3 patients and data could not be collected from 2 patients, as they did not continue the treatment.

Shuddha Manahshila gave a good prognosis in the patients of Vatika Kasa (cough/bronchitis with Vata predominance-eosinophilia) in comparisons to other types of Kasa, which were observed on the basis of subjective and objective improvement.

Conclusion

During the present clinical study of Shuddha Manahshila on the patients of Kasa Roga, no side effect of the drug was noticed. Shuddha Manahshila, when given to patients of Kasa Roga at the dose of 10-25 mg, three times a day for 4 weeks, with the adjuvant of honey, gave good result particularly in Vatika Kasa (eosinophilia). Shuddha Manahshila, if used in an appropriate dose on the patients of Kasa Roga, has a potential for becoming the drug of choice.

References


