AN OVERVIEW OF KUPIPAKAVA KALPANA

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ABSTRACT

Rasa Shastra and Bhaishajya Kalpana are the two main parts of Ayurvedic pharmaceutics. Rasa Shastra deals with the metallic and herbo-mineral preparations with their types, occurrence, physical properties, organoleptic characteristics and pharmaceutics. Basically there are four varieties of Rasaushadhis mentioned in Rasa Shastra i.e. Kupipakva Rasayana, Parpati Rasayana, Pottali Rasayana and Kharaliya Rasayana. Kupipakva Rasayana follows a typical process and requires long duration for preparation. However, it bears a unique place in Rasaushadhis because of its mercurial preparation with quicker action and synergistic effect in the body at very low dose. This Kalpana includes a number of preparations like Rasa Sindura, Makardhwaja, Malla Sindura, Rasa Karpura and Rasa Pushpa etc. The name Kupi indicates that the preparation is made in Kanch Kupi (glass bottle) on mild to intense heat by using a special instrument known as Baluka yantra. Particular chemical processes are involved in these preparations which also bear testimony to the great chemical knowledge prevailing in ancient India. Kupipakva Rasayanas are very popular and commonly prescribed preparations among the Ayurvedic physicians and are looked upon as panacea. The motive of this article is to explore the research and therapeutic scopes of Rasaushadhis and Parada yogas like Kupipakva Rasayana. In present era, most of them show medical toxicity and common people hesitate to use these medicines due to awareness or lack of knowledge. This article narrates the details of Kupipakva Rasayana studying classical references and present day scientific work.

Keywords: Rasa Shastra, Rasayanas, Kupi, Baluka Yantra

INTRODUCTION
At present, the new drug development process looks to be at a stagnant state. There is neither a good work on the chemistry point of Rasaushadhis nor are trials being made. To develop a new Rasaushadhi compound, work on the Rasausadies is limited to some classical formulations that too is not perfectly standardized. Present chemical labs identify purely prepared Kajjali, Ras Parpati, Ras Sindoor and Hingula, same as HgS. They have different pharmaceutical and therapeutic indication. Their chemical structure is still not identified like other chemical entities such as structure of benzene, diamond, graphite etc. Also there is huge scope for development of new drugs in Rasa Shashtra, like Makardhwaz, Samir Pannag Rasa etc. New Kupipakava Rasa compounds can be developed with combination of new metals and other elements. Working on some therapeutic specific isotopes of some elements can be a breakthrough in the field of medicine. To do all this as per present day requirements, the classical literature and text will have to be studied thoroughly. So this article primarily goes around the classical references of Kupipakava Rasayana and also some latest research works have been quoted. Chemistry in ancient India had its origin in the development of practical art to meet the demand for necessities of life, as also in the speculation about the nature and composition of matter. Since the beginning of civilization, the evolution of chemistry may be said to have proceeded in a more or less uninterrupted course in spite of numerous political and social changes in the country. Use of various metals and minerals and transformation of these into effective drugs in Ayurvedic system of medicine serve as evidence for this fact\(^1\). The Rasaushadhis described in Ayurveda are well known for their rapid action. These are supposed to be superior to other drugs in many aspects. One of the most peculiar properties of Rasaushadhis is “Small drug dose, but having greater efficacy”. Enumerable formulations, small drug doses, rapid action, desired results, long lasting effect and palatability are some of the specialties of Rasaushadhis\(^2\). They can be used in Asadhya vyadhis (incurable diseases), while ancient Acharyas have concentrated only on treating the curable disease. It is also said that one doesn’t have to look for Dosha, Dooshya, Desh, Kaal, Prakriti etc. for the use of Rasaushadhis\(^3\). Sinduras are the mercurial compounds with or without Sulphur, which are prepared through Kupipakva method. Rasa Sindura, Shila Sindura, Malla Sindura, Tala Sindura, Makardhwaja and Siddha Makardhawaja etc. are examples of Sindura. It is important to mention that Sinduras are named on their red colour like that of Sindura. Because of the similarity in method of preparation, Rasa Puspa and Rasa Karpura are also included into this group, though these are not of red colour\(^4\). Thus, Rasa Shastra has a unique importance in the field of Ayurveda. It basically deals with the pharmaceutics of drugs of mineral and metallic origin, along with their occurrence, varieties, organoleptic characteristics and physical properties. The Rasa preparations can be classified in different classes such as Kupipakva Rasayana, Parpati Rasayana, Pottali Rasayana and Kharaliya Rasayana. The drug prepared from Parada (Mercury) and other compounds in a glass bottle by applying heat is termed as Kupipakva Rasayana. Preparation of Kupipakva Rasayana is characteristic pro-
procedure in *Rasa Shastra* as it requires *Kanch Kupi* (a special type of glass bottle), *Bhrasthri* (furnace) and *Baluka yantra* (a specially constructed instrument), *Kramagni* (a specific heating pattern), *Shalaka sanchalana* (insertion of hot and cold rod during preparation), *Mukha bandhana* (corking of a bottle), *Swanga sheetikarana* (allowed to cool by own) and *Kupi bhedana* (breaking of glass bottle)².

The word *Kupipakva Rasayana* is made up of four words i.e. *Kupi* (glass bottle), *Pakva* (heating or paka), *Rasa* (Parada) and *Aayana* (Sthanā)⁶. *Kupipakva Kalpana* is a special procedure of drug preparation, in which *Kajjali* is the main ingredient. The role of temperature is very important to get the desired and beneficial effect in the final product. Many observations and precautions are involved in the process of preparation of *Kupipakva Rasayana*.

**Definitions related to Kupipakva Kalpana**

- **Jarana**: It is a process, in which *Gandhaka* is heated in different proportions with *Parada* (mercury) in specially designed apparatus⁷.

- **Murcchana**: It is a process in which *Parada* with or without *Gandhaka*, is converted into a suitable compound, which could be used internally without being reduced to ash⁸.

- **Kanch Kupi**: Glass bottle coated with seven layers of mud smeared cloth strips⁹.

- **Baluka Yantra**: Earthen pot filled with sand, at the center of which the *Kupi* is immersed for heating⁹.

- **Kupipakva Rasayana**: The Rasayana or formulation prepared using *Kupi* and *Baluka Yantra*¹⁰.

**HISTORICAL REVIEW**

In 8ᵗʰ century A.D. Govinda Bhagvatpada-charya described *Gandhaka Jarana* procedures in his text *Rasa Hridaya Tantra* which finally developed as *Kupipakva Rasayana*¹¹. *Rasa Prakasha* Sudhakar of Acharya Yoshodhara Bhatt is the first text to describe the *Kupipakva Rasayana* in the context of *Rasa Bhasma*. In this, *Sindura Kalpana* is mentioned as the name of *Udaya Bhaskar Rasa*. He also described the method of preparation of *Rasa Karpura* as the name of *Ghanasara Rasa*. *Kachaghati* (*Kupi*) and *Sikata yantra* are used for the preparation of *Udaya Bhaskar Rasa*¹². Acharya Dundukanatha, the author of *Rasendra Chintamani*, has firstly introduced the preparation of *Kupipakva Rasayana* during 12ᵗʰ century A.D. He mentioned *Kramagni paka* i.e. increasing of heat (*Mrudu, Madhya* and *Tivragni*)¹³. From 13ᵗʰ century, the *Siddha Sampradaya* started to develop the *Kupipakva Rasayana*. In 15ᵗʰ, 16ᵗʰ and 17ᵗʰ century, *Kupipakva Rasayana* is explained in the name of *Sindura Rasa*.

**Table 1:** Classification of Kupi Pakwa preparation:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Sagandha</th>
<th>Gandhaka is used.</th>
<th>Makaradhwaja and Rasa Sindura</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nirgandha</td>
<td></td>
<td>Gandhaka is absent.</td>
<td>Rasa Manikya and Vyadhiharana Ras</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturing Method</th>
<th>Antardhumā</th>
<th>Process is done in a closed container (<em>Kupi</em>)</th>
<th>Sameer Pannaga Rasa and Rasa Sindura.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahirdhumā</td>
<td>Initially opened <em>Kupi</em></td>
<td>Rasa Sindura and Makaradhwaja</td>
<td></td>
</tr>
</tbody>
</table>
Accumulation of desired product | Galastha | The product is obtained from the neck of bottle | Makaradhwaja and Rasa Sindura
---|---|---|---
Talastha | The product is obtained from the bottom of bottle | Sameer Pannaga Rasa and Swarna Vanga
Ubhayastha | The product is obtained from both neck and bottom of bottle. | Hinguliya Manikya Rasa and Sameer Pannaga Rasa

**METHOD OF PREPARATION OF KUPI-PAKAVA RASAYANA**

In *Rasa Shastra*, the practical experience with the preparation of every medicine is more important. Preparation of *Kupipakva Rasayana* is one of the typical procedures to adopt. The text *Rasa Ratna Samuchhaya* gives clear cut indication regarding the method of preparation of *Kupipakva Kalpana*. The colour of finished product is resembled like *Sindura* (red). So it is considered that *Kupipakva Kalpana* is a *Sindura Kalpana*. In ancient times, it was being prepared through *Baluka yantra* and the heat was being applied in increasing order. The idea of using *Baluka yantra* was to apply uniform heat to the *Kanch Kupi*. The total period of heat prescribed for the preparation of *Rasa Sindura* is 8 yamas (24 hours). This time period should be divided into three categories, i.e. *Mridu agni* should be given in the first 8 hours, then *Madhyamaagni* for next 8 hours and then *Teevragni* for last 8 hours. Other formulations require variables time period and sometimes, it may be more than 24 hours.

**Equipments required:** *Kanch Kupi*, *Baluka Yantra*, Burner/furnace, *Khalva Yantra* (mortar and pestle), *Shalaka* (Iron Rod), Copper coin or plate, Cork or sealing material.

**Materials:** The materials required for preparation of *Kupipakva Rasayana* may be-
1. *Parada* (Mercury)
2. *Gandhaka* (Sulphur)
3. Metal
4. Mineral
5. *Bhavana Dravya* (liquid for levigation)

**Procedure**

The procedure of preparation of *Kupipakva Rasayana* is mainly divided into three phases:

1. **Purva Karma (Pre heating phase)**: This includes
   - Collection of equipments
   - *Shodhana* of ingredient according to the specified classical methods
   - Preparation of *Kajjali*
   - Preparation of *Kanch Kupi*
   - Filling of *Kajjali* into *Kanch Kupi*
   - Fixing of *Kanch Kupi* in the *Baluka Yantra*.

2. **Pradhan Karma (Heating phase)**: Heat is given in three stages with gradual increase in temperature.

**Table 2:** Pattern of Heating during Kupi Pakwa preparation:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Type of Agni</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Stage of <em>Mridu</em> heat/liquefaction of <em>Kajjali</em></td>
<td>upto to 250°C</td>
</tr>
<tr>
<td>2.</td>
<td>Stage of <em>Madhyama</em> heat/Jarana of <em>Kajjali</em></td>
<td>250°C to 450°C</td>
</tr>
<tr>
<td>3.</td>
<td>Stage of <em>Tivra</em> heat/formation of compound</td>
<td>450°C to 650°C</td>
</tr>
</tbody>
</table>
• **Mridu Agni**: This is the stage where Kajjali starts melting and sulphur fumes are emitted. This is tested with the help of a Shita Shalaka (cold rod). The temperature at this stage ranges up to 250°C.

• **Madhyama Agni**: In this stage, melting of Gandhaka results in profuse fuming. At this stage, clearing of the mouth of glass bottle by Tapta Shalaka (hot rod) is done. The temperature ranges between 250 – 450°C.

• **Teevra Agni**: The emission of fumes is stopped and flame is seen at the mouth of Kanch Kupi. This stage is ideal to do Mudrana (Corking) for Bahirdhoom Kupipakva Rasayana. At this stage, temperature ranged between 450 - 650°C.

3. **Paschat Karma (Post heating phase)**:
   
   • Removal of Kanch Kupi- After self-cooling, Kanch Kupi is gently removed from Baluka yantra.
   
   • Breaking of Kanch Kupi- Mud smeared cloth is scrapped off carefully with a knife. A strip of cotton cloth or a thick thread is soaked in spirit/kerosene. This is strapped around the center of the bottle. It is ignited to burn out. A wet cloth is then wrapped around the hot surface, which facilitates breaking of the bottle.
   
   • Collection of product- After breaking of the bottle, the product is removed from the Kanch Kupi carefully and stored in an air tight glass container.

**Sub processes**

1. **Preparation of Kajjali**
   
   • Trituration should be done without using any liquid, until it becomes lusterless. If Bhavana is mentioned, it is to be done after Kajjali becomes lusterless.
   
   • When metals like Suvarna (Gold) and Roupya (Silver) are to be added, then thin flakes of these metals are made and triturated to dissolve in Parada.
   
   • When metals like Naga (Lead), Vanga (Tin) are to be added, they are melted and mixed with Parada to form amalgam and then Gandhaka is added to prepare Kajjali.

2. **Preparation of Kanch Kupi**
   
   • The Kanch Kupi is wrapped with 7 layers of cotton cloth smeared with Multani clay.
   
   • Each layer is done only after drying of the previous one.
   
   • The bottle should be filled to 1/3rd of its capacity.

3. **Baluka Yantra**
   
   • Baluka Yantra is filled with sand up to approximately 3 inches.
   
   • Kanch Kupi is fixed exactly in the centre of Baluka Yantra.
   
   • Sand is then filled around the Kanch Kupi up to its neck.

4. **Shalaka Sanchalana**
   
   • Iron rod with a wooden handle is kept for Shalaka sanchalana. Two types of Shalakas are used for this-
   
   • Shita Shalaka: It is used to check the stage of Kajjali. At the beginning, Shita Shalaka Sanchalana is done to see whether Kajjali started melting or not. At the end, it is done to confirm total evaporation of Sulphur before corking.
   
   • Tapta Shalaka: It is done to clear the mouth of the Kanch Kupi blocked by Sulphur particles during fuming.
5. **Copper coin test**: It is done before corking to check the presence of Parada in Bahirdhooma method.

6. **Corking**: Corking is done when-
   - Fumes are stopped completely in Antardhoom method.
   - Flames are stopped completely in Bahirdhoom method.
   - Bottom of the bottle appears red.

- Particles do not stick even on Shita Shalaka.

When these characters are appeared during Kupipakva preparation, then mouth of Kanch Kupi is sealed with cork and a piece of cotton cloth smeared with Multani clay is wrapped over it. After corking, 2-3 inch of sand surrounding the neck of the bottle is moved aside. Heating is then stopped.

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**Flow chart for method of preparation of Kupipakava Rasayana**

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<table>
<thead>
<tr>
<th>Kanch Kupi</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhrastri (Furnace)</td>
<td></td>
</tr>
<tr>
<td>Baluka Yantra</td>
<td></td>
</tr>
<tr>
<td>Kramagani Paka</td>
<td></td>
</tr>
<tr>
<td>Shalaka Sanchalana</td>
<td></td>
</tr>
<tr>
<td>Mukha Bandhana</td>
<td></td>
</tr>
<tr>
<td>Swanga sheetikarana</td>
<td></td>
</tr>
<tr>
<td>Kupi Bhedana</td>
<td></td>
</tr>
</tbody>
</table>
```
OBSERVATIONS\(^\text{19}\)

1. Observations of fumes
   - Colour, odour and time of the fumes are noted.
   - Fumes may be mild, moderate or profuse.
   - Colour of fumes may vary from yellow, orange to white.
   - Odour of fumes may be sulphuric or arsenical according to the ingredients.

2. Observation of Flame
   - Time of appearance of flame, its height, colour, odour and duration are noted.
   - Flame does not appear in Nirgandha preparations.

3. Observation of Shalaka sanchalana
   - Shita Shalaka: Particles of ingredients are seen on the rod at the stage of melting of Kajjali. This is the first end point.
   - Tapta Shalaka: Material present at the mouth of Kanch Kupi burns with a blue flame on insertion of Tapta Shalaka.

DIFFERENT VARIETIES OF KUPIPAKVA PREPARATIONS

There are various types of Kupipakva preparations available to cure and control the diseases like Makaradhwaja\(^\text{21}\), Malla Sindura, Tala Sindura, Shila Sindura, Rasa Karpura, Rasa Pushpa, Swarna Vanga and Rasa Sindura\(^\text{22}\).

Table-3: Details of some Kupi Pakwa preparations:

<table>
<thead>
<tr>
<th>Name of preparation</th>
<th>Ingredients</th>
<th>Chemical changes expected</th>
<th>Dose</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rasa Sindura</td>
<td>Shuddha Parada and Shuddha Gandhaka</td>
<td>( \text{Hg} + \text{S} = \text{HgS} )</td>
<td>1-2 Ratti</td>
<td>Rasayana, Vajikarana, Kushtha, Varna</td>
</tr>
<tr>
<td>Makaradhwaja</td>
<td>Eight parts of Shuddha Parada, One part of Shuddha Swarna, Sixteen parts of Shuddha Gandhaka</td>
<td>( \text{Hg} + \text{S} = \text{HgS} )</td>
<td>1/2-2 Ratti</td>
<td>Kantikar, Aayushya, Vajikarana</td>
</tr>
<tr>
<td>Rasa Karpura</td>
<td>Specified quantity of Shuddha</td>
<td>( \text{K}_2\text{SO}_4\cdot\text{Al}_2(\text{SO}_4)_3\cdot24\text{H}_2\text{O} = )</td>
<td>1/64-1/32</td>
<td>Vrana ropana, grahi,</td>
</tr>
<tr>
<td></td>
<td>Formula/Equation</td>
<td>Ratti</td>
<td>Kushtha, Atisaransak</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Rasa Pushpa</td>
<td>Equal quantity of Shuddha Parada and Shuddha Kasisa, equal part of Saindhava Lavana</td>
<td>1/2-2½ Ratti</td>
<td>Visuchika nasaka, Pittahara, Vishanaka</td>
<td></td>
</tr>
<tr>
<td>Swarna Vanga</td>
<td>Shuddha Vanga, equal quantity of Shuddha Parada, Equal parts of Shuddha, Gandhaka, Shuddha Nausadara</td>
<td>1-2 Ratti</td>
<td>Rasyana, Vajikaranav, Kushtha nashaka</td>
<td></td>
</tr>
</tbody>
</table>
is stronger among these three. It is more potent than any of other herbal preparations due to its quicker action on minimum dose. Heating pattern and preparation of Kajjali is most important to achieve maximal yield and increase effectiveness of preparation without any side effects or unwanted effects. The Kramagni are the best heating pattern for the Kupipakva preparation which is clearly mentioned in classical texts. Heating pattern should be always in increasing order like Mridu Agni at 120-250°C temperature for 6 hours, Madhyama Agni at 250-450°C temperature for 6 hours and Tivra Agni at 450-650°C temperature for 6 hours, but heating should be intermediate during the preparations. In pharmaceutical studies various instruments required, preparatory procedure have been described in detail which prove to be helpful for Ayurvedic scholars when they prepare this formulation of their own. This study will definitely help scholars to understand Kupipakva Rasayana and encourage them in its preparation.

**CONCLUSION**

Kupipakva Rasayana holds its specialty in many aspects. The properties like Small drug dose, rapid action, desired results, long lasting effects and palatability make this formulation popular in Rasa vaidyas. While reviewing the Rasa granthas various references of Kupipakva Rasayana were found. Variations are found especially with respect to preparatory procedure, Bhavana dravyas used, instruments used in the procedure, medium of heat provided in the procedure, type of heating pattern, corking of the Kupi, materials used in the corking. The characteristic procedures like Murcchana, Bandha, types of Kupipakva Rasayana are discussed in detail which is helpful in proper understanding of the concept. In pharmaceutical studies various instruments required, preparatory procedure have been described in detail which prove to be helpful for Ayurvedic scholars when they prepare this formulation of their own. This study will definitely help scholars to understand Kupipakva Rasayana and encourage them in its preparation.

**REFERENCES**


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