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A Critical Review on *Kupipakva Rasayana* w.s.r. to *Rasasindura*

Author: Ankesh Sharma¹

Co Authors: Saroj Parhate², K S Karbhal³ and Anil Kumar⁴

¹⁻³Dept. of R.S. & B.K., Shri N.P.A. Govt. Ayurveda College, Raipur (C.G.), India

⁴Dept. of R.S. & B.K., Vijayashree Ayurvedic Medical College Jabalpur (M.P.), India

ABSTRACT

Kupipakva rasayana are unique pharmaceutical procedure where in the medicinal preparation *shuddha Parada*, *shuddha Gandhaka* and any of other *rasadravya* (metals and minerals) *paka* is done by giving agni into gradual increase in temperature for specific time in a *Kacha Kupi* (glass bottle) resulting in *rasayana* effect, so it is called *Kupipakva Rasayana*. *Kupipakva Rasayana kalpana* have always been known for their absolute potency and quick in action even in smaller dosage. These formulations have wide range of therapeutic utility. *Rasasindura* is a one among basic most common preparation used as *kupipakva Rasayana*. This is largely produced and marketed by pharmaceutical companies, because of its *sukshma* and *Tikshna* guna it has strong penetrating power to reach the pathological site quick in action, required minimal therapeutic dose, easy to administration and longer stability. They are having more potent compare to pure herbal preparation.

Key Words: *Kupipakva Rasayana*, *Rasa Sindura* and *Gandhaka Jarana*

INTRODUCTION

Rasashastra is a very important branch of *Ayurvedic* pharmacology. Therapeutic uses of mercury and minerals are a speciality in *Rasashastra*. This branch mainly deal with the use of metals and minerals and their processing in detail. *Parada* which is believed to divine origin is given utmost important that the whole branched is named after it. *Parada* is liquid at room temperature and cannot be utilized directly as medicine in metallic form, hence conversion of *Parada* into such a form which imparts a definite disease curing property termed as *Murchana*¹. *Murchana* of *Parada* can be classified as *Kharaliya Rasayana*, *Parpati Kalpana*,

Kupipakva Rasayana and *Pottali Rasayana*. Among them *kupipakva Rasayana* which is mainly *sagandha saagni murchana* of *Parada* (except *Rasapushpa* and *Rasakarpura*) becomes most important preparation because of continues *agni samyoga* makes them strong chemical bond compared to other. It has been claimed that *Parada* treated with process of *gandhaka jarana* becomes highly potentiated. More the ratio of *Gandhaka* assimilated in *Parada* better will be its therapeutic strength and wider will be its therapeutic application. The *Parada* digested with six times of *suddha Gandhaka*, not only gains therapeutic potency but also exhibits the *Rasayana* effect².



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ETYMOLOGY

The word *kupipakva Rasayana* is made by the combination of following words that is the term *kupi* indicates suitable glass bottle, *pakva* means *paka* in *agni*, *rasa* terms stands for *parada* and *ayana* means *sthana*. *Rasayana* is that by which *Rasa*, *Rakta* etc *Dhatu*s are obtained. By which the human being can retain *Bala*, *Oja*, *Medha* etc. ultimately delay the process or wards off *Jara* as well as *Vyadhi*.

History of Kupipakva Rasayana:

The knowledge of *Kupipakva Rasayana* came to India by various *Siddhas* in 8th century A.D.

- 9th century A.D. - *Gandhaka Jarana vidhi* first time mentioned in *Rasa Hridaya Tantra*, further developed as *Kupipakva Rasayana* ³.
- 13th century A.D. - Information of *Rasa Sindura Kalpana*, was first time mention as *Udayabhaskara Rasa* in *Rasa Prakash Sudhakar*, where *Kupi* used in the preparation and also described the method of preparation of *Rasa karpura* as the name of *Ghansara Rasa* ⁴.
- 15th century A.D. - *Acharya Dhundhuknath* in *Rasendra Chintamani* has mentioned there is clear cut specific heating pattern of *Gandhaka jarana* named as *Kramagni* (*Mridu*, *Madhya* and *Tikshna Agni*) intermediate heating for a specific period (3, 4 and 5 days) with the use of *Kachakupi* and *sikta yantra*. It is claimed that without *Shadaguna Gandhaka Jarana Parada* does not have the power of removing or curing diseases. So that *Gandhaka Jarana* is essential for making *Parada* capable of destroying diseases. It has been also mentioned here that the *Murchana* process

without *Gandhaka Jarana* is not beneficial, as *Murchana* may not be able to induce definite diseases curing capacity in *Parada*. It has been also mentioned that those who want desired effects of *Parada* without doing *Gandhaka Jarana* are considered as most unwise ⁵.

- 16th and 17th century A.D. - In *Rasakaumudi* there is mention about *Baulka Yantra*, *kachakupi*, and *Nayanananda sindura*. In *Ayurveda Prakash of Madhava* different methods of *Gandhaka Jarana Antardhuma* and *Bahirdhuma* along with its importance have been found. He has mentioned that *Gandhaka Jarana* and *Shodhana* of *Rasa (Parada)* both are highly essential to make *Parada* therapeutically useful. He also claims that the person, who wants to utilize *Rasa* for *Rasa Karmas* without performing *Gandhaka Jarana*, cannot achieve its goal (desired effect). Without the *Jarana* of *Abhraka*, *Swarna* and *Gandhaka* desiring the therapeutic efficacy of *Parada* it is most unwise ⁶.
- 19th century A.D. - The author of *Rasatarangini*, *Sadananda Sharma* have mentioned different types of *Kupipakva rasayana* like *Rasasindura*, *Rasapushpa*, *Rasakarpura* and *Makardhwaja* etc. where modification of sulphuric acid in preparation of *Rasa karpura* ⁷.
- *Swami Harisharnanand Vaidya* has described 260 *kupipakva Rasayana* in his text *Kupi Pakva Rasa Nirmana vigyana* ⁸.
- 20th century A.D. - Many research based standardization are done for manufacture of *Kupipakva Rasayana* i.e. development of muffle



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furnace, standardization of heating pattern, pre-clinical studies etc.

After overall study, one can come to conclude that process of *Gandhaka Jarana* mentioned in *Rasa Hridaya Tantra* developed and came in light as *Kupipakva Rasayana*.

Classification:-

1. According to ingredients:

A. Sagandha - In which contain *gandhaka* as an ingredient.

1. *Parada* + *Gandhaka* → *Rasa Sindura*.

2. *Parada* + *Gandhaka* + *Dhatu* → *Nagasindura*.

3. *Parada* + *Gandhaka* + *Adhatu* → *Mallasindura*.

4. *Parada* + *Gandhaka* + *Adhatu* + *Swarna* → *Poornachandrodaya rasa*.

B. Nirgandha - where *gandhaka* is not in ingredients, eg. *Rasapuspā*, *Rasakarpura*.

2. According to manufacturing method:

A. Antardhuma – Cork is applied in the beginning, the fumes are not allowed to escape it eg. *Sameerpanaga Rasa*, *Sarvangasundara Rasa*.

B. Bahirdhumavidhi - Cork is applied after *jarana* of *gandhaka*. eg. *Rasa Sindura*.

3. Depending upon the deposition site of finished product:

A. Galastha or Kantastha - Final product accumulated at the neck of *kupi* eg. *Rasa Sindura*.

B. Talastha or Adhastha - The product is obtained at the base of *kupi* eg. *Sameerapannaga Rasa*, *Rasa Sindura*.

C. Ubhayastha - Medicine accumulated both at neck and the base of the *kupi* eg. *Poornachandrodaya*, *Rasamanikya* etc.

Procedure (Method of Preparation):

Kupipakva Rasayana procedure can divide into three phases:

1. Purva karma: It includes –

1. Collection of appropriate instruments & ingredients.

2. Purification of ingredients.

3. Preparation of *Kajjali*.

4. Filling of *Kupi* with *Kajjali*.

5. *Kupi* placed in *Valuka Yantra*

1. Collection of appropriate instruments & ingredients:-

(A) Bhatti (Electric Muffle Furnace) 9:- The height and width of the *Bhatti* should be 18 *angulas*, external shaped like *valmikakar* (Ant hill) round, lower side diameter is big with a hollow space of 5 *Gulpha* (20 inches) inside. There should be an opening in towards downside for introducing fuel, of about 12 *angulas*. *Bhatti* can be made with the fire proof bricks which minimizes the loss of heat and fuel consumption. Presently the different varieties of *Bhatti* are in use-

- *Bhatti* using the fuel as fire wood, Charcoal, Diesel, Gas etc.

- *Bhatti* using the fuel as Electric power – Muffle Furnace. Construction of each of these *bhatti* will vary according to the fuel used. According to *Acharya Harisharnanand ji*, *Bhatti* may be of any type but it should fulfill the following criteria.



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1. The height of *bhatti* should be sufficient so that the heat produced from the fuel should properly reach to the center of *valuka yantra* and the medicine inside the *kupi*.

2. Air should freely enter into the *bhatti* for proper blowing of fire.

3. Smoke should not be formed inside the *bhatti*.

4. Heat should be radiated in upward direction and should not be leaking out and sustained well.

For this purpose recently fire clay is used.

Recently the muffle furnace is in common use.

This is supposed to be ideal one as heating process is continuous, gradually increasing, incontrolled manner and up to expected time limit, pollution free and ecofriendly etc.

(B) Valuka yantra¹⁰: A *Loha bhanda* or *Mritika bhanda* having narrow base and wide mouth depending on the size of the *kupi* (1" smaller than *kupi*) should be prepared with 2 handles. The circumferences of *valuka yantra* should be exactly fit over the hole of the *Agnibhatti*. Before keeping the *kupi* during heating a central hole which should be close with *abhraka patra* and the sand should be fill around the *kupi*. According to *Yadavji Trikamji Acharya* the depth of the vessel should be *1 vitasti pramana*.

History of Valukayantra:-

The usage of this *yantra* seem to be started from 9th century, *Rasa Hridaya Tantrakar* used *valuka yantra* for *Jarana* process.

➤ **Rasa Ratna Samucchaya**: A *bhanda* of 1 *Vitasti* filled with 5 *adhaka* of sand is taken for *valuka yantra*, in which a *kachkupi* wrapped with 1 *angula* thick *kapadmitti* filled with 3 parts of

kajjali, then the *bhanda* is covered with another *sharava* & *sandhibandhana* is done¹⁰.

➤ **Rasendra Chintamani**: The centre in the bottom of *bhanda* should have the hole of *tarjini anguli*, which is closed with *abhraka patra* while filling it. It is then subjected to *kramagni paka* for 3, 4, and 5 days¹¹.

➤ **Rasendra chudamani**: Vessel should be containing upto 5 *adhaka* sand and *aushadha* filled upto 1/3rd part¹².

➤ **Rasa Tarangani**: Depth of *bhanda* is mentioned as 12 *angula*, along with the indication of *kapadmitti* over *bhanda* too, before subjecting it to *agni. sand* should be filling up to the neck of the *kupi*¹³.

➤ **Acharya Yadavji**: Has mentioned the depth of vessel as 1 *vasthi*.

• **Valuka (Sand)**: *Sthoola* and *shuddha* *Valuka* (sand) should be filled into the *valuka yantra*. *Valuka* should be neither big nor small. It should be clean and free from *trina*, *kastha* etc¹⁴.

• The sand should not be very fine nor having big sized stones.

• The sand particles size should be moderate & having same size of particles.

(C) Kupi: During ancient period *Acharya* used to prepare *Sindura kalpana* in *Andha moosha* or *kupi* made of *Hema*, *Tara*, *Ayas* / *Mrittika*¹⁵. Any material can be used but they should sustain intense heat. After 10th century when glass bottles were invented it was used for the medicine preparations. Now a days beer bottles of 650 ml capacity with the neck 1 -1 ½ inch length and moderate thickness is used.



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Synonyms of *Kupi* are *Kupika*, *Siddha*, *Girindika* etc.

History of *kupi*:

Vaidya Harisharnananda stated in his text *kupipakva Rasayana* that the use of *kanch kupi* began from 10th century A.D. when the science of preparing glass began in India. *Kupi* made up of iron, silver, mud, gold were in use. *Rasendra mangala* has described *shadguna* (six times) *bali jarana* in *Parada* by the help of *Loha* crucible. *Harisharnanda Vaidya* had stated that a *kanchkupi* should have thin bottom and should not have so long neck as the fumes of sulphur would block the neck and even break the *kupi*. Now a days green colour or Amber colour beer bottles are used in practice.

The neck of the bottle should not be so long:-

If bottle neck is unnecessary lengthy, sulphur is definitely to accumulate in the lumen & occlude the passage resulting in the tearing of the bottle. Generally the fumes of sulphur are responsible for breaking of the bottle.

Advantages of *kanch kupi*: - The most important advantage of glass bottle is the *rasas / aushadha dravya* which prepared in glass bottle they get very beautiful, having outer smooth surface.

- It does not break suddenly during preparation.
- During whole process vapours do not escape out.
- Drug can be separated easily.

Disadvantage: Can be used for only once.

Preparation of *kupi*:-

As per the textual reference the *kupi* should be covered with the mud smeared cloth which can withstand intense heat. Mud which is *pandura varna*, obtained in mass and which sustains heat can be used. *Valmika mrittika* or potters mud can also be used. It is advised to prepare *kapad mitti* from, husk - 2 parts, cotton - 1 part, mud - 3 parts, fibres, grinded and kept soaked in water for 7 days and then used to cover the *kupi* ¹⁶.

Now a day's *multani mitti* is used for this purpose. Since *multani mitti* is by nature fine, soft and sticky. The mud smeared cloth is applied to the *kupi* from bottom to mouth and should be well dried. Whole length of the *kupi* can be applied with *kapad mitti* as it prevents breakage of *kupi* during heating.

(d) Application of *kapadamitti*:-

Aim: To enhance the heat tolerance capacity of *kupi* and also to strengthen the glass bottle.

- In Rasaratna samucchaya* describes the method of coating of *kupi* with clay and cloth in detail ¹⁷.
- Firstly mixed mud and water properly to make a semisolid paste and applied over cloth piece, then apply this paste at the bottom, then on circumference continues on neck and lastly on mouth region of *kupi* and again apply mud on it and keep it for drying in sunlight.
- After proper drying of the first layer, should be put second layer. Another cotton strip smeared with clay should be placed in cross direction to previous strip from the bottom to the mouth of the bottle.



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- After coating it should be pressed by hand to make it smooth, to make sure that no free space or air bubble is present in between the bottle and strips, after that it should be dried in sun.
- Likewise total seven layers of coating of clay with cloth are applied over *kachakupi* to make it strong and heat resistant.
- In *Ayurveda Prakasha saindhava*, *Ayaskriti* and *Khadiya* clay are used for coating¹⁸ whereas in *Rasendra Chintamani Khatika*, *Saindhava* and *loha churna* with water are used for coating on glass bottle¹⁹.

Precautions:

1. Don't apply all 7 layers at a time.
2. Don't apply more clay repeatedly. It will increase unnecessary weight and thick layer over the bottle, which is easily scraped out.
3. If coating is not done properly, it may cause burst of glass-bottle due to the unequal surfaces or air space in the bottle.
4. Stouting should be enough at the bottom of bottle, because here quantity of heat is much more, than the mouth region of bottle.

2. Purification of Ingredients: The raw materials which are used in preparation should be identified first for the gentility and purity. Every raw material should be purified must according to the method mentioned in classics and tested according to the *Samyak Shuddha laxana* described in the texts²⁰.

3. Preparation of *Kajjali*:

If the *kajjali* is to be prepared with only *Parada* and *Gandhaka*, then both should be taken in

shodhitavastha and subjected to *mardana* together.

If *kajjali* is to be prepared by adding *dhatus* such as *Svarna*, *Tamra* etc, then *parada* should be first triturated with the *Dhatu* till it becomes a homogeneous mixture. Later, to this *Gandhaka* is to be added and *mardana* done till it becomes '*kajjal sadrishha sukshma churna*'²¹.

If it includes other minerals they should be powdered separately and mixed to this *kajjali* and again triturated till a homogeneous mixture is formed. If *bhavana* is mentioned it is given after the completion of *kajjali* preparation. After *Bhavana* the mixture should be well dried before filling into the *kupi*.

4. Filling of *Kajjali* into the *Kupi* (*Kupibharana*):

The *kupi* should be filled with *kajjali* up to 1/3rd or 1/4th part hence enough space available inside the *kupi* for melting and boiling of *kajjali* and also for the sublimation of compound which is going to be condensed and deposited in the neck of the *kupi*²².

5. Keeping of *Kupi* in *valuka yantra*:

Such *kupi* should be kept exactly at the centre of *valuka yantra* which is in turn placed in the *Agni bhatti* and remaining part of the *valuka yantra* should be filled with sand up to the neck of the *kupi*. Mouth of *kupi* is to be covered temporarily while filling sand in *valuka yantra*.

2. Pradhan karma:

 It includes -

- (1) Temperature measurement
- (2) Heating pattern
- (3) *Shalaka Sanchalana*
- (4) Observations of Fumes & Flame
- (5) *Mukhamudrana*



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(6) *Swangasitikarana*

(1) Temperature measurement:

It is very much mandatory to control heat in *kupipakva Rasa* preparation, to prepare good quality of medicine.

Ancient Parameters - Traditionally following tests were in practice –

(a) Cotton, dried grass test - When cotton piece, or dried grass is kept on the *valuka* and if it catches fire & burns, then it is considered to be *tivragni*²³.

(b) Rice test - When rice put on *valuka* it puffs up considered as *tivragni*.

Modern parameters:-

Nowadays pyrometer, Thermocouples, Thermometer are used for measuring the temperature.

(2) Heating Pattern:

In this process of *Pachana*, heat is needed for *Gandhaka Jarana* and *Gunaparivartana* (chemical changes)

This is the speciality of *kupipakva Rasayana*. In classics, *Acharya* every time stresses for maintaining *kramagni*, meaning gradual increase of heating. According to *Acharya Babu Niranjana Prasad Shastri* in his text *Vaidya Yoga Ratnavali* heating pattern is following:

Kramagni pattern is categorized into three phases²⁴.

1. **Mridu Agni** – Room temperature - 250°C (Initial stage)

2. **Madhyamagni** – 250 - 450°C (Middle stage)

3. **Tivragni** – 450-650°C

(End stage)

I. Phase, *Mridu Agni* (125°C - 250°C):

Stage of liquefaction of *Kajjali* -

a. In this phase of heating, *Gandhaka* fumes starts to expel out from *kupi* mouth in the form of initially white fumes then gradually becomes yellowish fumes.

b. *Kajjali* completely gets melted which may be ascertained by inserting *sheet shalaka* in to the bottom of *kupi*.

c. This heat may be maintained for the required time to allow chemical reactions to begin with.

II. Phase, *Madhyamagni* (250°C - 450°C):

Phase of profuse fuming and boiling of *Kajjali*.

a. This phase commences from the complete melting of *kajjali* and lasts till the starting of formation of *Sindura* compound.

b. In these stage profuse fumes of *Gandhaka* from the *kupi* mouth is observed. Liquefied *kajjali* starts boiling.

c. At the end of this stage if the bottom of the *kupi* is visualized by torch light, it appears deep red.

d. Deposition of fumes at the neck of the *kupi* may cause chocking, which may frequently be cleared by inserting *tapta shalaka* in to the *kupi* mouth.

e. Boiling of melted material in the *kupi* is ascertained by inserting *sheet shalaka* in the *kupi*.

f. Maintain moderate heat for the specific period to ensure burning of extra sulphur in the product. Same degree of heating is maintained continuous till boiling of *kajjali* ceases.



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g. During this stage, sulphur fumes come out strongly. Hence care should be taken by maintaining and controlling heat and proper uses of *tapta shalaka*, otherwise boiling *kajjali* may escaped out from the *kupi* mouth and may catch fire which may leads to breaking of *kupi*.

III Phase, *Tivragni* (450°C - 650°C):

Phase of appearance of flame and corking of *Kupi* mouth.

1. This phase initiates from the formation of *Sindura* compound and ends up to the complete *Jarana* of *Gandhaka*. The process of formation of *Sindura* occurs in the middle stage, it means when *Kajjali* is in boiling stage (Honey comb like appearance), chemical changes occurs and as a result formation of new compound takes place which is called as *Sindura Kalpa*. Afterwards as heating persists, this newly formed compound sublimates and gets condensed in the neck of the *Kupi*.

2. At the end of *madhyamagni* stage *Gandhaka* fumes catches fire and it takes a form of flame. During end stage flame appears.

3. Slowly the height of the flame starts to rise.

4. When extra *Gandhaka* burns out completely flame disappears and this indicates the completion of *Gandhaka Jarana*.

5. Complete disappearance of fumes and flames in the *kupi* could be observed

6. Redness starts appearing at the bottom of the *kupi* (seen through torch light) which get more brightened (*Suryodaya laxana*), this indicated *Sindura* test becomes positive.

7. When Copper coin is placed over the mouth of *kupi*, white coloured *Parada* particles are seen adhering to it.

(3) ***Shalaka Sanchalana***: During this procedure *Tapta* and *Shita Shalaka* are being in use.

Shita Shalaka: It is used especially for noting the state of *Kajjali*, whether it is in powder form, melted state, in boiling state, or in sublimating compound state. The part to be inserted is comparatively thin and its length is large enough to easily touch the bottom of *kupi*. *Shita shalaka* test can be used as confirmatory test for deciding corking time.

Tapta Shalaka: It is used for clearing the *kupi* mouth and burning extra *Gandhaka* deposited at the neck region of *kupi*. One must be very careful while applying *tapta shalaka* as it immediately burns *Gandhaka* which produce flame & fumes. Application of *tapta shalaka* is must, otherwise the deposited *Gandhaka* may block the mouth of the *kupi* and the fumes or vapour inside the *kupi* increase the inside pressure and there may be chances of bursting of *kupi*.

(4) **Observations of Fumes & Flames:**

Fumes: All the characteristics of fumes like colour, smell etc. must be observed. It differs according to the ingredients. Colour may be yellow, orange, quantity may be less, moderate, profuse, smell like sulphur odour, other odour may be some of the observations.

Flames: This is also an important factor while preparing *Kupipakva Rasayana*. Timing of starting of flame, its height, colour and its duration



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are the important features. All these features depend on the ingredients used.

(5) Mukhamudrana of Kupi (Corking): To decide the proper timing of corking is very important and difficult task. It is important to decide the proper time of corking. It is decided by observing following findings.

1. Absence of flame.
2. Absence of fumes.
3. Copper coin test – should be positive.
4. Appearance of Redness in the bottom of *kupi*. (*Suryodaya lakshana*- positive)
5. *Sindura* test – should be positive.
6. Dry grass test should be positive.
7. If a *Shita shalaka* is introduced into the *kupi*, white dense fumes appear. It suggests the completion of *Gandhaka Jarana*. *Shita shalaka* gets coating with different coloured powder according to different compounds. Ex. Blackish in *Rasa Sindura*, White coating in *Rasapushpa* etc. This is called positive *Shita shalaka* test; a confirmatory test before corking.

8. Before corking 2-3 inches of sand layer should be moved aside from the neck region to make it cool as the sublimating compound can get well condensed in the neck portion of the *kupi* ²⁵.

9. Method of Corking (*Mudra*):

Corking material is called *Mudra* ²⁶.

1. *Madanamudra*.
2. *Hata mudra*.

Now a days a cork made up of stone or wood or brick piece which is thicker at the top and comparatively narrower below, firmly fixed into the mouth of the bottle which is wrapped with

the cloth dipped in Plaster of Paris or *multani mitti* is used.

Aim of Corking -

- (1) To avoid entrance of foreign materials (especially in *Talastha Rasayana*)
- (2) To obtain *Kanthastha Rasayana* (complete sublimation of compound)
- (3) To prevent *Paradadi* medicine from expelling out of *kupi*.

(6) *Swangasitikarana* (Self Cooling):

After the process of corking, *Bhrastri* is left for self-cooling, during this period sufficient time for completion of reaction so that forming *Sindura* compound starts too condensed in the neck portion of *kupi*. Whatever is the temperature obtaining in this period is necessary for enhancement of qualities of *Sindura* by its complete *Pachana*, *paka* process.

(C) *Paschat Karma* (Collection of final product):

The following procedures come under this *karma* –

- a. Removal of *kupi* from the *valuka yantra*.
- b. Breaking of *kupi* & collection of final product.
- c. Examination of the final product.

a. Removal of *kupi* from the *valuka yantra*: First sand should be removed from the *valuka yantra* and then the *kupi* is taken out carefully, layers of *kapadmitti* is scraped out, *kupi* is cleaned with wet cloth. After that marked the level of *Rasayana* (prepared medicine) inside the *kupi*.

b. Breaking of *Kupi* (*Kupibhedana*):

Breaking of *kupi* with all care and gentleness to avoid any loss of drug so that a thread soaked in



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kerosene is tied just below (2-3 cm) the level of the product, the thread is ignited and *kupi* is horizontally rotated so that whole thread gets completely ignited. Then *kupi* should be wrapped with a wet cloth, as a result of sudden change in temperature the *kupi* breaks into two equal halves at desired level. The product which is either *Talastha* or *Kantastha* from the broken *kupi* is carefully collected, grinded well and stored in clean place. The collected medicine should be analyzed to classical and modern parameter²⁷.

c. Examination of the product / *Sindura*:

Judgment about the colour and shape of the crystal of *Sindura* can be made by the ingredients of the *Kajjali*. Similarly smell and colour of fumes and flames are the basis for the determination of *Sindura* compound, to be formed. At last Organoleptic character described as classical text, Physico-chemical analysis, NPST and Crystallographic study like XRD are done as confirmatory evidences of the *Sindura paka*.

***Sindura Bhasma Pariksha*:** When the *Sindura Bhasma* is subjected to flame test, there should not be any emission of fumes, discolouration or odour.

RASA SINDURA

Etymology of the word *Rasa Sindura*:-

The word *Rasa Sindura* is formed by the combination of two words i.e. *Rasa* and *Sindura*. Here *Rasa* stands for *Parada* and *Sindura* has its own identity which gives the meaning of movement or releasing properties. The name *Sindura* is suitable because it has similar colour to *Sindura* (red colour).

Historical backgrounds:-

- There is no such reference of *Rasa Sindura* in vedic as well as *Samhita* periods. Uses of *valuka yantra* for the preparation of *Rasa Sindura* was developed only after 9th century A.D. before that *Rasa Acharya* have made such preparation in *Andha Musha* made of clay with the help of *Tushagni* (*Kupi pakva rasa nirmana* 2nd chapter page- 43).

8-9th Century AD -

- In *Rasa Hridaya Tantra* a formulation similar to *Rasa Sindura* prepared in *Loha samputa* (*Parada bhasma*) has been mentioned for the first time. *Valuka yantra* is also traced for the first time in this text²⁸.

12th Century AD -

- In *Rasarnava*, found different types of *Gandhaka Jarana*, *Loha musha* and processes of *Parada Marana* are mentioned. *Rakta varna Parada Bhasma* consisting the mixture of *Parada*, *Gandhaka* and *Makshika Satva* is mentioned in this text, but, regarding the term *Rasa Sindura* or its method of preparation are not found in this text²⁹.

- During same period, the author of *Rasendra Chudamani Acharya Somadeva* has mentioned about *Kajjali*, *pisti* of *Gandhaka* and *Parada* and *Valuka Yantra*. But information on *Rasa Sindura* is not found³⁰.

13th Century AD -

- 31 types of *Parada marana* methods has been described in *Anand Kanda*. Out of these only two types are prepared using *Kachakupi* and *Valuka Yantra*. Product with one *Sindura varna* and two *Rakta varna* total three types of *bhasma*



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mentioned though they are prepared with the help of different *yantra*³¹.

- In *Rasa Prakasha Sudhakara*, the author *Acharya Yashodhar* has mentioned three preparations with different names and similar colours which are similar to the manufacturing procedure of *Rasa Sindura*, i.e. *Udayabhaskara Rasa*, *Talastha Rasa Bhasma* and *Manikya varna bhasma*. Six *guna gandhaka jarana* references are also found in this text³².

- *Acharya Nityanath Siddha* has mentioned 11 methods of *Parada Bhasma* in *Rasa Ratnakara Rasayana Khanda*. In this text a type of *Rakta varna* (red colour) *Parada Bhasma* preparation has also been mentioned. But as it contains *Makshika Satva* it is not considered as *Rasa Sindura*³³.

- The author of *Rasa Ratana Samucchaya* described about *Valuka Yantra* and *Kachakupi*, but not mentioned information regarding *Rasa Sindura*. Eight types of *Parada Bhasma* methods of unspecified colour are described. The composition of one formulation is found to be similar to *Rasasindura* which has been described as *Rasasindura* by the commentators *Dr. Kulkarni*³⁴.

15th Century AD -

- *Rasa Chintamani* of *Anantdeva Suri* has explained nineteen methods of *Rasa Bhasma*, out of which three formulations resembling *Rasa Sindura*. One formulation has been mentioned in the context of therapeutics i.e. *kamadeva rasa (Hingula Varna)* that is similar to *Rasa Sindura*³⁵.

- *Acharya Dhundhuknath* in *Rasendra Chintamani* has mentioned about '*Gandhaka Jarana*' and has stressed on its importance also described *Antardhum shadguna Gandhaka Jarana*, *Hingula Gandhaka Marit Rasa Sindura* and its importance. The term *Rasa Sindura* has been mentioned first time in this text, there are two references of *Sindura Paka* and two types *Valuka yantra* also described³⁶.

16th Century AD -

- In *Rasa Sanketa Kalika* the author has mentioned few preparations resembling *Rasa Sindura* with different names like *Haragauri Rasa*, and *Kamadeva Rasa* etc³⁷.

- *Acharya Bhava Mishra* has been described one reference of *Rasa Sindura* in *Dhatuvadi prakana* of *Bhava Prakasha*³⁸.

- *Acharya Gopal Krishna Bhatta* has been mentioned three preparations of *Rasa Sindura (Bandhuka pushpa aruna varna)* with using different ingredients in *Rasendra Sara Sangraha*³⁹.

- One preparation of *Rasa Sindura* with the name of "*Nayanananda Sindura*" prepared in *kachukupi* with *valuka yantra* is available in *Rasa Kaumudi*⁴⁰.

- One reference is available in *Rasa Kamadhenu* i.e. *Haragouri rasa* resembles to *Rasa Sindura*⁴¹.

17th Century AD -

Acharya Madhava has described four preparations of *Rasa Sindura* in his text *Ayurveda Prakasha* and giving importance to *Tapta shalaka* for clearing the blocked mouth of *Kachakupi*. Besides



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above, he has mentioned *Shadguna Balijarita Rasa Sindura* (1/190) and various other formulation of *Rasa Sindura* ⁴².

18th Century AD -

- Many references of *Rasa Sindura* have been mentioned in *Yoga Ratnakara*, most of them are the compilations from the earlier classics ⁴³.

20th Century AD -

- *Rasendra purana* of *Pandit Ram Prasad Sharma* has mentioned three methods of *Rasa Sindura* with varying proportions of *Gandhaka* (*Samaguna, Dviguna and Shadguna*)⁴⁴.

- *Rasa Yoga Sagara* of *shri Hari prapanna Sharma* a comprehensive compilation of *Rasa yoga* has mentions ten preparations of *Rasa Sindura* ⁴⁵.

- *Rasamrit* by *Yadavji Trikramji Acharya* mentioned about *Rasasindura* by *kupipaka* method 8 yama paka , *tapta shalaka* used for clearing the mouth of *kupi* ⁴⁶.

- *Kupipakva Rasa Nirmana Vigyana*, another combinatory text, mentions detail about *kupi* and

Kupipaka method along with five types of *Rasa Sindura* preparations ⁴⁷.

- *Shri Harisharnananda* the author of *Bhasma Vignana* has mentioned 54 preparations under the heading of *Parada Bhasma*, out of these 17 preparations are *Rasa Sindura kalpanas* ⁴⁸.

- *Acharya Sadananda Sharma* the author of *Rasa Tarangini* has mentioned seven preparations of *Gandhaka Jarita Rasa Sindura*. Various proportions of *Gandhaka* from *Ardhaguna to Shadguna Gandhaka jarana* in *Parada* have been described to attain different therapeutic attributes along with procedure of *Talastha Rasasindura* is mentioned. The author has described detailed information regarding its indication with disease specific *anupanas* ⁴⁹.

The Pharmacological aspects of *Rasasindura* -

<i>Rasa</i>	-	<i>Shadarasa</i>
<i>Guna</i>	-	<i>Guru, Snigdha</i>
<i>Virya</i>	-	<i>Ushna</i>
<i>Vipaka</i>	-	<i>Madhura</i>
<i>Prabhava</i>	-	<i>Vajikara, Sarva Rogahara</i>

Gandhaka Jarana phala.

Table 1 *Gandhaka Jarana phala*

S. No.	Proportion of Gandhaka	Rasendra Chintamani (3/47-49) & Ayurved Prakash (1/118-120)	Ayurved Prakash (1/121,122)	Rasa Tarangini (5/106-108)
1.	<i>Samaguna</i>	<i>Suddhat shata guna rasa</i>	<i>Rogaghna</i>	<i>Samanya Gadanashana</i>
2.	<i>Dwiguna</i>	<i>Sarva Kushta Hara</i>	<i>Rajayakshma hara</i>	<i>Maharoghara</i>
3.	<i>Triguna</i>	<i>Sarva Jadhya Vinashana</i>	<i>Kaminnidarpa Nashaka</i>	<i>Pumsatva Prakashaka</i>
4.	<i>Chaturguna</i>	<i>Valipalit Nashana</i>	<i>Tejasvi</i>	<i>Mahotsaha Medha Smriti Vivardhana</i>
5.	<i>Panchaguna</i>	<i>Kashya Nashaka</i>	<i>Sidha bajith</i>	<i>Gada Santapa Nashaka</i>
6.	<i>Shadguna</i>	<i>Sarva Rogahara</i>	<i>Mrityujit</i>	<i>Adbhuta karyakrit</i>



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Dose: *Rasa Prakash Sudhakara* has mentioned 1-3 Ratti dose of *Rasa Sindura*.

Ayurveda Prakasha - Upto 5 Ratti, and *Rasa Yoga Sagar* - Upto 3 Ratti.

Yoga Ratnakar – valla or valla yugma matra (125mg – 250 mg).

Table 2 According to *Rasa Tarangini* doses of *Rasasindura*.

AGE	DOSE
1 year	1/16 Ratti
2 year	1/7 Ratti
6 year	1/3 Ratti
12 year	½ Ratti
Above 12 year	1 Ratti

DISCUSSION

Among different types of *Parada Murchana*, *Kupipakva Rasayana* is the unique formulation takes own place in *Rasa Shastra*. This is because of its typical mode of preparation in a specially prepared *kacha kupi*, following *kramagni paka* for specific duration of time. The idea of using *valuka yantra* is to apply for uniform, indirect, and controlled heat giving to the *kupi*, Using 7 layers mud smeared cloth strips on the *kacha kupi* increase heat stable capacity and pressure resistance of the *kupi*. The overall literary review

reveals that ancient *Rasa Acharya* were expert in potentiating and transforming *Parada* to certain higher level by different *Jarana* procedures. In such experimentation of *Jarana*, the use of *Kupipakva* method was adopted. *Kupipakva Rasayana* is getting a unique place in *Rasa Shastra* because of its quicker action and synergetic effect in the body at minute doses. Now days, with *Parada* and *Gandhaka* there are chemical reactivity are well known⁵¹. It may be claimed that from therapeutic point of view *Gandhaka Jarana* is highly essential and also considered a pre requisite condition to the actual *Murchana* process as without *Gandhaka Jarana* *Murchana* may not be able to induce “*Avyabhicharita - Vyadhighatakata*” (definitely disease curing ability in *Parada*). Not only this the *Gandhaka Jarana* also reduces the dosas (toxic effects) of *Parada* to the great extent as it has been said that *Parada* obtained from *Hingula* is *shuddha* and does not need any further *shodhana* and may be used for all purposes, and because of *Gandhaka Jarana* its dosas are destroyed hence it is claimed as *shuddha*⁵².

Table 3 *Anupanas* for *Rasa Sindura* –⁵⁰

Sr. No.	Diseases	<i>Anupana</i>
1	Ajirna	Madhu + Musta kwath
2	Apasmara	Vacha , Bramhi, Sankhapuspi, kustha, Ela Kwath
3	Arsha	Hriswa Haritaki kashaya.
4	Vajikaran	Salmali, Musali churna, Vidaryadi gana + Milk
5.	Udar Sula	Triphala kwath
6	Bhagandara	Triphala + Vidanga Kwatha.
7	Shira sula	Dashmoola kwath
8	Pandu	Loha Bhasma
9	Dhatu Vriddhi	Abhrak Bhasma, Swarna Bhasma
10	Garbhashaya roga	Kakoli churna + Narikela taila
11	Jirna Vrana	Kantakari, Sugandhabala, Giloy, Shunti kwath
12	Basti kundal	Triphala kwath. Kanji, Sandhava lavana
13	Jirna Amavata	Guduchi, Motha, Shatavari, Pippali, Haritaki, Vacha, Shunti kwath



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14	Gulma	Mishi, Bala Abhaya kwath, Yawani churna, Vida lavana
15	Nav Jwara, Pratisyaya	Tulsi Swarasa
16	Jirna Jwara	Guduchi kwatha + Parpata + Dhanyak swaras
17	Jwara	Jiraka, Pippali + Dhanyaka kwatha or Kiratha tikta + Haritki + Jiraka
18	Kamala	Darvi kwath
19	Sarvanga Shotha	Punernava kawath
20	Madatyaya	Hinga, Ajwayan, Sunthi, chavya, Dhaniya, Savarchan lavana
21	Mutra Kriccha	Mishri or Shilajatu + Sushma Ela
22	Garbhashaya roga	Kakoli churna + Narikela tail
23	Nava Jwara	Tulasi Patra Swarasa or Ardraka Swarasa or Tambula Swaras
24	Jirna Prameha	Vanga Bhasma + Madhu
25	Meha	Guduchi swarasa, Haridramula Swarasa
26	Pradara	Ashoka, Baladi kwath
27	Rakta Pradara	Vasa kashaya, Lodhra kashaya
28	Shotha	Punarnava Kashaya.
29	Unmada	Kusmanda Swarasa
30	Parinama Shoola	Chavya + Tankana
31	Swasa	Vibitak kwath, Vasa Swarasa.
32	Sula	Triphala kwath, Pippali churna
33	Chardi	Brihat Ela kwath + Madhu

CONCLUSION

Rasa Sindura is therapeutically claimed as *Yogavahi*, *Rasayana*, *Param Vrisya* and *Balya* with different *Anupanas*. It contains *Parada* and *Gandhaka*, *Parada* having unique characteristics i.e. *Yogavahi* plays a significant role in this respect, as a result the dose and time required for onset of action of drug is considerably reduced. It can be assume that the bioavailability of the drug is increased manifolds due to *Yogavahi* properties of *Parada*. *Gandhaka* which is used for various important procedure in *Rasa Shastra* i.e. *Jarana*, *Murchana* and *Marana*. It is believed to impart many desirable properties to *Parada*. *Parada* with *Sagandhaka yoga* becomes therapeutically safe and more potent, thus *Gandhaka* is used as antidotes of *Parada* to reduce the toxicity of *Parada*. They can interact easily and able to build a strong bond between them. It is claimed that, *Gandhaka jarana* not only implants the property of bioavailability to *Parada* but also increases its

pharmacological and therapeutic efficacy. Classical texts of *Rasashastra* have mentioned different procedures for *Gandhaka jarana*, among them *Gandhaka jarana* carried out by *Kupipakva Rasayana* method was found better than others. *Kupipakva Rasayana* specially *Rasa Sindura* is categorized on the basis of proportion of *Gandhaka* i.e. 1:1/4 to 1:6 ratio of *Parada* and *Gandhaka* respectively. According to classical text more the amount of *Gandhaka* taken (means increased duration of *Gandhaka Jarana*) for *Rasa Sindura* preparation more potent will be the final product⁵³. Therapeutic property of *kupipakva Rasayana* (*Rasasindura*) directly depends of *gandhaka jarana* (with proportion of *Gandhaka* added to *Parada* and also the duration of *agni*). Hence *shadguna balijarit Rasasindura* which is prepared by adding 6:1 (6 parts of *Gandhaka* added to 1 part of *Parada*) is known to be superior and attributed to create marvels when used in therapeutics. *Rasaushadhis* by virtue of its properties such as *alpamatra*, *shigra phaladai*,
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Rasayana, bahu upayoga etc, have been leading the field of *chikitsa* since time immemorial. *Rasa Sindura* is a unique metallic drug to treat various diseases with different *Anupanas*.



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