

## PHAMACEUTICAL AND ANALYTICAL EVALUATION OF TALSINDURA RASA

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### ABSTRACT:

Rasashastra is a science of minerals and these mineral products are toxic in nature<sup>1</sup>. These are subjected to process to shodhana, marana, jarana, murchchna, kajjali, kupipakwa rasayana to convert into nontoxic and absorbable. In Rasashastra various methods are available to convert mercury in the form of which is beneficial to our body for curing the diseases in certain dose . Talsindura-rasa is Herbo-mineral preparation,<sup>1</sup> It is important to mention that sindura group of kalpas are named on the basis of their red colour like that of sindura. Prepared by Kupipkwa method. This method is unique, efficacious, potent, difficult and gandhak jarana plays an important role in it. The ancient scholars of Rasashastra have

mentioned varies parameters to evaluate the kupipkwa rasayana..some modern analytical tools can also adopted to asses these method. Here an attempt is made to evaluate and prepare talsindura – rasa by traditional method and do analytical study of obtained sample.

### KEYWORDS:

*Kupipkwa , murchchna , shodhana ,jarana , kajjali. Marana.*

### INTRODUCTION:

Ayurveda has interacted with various medical systems from time to time and this interactions<sup>2</sup> along with updated research has facilitated its growth . The importance of herbo-mineral-metal preparations emphasizing towards chikitsa in which all principles is laid down in acute condition for better and quicker results.<sup>1</sup> These preparations are suppose to be harmful to our body as per western medicine, but in

Rasashastra text the adverse effects are mentioned already. Rasa-shastra has played a major role in popularizing Ayurveda in masses. Ayurvedic physicians are of the view that various pharmaceutical processes in ayurveda like shodhana (purification), marana (incineration), murchchna, jarana, kupipkwarasayana etc. converts metallic preparations into non-toxic. In current kinetic era rasaushadhies have given Ayurveda a complete novel health care look<sup>1</sup>.

Talsindura-rasa is a haerbominaral preparation prepared by kupipkwa method which is made in<sup>3</sup> valukayantra. In talsindura-rasa kajjali prepared of shuddha parada, Shuddha gandhaka, shuddha haritala and shuddha gouripashana. Gandhak jarana plays an important role in enhancing the potency of mercury and arsenic. This jarana process claimed many pharmacological and therapeutic properties in mercury. So dhatu yukta kupipkwa-rasayana has its importance in Rasashastra.

A standard operative procedure in the preparation of talsindura-rasa, along with certain analytical methods helps to reveal out the chemical composition of formulation with there concentration and

also ensure safety limits and accuracy of drug<sup>7</sup>. In the present era in order to establish the safety concern the prepared drug should be understood well and interpreted with the help of modern technology and must be supported by proper scientific validation.<sup>8</sup> Physio-chemically talsindura-rasa is HgS and AS<sub>2</sub>O<sub>3</sub> but after doing XRD test (X-Ray diffraction). Iron (Fe<sub>2</sub>O<sub>3</sub>) found in the upper part of medicine in trace amount<sup>8</sup>.

#### **Aims and Objectives:**

- To prepare Talsindura-rasa by kupipkwa rasayana vidhi.
- Pharmaceutical study of talsindura rasa according to siddha bhaishajya manimala.
- To Evaluate the ancient and modern parameter in analytical studies.

#### **MATERIAL AND METHODS :**

##### **Materials :**

**Rasabhaga rasata :**

**punraikaikstalmallagandhakta:**

**Kupyam dwayham**

**paripchetpwankaffuw hanti talsindura**

**: // - r.yog .s . & s.b.m.m.**

*Shuddha parada (H<sub>g</sub>),*

*Shuddha gandhaka (S)*

*Shuddha haritala ( AS<sub>2</sub> S<sub>3</sub>),*

*Shuddha gauripashana (AS<sub>2</sub> O<sub>3</sub>)*

**Method:**

Preparation of Talsindura rasa

Ref : siddha bhaishajya manimala

**Materials :**

*shuddha parada – 600 gm*

*shuddha gandhaka – 100 gm*

*Shuddha haritala -100 gm*

*shuddha gauripashana-100 gm*

*Methods ; kupipkwa rasayana*

**Equipments:**

*Valuka yantra, prepared kanchkupi, cork, shalakas, copper coins, torch, bhatti , thermometer etc.*

**Procedure :**

The whole procedure was divided into 3 phases<sup>15</sup>.

*I) purva karma ii) pradhan karma*

*iii) paschat karma .*

**Purva karma:**

Collection of necessary equipments : Mortar and pestle, Kanchkupi – (A Glass of bottle which is wrapped with rag and mud of 7 layers and dried .) the thickness of rag and mud sealing is quoted to be of 0.75 inch. Valuka yantra ( earthen vessel filled with sand at the bottom upto 8” –9 thickness. Bhatti ( for fire ) Thermometer ( to moniter the amount of heat )““ Cork, Iron shalakas ,torch

etc .“shodhana is done as per reference text.<sup>1</sup>

Selection and collection of raw material drugs as per grahya lakshnas as per reference text.<sup>2 1</sup>

Parada shodhana was carried out by doing trituration in khalwa yantra. with( lime, rason kalka ,saindhav lavana ). For 7 days.then it is washed to get back<sup>9</sup>.

Gandhaka shodhana was done in heating gogruita and dissolved gandhak liquid is poured into godugha.we get solid slab of sulphur. Then washed with hot water. Dried and powered.procedure is repeated 3 times<sup>13</sup>.

Haritala shodhana was carried out by doing swedana with the help of dola yantra in kushmand swarasa.(benincasa hispida)<sup>14</sup>

Gauripashana shodhana done with karavellak swarasa is bitter guard (momordica charantia) by doing swedana with the helpof dolayantra.<sup>14</sup>

Preparation of Kajjali. Shuddha dravyas were weighted accurately.

Mixed together in stony khalwa yantra and trituration was started till the kajjali become black , slakshnatwa ,and completely nishchandra . bhasma pariksha done .the kajjali powder is then filled into a bottle(1/3 part) which is covered seven

times with kapda mitti. after drying, the kachkupi bottle is kept in valuka yantra and sand is filled upto the neck of bottle.

#### **Pradhan karma :**

In the pradhan karma gradual heating schedule is kramgni for 24 hours/ temp recorded.<sup>10</sup>

Mrudu agni : Room temp to 200<sup>0</sup>C (8 hrs) Madhyam agni; 200-400<sup>0</sup> C (8 hrs) Teevragni ; 450 -650<sup>0</sup>C(8 hrs) is given in valuka yantra . shalaka sanchalana –(the mouth of bottle is kept open with help of a red hot iron strirer) and observation of fumes and flames. Copper coin test done . appearance of redness at the bottom. Adherence of mercury particles . then closing of the bottle mouth should be done when extra sulphur is burn completely. The fumes stop coming out of the mouth of the bottle . the joints of the cork and the mouth should be seald properly with molasses and lime powder made into paste with water , after this Teevr agni applied .

#### **Pashchat karma :**

The swangasheetta bottle(after cooling on its own) was broken tactfully and sublimate deposited Talsindur rasa at the neck and bottom of kanch kupi. (kanthstha / talastha) .talsindura rasa .while taking out,it looks redish yellow

black in colour. kanthastha and Talashta talsindur rasa shiny blakish red parpati rupa and was collected and weighted ..

#### **RESULTS :**

Analytical evaluation ;

This evaluation devided into two parts.

- 1 . Ancient method
- 2 . Modern method .

#### **Ancient Method :**

A) Analytical parameters for physical characters<sup>1</sup> ;

- 1 . Varna (colour) - - Redish black shiny.
2. Nishchandratwa – (lusterless ) – present
3. varitaratwa - (flotness) - present
- 4.Unam test – properly present (excellent)
- 5.Rekhapurnatwa (furrow filling ness)- present(genuine )
- 6.Slakshanatwam—present.
- 7 .sukshmatwa (fineness) – Present.
- 8.anjana sannibha (softness)- present.9.physical state- churna powder form.

B.) Analytical parameters for chemical characters ;<sup>8</sup> To assess the chemical changes as compound formation. Etc. the below mentioned parameters are to be considered.

1. Gatarasatwa (Tasteless) –present
2. Apunarbhavatwa (irreversibility) - present
- 3 .Nirutthatwa – present.

( specially done for haratala mixed bhasma – no melting or fumes).

### Modern Methods:

#### 1.) XRD – X –ray diffraction studies <sup>8</sup>

.X –ray diffraction methods are based on the scattering of x –rays by crystals. It is helpful to check product Qualitatively. And Identify a given sample. Evaluate different compounds with same chemical formula but different structure . For determine the arrangements of atoms in minerals and metals. Talsindura rasa sample on  $10^0-80^0$  at the scattering rate  $4^0/\text{mm}$  of 6kw energy.xrd pattern is mercuric sulphide and  $\text{AS}_2\text{O}_3$  . And  $\text{fe}_2\text{O}_3$  is in trace . this elements is either by raw material ,mortar or the plant extracts added during trituration.<sup>8</sup>

2)Atomic Absorption Spectroscopy (AAS)<sup>3</sup> It can identify the trace elements present in kupipkwa rasayana bhasmas qualitatively .it is the best Analytical method to evaluate the presence of Arsenic and Iron<sup>3</sup>.

#### 3) Differential Thermal Analysis (DTA)<sup>6</sup>

It provides information on the chemical reaction , phase transformation ; structural changes etc, occurs in a sample during heat up and cool down cycle. Helpful in the probable chemical reaction that occurs

at different stages of kupipkwq rasayanas process..

#### Analysis of Talsindura –rasa

The data (Table-1) pertaining to Organoleptic and physico- chemical are suggestive of sample is corrosive on sparsha , redish black crystals in rupa, . the sample of parada

churna was analysed for the total mercury and it was found 78.90%. the sample of residue was analyzed for estimation of mercury. The result of analysis was negative .It indicates there is absence of parada in residue sample obtained from kupi . so it may be inferred that mercury totally was converted in arsenic form and sublimated completely .along with trace elements .

Black red shiny in varna ,Ash value can be calculated in sample 78.90% of mercury ,14.31% of sulphur and 13.28 % of haritala ,3.28% of gauripashana(malla),<sup>1</sup> Talsindur - rasa is shown to contain mercuric sulphide (Hg S) associated with  $\text{AS}_2\text{S}_3$  several organic micro molecules derived from the plant extract used during the processing. Of the drug.  $\text{Fe}_2\text{O}_3$  is found in this sample is in trace amount.

### DISCUSSION:

Kupipkwa method is very unique, and is best example of murchchna. Talsindur rasa is prepared by kupipkwa rasayana method satisfied the required criteria of traditional analytical techniques. Talsindur rasa should be considered as Mercuric sulphide as major constituent along with arsenic and iron as trace elements. The results conformed the presence of heavy metals as Fe, Ar and, S, and Hg in the prescribed pharmpoical limits. Shodhana is necessary for materials because of proven toxicity effects and converts these preparation into non-toxic and digestible and absorbable. In classical literature kupipkwa method has given more importance for gandhak jarana, it depends upon the quality of gandhaka and types of agni i.e. kramagni in valuka yantra on bhatti. (specialized heating pattern-indirect constant heat). During preparation of nirgandha kajjali there was a loss of 5%. It may be due to process or human error. During talsidura rasa preparation 350 gm of kanthastha part was obtained out of 900 gm of kajjali. and talastha part was obtained 500 gm of kajjali. Weight of parada is not increased.

For murchchna of kajjali mixture titration do not use metal khalwa use stone or porcelain khalwa to prevent the loss of kalpa.

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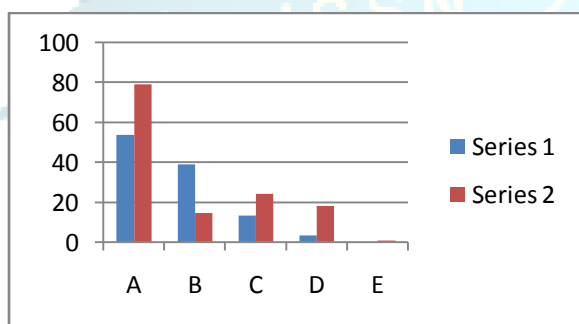
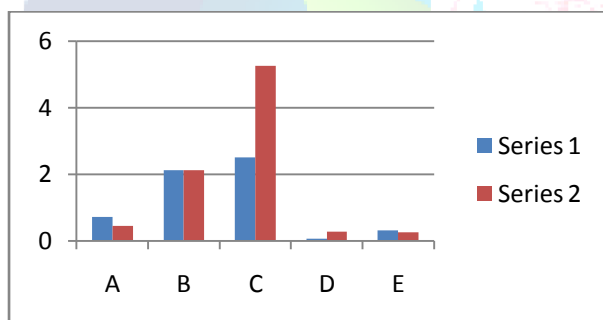
Table -1 : Observation and Results of Analytical Tests

Sr. No.	Parameters	Kajjali (in percentage)	Talsindura-rasa ( in percentage)
1	Loss of Ignition	0.72	0.45
2	Loss of drying at 110 <sup>0</sup> c w/w	2.12	2.12
3	Ash value w/w	2.50	5.25
4	Acid insoluble ash w/w	0.05	0.27
5	Water soluble ash w/w	0.30	0.25
6	Mercury as Hg	53.65	78.90
7	Sulphur as S	38.70	14.31
8	Harital as AS <sub>2</sub> S <sub>3</sub>	24.11	13.28
9	Gauripashana as AS <sub>2</sub> O <sub>3</sub>	18.02	3.28

10	Iron as Fe <sub>2</sub> O <sub>3</sub>	-----	0.72
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Table- 2 Observation and Results of Analytical Tests ( Ancient method )

Sr.	parameters	Talsindura rasa
1	Varna ( colour)	Redish black shiny
2	Nishchandratwa(lusterless)	present
3	Varitaratva (flotness)	present
4	Unam test	Properly present (excellent)
5	Rekhapurnatva(furrow filling ness)	Present (genuine)
6	Slakshanatwam	present
7	Sukshmatwa (fineness)	present
8	Anjana Sannibha (softness)	present



Bar Diagram 1 Analytical Evaluation of Kajjali and Talsindura-rasa

Bar Diagram 2 Analytical evaluation of Kajjali and Talsindura-rasa

A – Loss of ignition B- loss on drying at 110<sup>0</sup>C C – Total ash value  
D- Gauripashan

A – Mercury as Hg B – Sulphur as S C- Harital AS<sub>2</sub>S<sub>3</sub>

D- Acid insoluble ash E – water soluble ash %

as AS<sub>2</sub>O<sub>3</sub> E – Iron as Fe<sub>2</sub>O<sub>3</sub> %



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