



Research Article

PHARMACEUTICAL STUDY ON JWARANKUSA RASA

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Article info

Article History:

Received: 25-07-2022

Revised: 09-08-2022

Accepted: 15-08-2022

KEYWORDS:

Jwarankusa Rasa,
Herbomineral
preparation,
Mercurial
preparations,
Rasoushadies.

ABSTRACT

Rasayogas in Ayurveda have a wide range of therapeutic utility since they are fast acting even in smaller doses. *Acharya Charaka* mentioned, *Jwara* is the foremost of all diseases, so it need a special attention. There are various herbal and herbomineral preparation mentioned for *Jwara chikitsa* mentioned in *Brihat trayees*, *Laghu trayees*. Wide variety of *Rasa yogas* were mentioned in classics for *Jwara* and *Jwarankusa rasa* is one among them. Herbomineral preparations mentioned for *Jwara* have specific mode of action including *Ama pachana*, *Agni vardana*, *Sroto sodhana* and *Jwara hara* properties. *Jwarankusa rasa* is a well known herbo mineral formulation specially indicated for *Vishama jwara* and it is mentioned on *Bhaishajya Ratnavali Jwara chikitsa*. There are various references available for *Jwarankusa rasa* with various ingredients and different method of preparation such as *Rasendra sara sangraha*, *Rasa Prakasha sudharakara*, *Sharangadhara Samhita*, *Vrinda nigantu ratnakara*, *Rasa chandamsu*. In certain references *Jwarankusa rasa* consists of only non-herbal ingredients and in other references we can find it as herbomineral combination. Majority of the *Yogas* contains ingredients such as *Parada*, *Gandhaka*, *Tankana*, *Haritala*, *Manasila* among the non-herbal ingredients and *Vatsanabha*, *Sunti*, *Danti beeja*, *Dattura beeja* among the herbal ingredients. It is mainly indicated in diseases such as *Jwara*, *Jwaratisara*, *Vishama jwara*, *Vishoochika*. *Rasa dravyas* are *Rasayana yogavahi* and possess *Amadosha nirharana* property. Preparation and observations during preparation of *Jwarankusa rasa* mentioned in *Bhaishajya Ratnavali Jwara chikitsa* is emphasized in this humble work.

INTRODUCTION

Ayurveda being one of the ancient systems of medicine has its own identity among all other systems. In the present era, *Rasoushadies* are gaining more popularity due to scarcity of herbal drugs as well as due to fast action in small doses. *Rasoushadis* are used in *Alpa matra* and faster absorption and assimilation in body is much faster as it is subjected to many *Samskaras*. *Jwarankusa rasa* is one such formulation mentioned in *Bhaishajya Ratnavali Jwara chikitsa* specially indicated for *Vishama jwara*.

It has also many other references, different ingredients, various method of preparation and indicated in many other diseases. Preparation and observations during preparation of *Jwarankusa rasa* mentioned in *Bhaishajya Ratnavali Jwara chikitsa* is emphasized in this paper.

Pharmaceutical study means preparing medicines from raw drugs. Pharmaceutical study comprises the preparation of *Jwarankusa Rasa* mentioned in *Bhaishajya Ratnavali Jwaradhikara*.

AIMS AND OBJECTIVES

To prepare *Jwarankusa rasa* mentioned in *Bhaishajya ratnavali Jwara chikitsa*

Preparation of Medicine: It includes following steps
Collection of raw materials

Pre-procedures for preparation of *Jwarankusa Rasa*

- *Parada sodhana* done *Bhavana* for 12hrs each in *Kumari swarasa*, *Chitraka Kashaya*, *Kakamachi swarasa*.

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<https://doi.org/10.47070/ijapr.v10i8.2487>

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- *Gandhaka sodhana* by *Kurma puta vidhi*
- *Haratala sodhana* by *Swedana* in *Churnodaka*
- *Tankana sodhana* by *Utphullikarana* method
- *Vatsanabha sodhana* by *Sthapana* in *Gomutra*

Preparation of *Jwarankusa rasa*

- Preparation of *Kajjali*
- Pulverisation of *Sunti, Sodhita Vatsanabha*
- Preparation of *Jwarankusa rasa* by *Bhavana* in *Brngaraja swarasa*

Collection of Raw Materials

Raw materials which satisfy *Grahya lakshana* as per classics were procured from reputed stores

Pre-procedures for preparation of *Jwarankusa Rasa*

Sodhana of Parada [1]

Parada sodhana was performed using a procedure described in *Rasendra Sara Sangraha*. *Sodhana* of *parada* was done by grinding it in *Kumari swarasa*, *Chitraka kashaya* and *Kakamachi swarasa* for 12 hours each. *Oushadha mana* for *Parada sodhana* determined on *Yogatarangini* reference.

Step 1: *Bhavana in Kumari Swarasa*

The *parada* was placed in a mortar and 40ml of *Kumari swarasa* was poured to soak it and grinding

done for 12 hours. It was then washed in hot water and dried.

Step2: *Bhavana in Chitraka Kashaya*[2,3]

Sodhana of *Chitraka* is done by keeping pieces of 345gm fresh *Chitraka* after peeling off skin and keeping it in *Churnodaka* which was made by adding 12.5gm *Choorna* in 3000ml water for 9 hours. Pieces of *Chitraka* is kept immersed in this *Churnodaka* till it becomes red colour then *Choornodaka* is discarded and fresh *Churnodaka* is added. 1000ml of *Churnodaka* was added at first and this process repeated 6 times. This process is repeated till there is least colour change to *Churnodaka* was observed. *Chitraka Kashaya* was prepared by 84.5gm dried *Sodhita chitraka* added with 676ml water and reduced to 84.5ml. Then 40ml of it was added to *Parada* grinded for next 12 hours. After 12 hours it was washed in hot water and dried. Preparation of *Chitraka bhavana Kashaya- Sodhita chitraka* was cut into small pieces and added 8 times of water and reduced to 1/8 in *Mandagni*.

Step 3: *Bhavana in Kakamachi swarasa*

1 and ½ kg of fresh leaves of *Kakamachi* was taken and 150ml *Swarasa* was taken from it. 40ml of *Kakamachi swarasa* was needed to soak dried *Parada* obtained after above step and then grinded for 12 hours. After grinding it was washed with hot water and filtered through double layered cloth.



Parada in Kumari Swarasa



After *Sodhana* in *Kumari swarasa*



Parada in Chitraka Kashaya



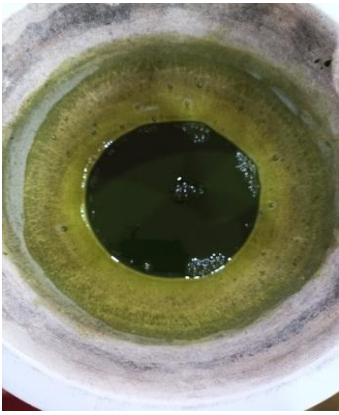
Parada in Chitraka Kashaya stages



Parada in Chitraka Kashaya final stage



Washing after *Chitraka kashaya sodhana*



Parada sodhana in Kakamachi swarasa



Parada sodhana in Kakamachi swarasa (in between)



After Sodhana in Kakamachi swarasa

Figure 1: Stages of Parada sodhana

Sodhana of Gandhaka^[4]

Gandhaka Sodhana was done by *Kurma puta* method mentioned in *Ayurveda Prakasha*. 500gm of finely powdered *Gandhaka* was taken and kept aside. Mud pot of 5L capacity was taken and smeared with sufficient quantity of ghee inside the pot and then 3L of cow's milk was filled in the pot. At the neck portion of the pot a double layered cloth was tied and finely powdered *Gandhaka* was spread over the cloth. Later it was covered with *Sarava* and *Sandhibandhana* done 7 times with mud smeared cloth. It was kept for drying and then pot was placed inside the pit and covered with coconut husk pieces. Totally 50 coconut husk pieces were used. A few pieces were kept at first and then ignited. Later more pieces were placed when to layer gets burned off and after complete process (4hrs) it was allowed to cool down. After cooling, apparatus was carefully removed and small beads of bright yellow purified *Gandhaka* was collected from the bottom of milk and washed with hot water and allowed to dry. Then it was stored in a bottle.



Covering pot with cloth



Gandhaka spread on cloth



Covering with Sarava



Sandhibandhana



Sodhitha gandhaka from milk



Sodhitha gandhaka

Figure 2: Stages of Gandhaka sodhana

Sodhana of Haritala^[5]

Churnodaka has been prepared as per reference of *Rasatarangini*, the ratio of lime water is mentioned as 2 *Ratti* of *Churna* to 5 *Tola* of *Jala*. So 12.5gm of lime was added to 3000L of water and kept undisturbed for 9hrs. Thus, *Churnodaka* was made. The supernatant portion of *Churnodaka* was collected and filtered through a cloth next day and used. *Asudha haritala* was made into coarse powder and tied in a *Pottali*. This *Pottali* was tied on a rod and suspended in a mud pot where *Churnodaka* was added and filled to a level where *Pottali* was immersed and is hanged so that it doesn't touch the bottom of the vessel. The entire apparatus kept on low flame for 6 hours and *Churnodaka* was refilled whenever it reduces. After 6 hours, *Pottali* has been removed and *Suddha haritala* collected, washed in lukewarm water and dried.



Raw Haritala



Haritala sodhana stages



Sodhita haritala



Sodhita haritala - powdered

Figure 3: Stages of Haritala sodhana

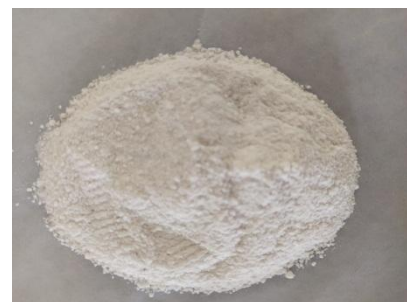
Sodhana of Tankana^[6]: Utphullikarana

Procedure

- *Asuddha Tankana* was weighed exactly 100gm and kept in a mortar and fine powder was made
- Initially an iron pan was heated on a stove till it becomes enough hot.
- Sprinkle the fine powder of *Asudha Tankana* on hot iron pan.
- Fry it till the frying sound ceases and the water is evaporated so that it becomes very light and get puffed.
- Take *Utphullita Tankana* in *Khalwa yantra* and made into smooth powder form and stored in airtight container.



Raw Tankana



Sodhitha Tankana

Figure 4: Stages of Tankana sodhana

Vatsanabha Sodhana^[7]: Sthapana

Procedure

- Impure *Vatsanabha* was weighed exactly 150gm and made to small pieces.

- The pieces of *Vatsanabha* were kept in an earthen vessel.
- Fresh *Gomutra* was poured into that vessel in such a way that all pieces of *Vatsanabha* should get dip in it.
- The earthen vessel was kept in sunlight for whole day.
- *Gomutra* was discarded in the evening and the pieces of *Vatsanabha* were spread over a plastic sheet.
- On the next day add fresh *Gomutra* to dip the pieces of *Vatsanabha*.
- The process was repeated for 3 days
- On the 4th day soaked *Vatsanabha* were first peeled off and then kept in the sunlight to dry completely.



Figure 5: Stages of Vatsanabha sodhana

Pulverization of *Sunti* and *Vatsanabha*

Sunti was cleaned well and dried in sunlight for few hours and made to small pieces and made to fine powder and sieved through sieve number 85 and *Sodhita vatsanabha* was dried and powdered and sieved through sieve number 85.

Preparation of *Kajjali* ⁽⁸⁾

25gm of *Suddha parada* is taken in *Khalwa yantra* and 25gm of *Sudha gandhaka* is added to it little by little and *Mardana* done until it attained *Kajjali siddha lakshana*. The grinding of *Kajjali* was done in *Khalwa yantra* with uniform strokes applying pressure. The colour of the mixture changes to grey gradually as the grinding proceeds. Fine powder of *Gandhaka* must be added little by little. As the grinding proceeds, *Gandhaka* particles were still present and shiny mercury particles seen at 30 minutes. After 7 hours and 30 minutes it turned to fine black colour and became very fine particles but shining was still present. As the *Kajjali* grinding proceeded, the resistance felt was highly reduced and the pestle moved easily. So the frequency of grinding and pressure needed to be applied became less. The grinding was continued till *Kajjali* attained *Siddha lakshana* that is *Nischandratwa*, *Varitaratwa*, *Rekhapurnatwa*, *Unnama* etc.

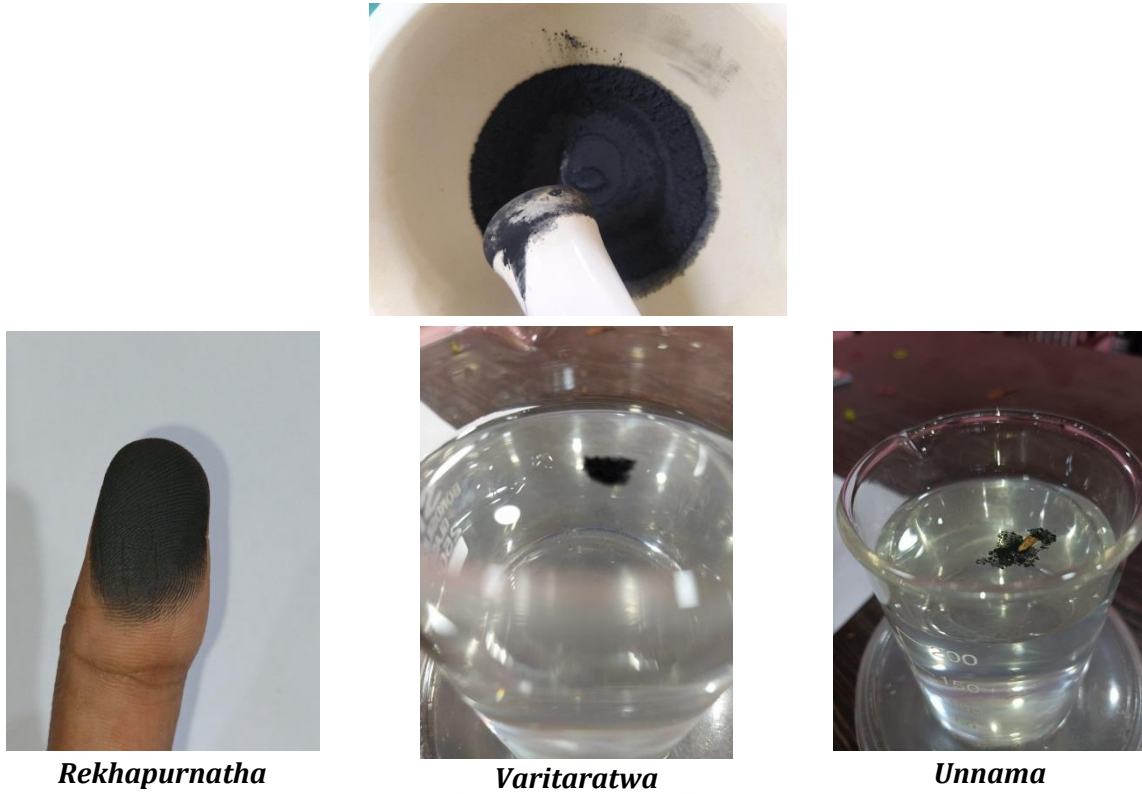


Figure 6: *Kajjali siddha Lakshana*

Preparation of *Jwarankusa Rasa*

Ingredients:

- Sodhita Parada*: 25gm
- Sodhitha Gandhaka*: 25gm
- Sodhita Haratala*: 12gm
- Sodhita Tankana*: 12gm
- Sodhita Vatsanabha*: 12gm
- Sunti choorna*: 12gm



Figure 7: *Ingredients of Jwarankusa rasa*

Procedure:

- Obtained amount of *Kajjali* is taken in a mortar and pestle and to it added powdered *Sodhitha Haratala*, powdered *Sodhitha Tankana*, added one by one and mixed well.
- Then to it added fine powder of *Sodhitha Vatsanabha* and fine powder of *Sunti* and mixed well to a homogenous mixture
- *Brngaraja swarasa* was added to mixture so that the mixture will get immersed in it.
- Then triturated with the help of pestle for 3 days by adding sufficient quantity of *Swarasa* each time when it got dried.
- Trituration was stopped when whole mixture became a good semisolid paste which will not stick to fingers while rolling.
- Then that paste is converted to pills of 125mg each.
- All pills were put in a well dried enamel tray and kept in shade for drying.
- Well dried and weighed pills were kept in air tight container.



Figure 8: *Bhavana of Jwarankusa rasa* Figure 9: *of Jwarankusa ras*

OBSERVATION AND RESULTS**Results after Parada Sodhana**

Wt of Parada	Kwatha/Swarasa	Qty of Kwatha/ Swarasa	Wt after Sodhana	Loss of Parada
150 gm	<i>Kumari swarasa</i>	40ml	148.9gm	1.1 gm
148.9 gm	<i>Chitraka Kashaya</i>	40ml	146 gm	2.9gm
146 gm	<i>Kakamachi swarasa</i>	40ml	144.43 gm	1.57gm

Results after Gandhaka sodhana

Qty before Sodhana	Qty of cow's milk	Qty after Sodhana
500 gm	3L	475 gm

Observations after sodhana of Gandhaka

Particular	Before Sodhana	After Sodhana
Smell of milk	No smell	Smell of Sulphur
Colour of milk	White	Yellow
Colour of Sulphur	Greenish yellow	Bright yellow
Smell of Sulphur	Present	Slight smell of ghee

Results after sodhana of Haritala

	<i>Asuddha Haritala</i>	<i>Suddha Haritala</i>
Colour	Bright orange yellow	Golden yellow
Mass	100 gm	82 gm
Lustre	Present	Reduced lustre

Result after Tankana sodhana

Quantity before Sodhana	100 gm
Quantity after Sodhana	60 gm (40 gm)
Time taken for Sodhana	35 min

Observations after Tankana sodhana

Tests	Tankana	Sodhitha tankana
Colour	White	Bright white
Touch	Hard	Brittle puffy
Smell	No specific smell	No specific smell

Result after Vatsanabhi sodhana

Time taken for complete procedure	4 days
Quantity of Vatsanabha taken	150 gm
Quantity of Vatsanabha obtained	90 gm
Weight loss	60 gm

Observations after Vatsanabha sodhana

Tests	Vatsanabha	Sodhita Vatsanabha	
		Before drying	After drying
Colour	Dull brownish black	Pale yellow	Dark blackish red
Touch	Hard solid	Soft	Rough
Smell	No specific smell	Tikshna, Gomutra smell	Tikshna, Gomutra smell

Weight variation of Sunti, Sodhita Vatsanabha after pulverization

	Sunti	Vatsanabha (Sodhitha)
Weight before powdering	50 gm	90 gm
Weight after powdering	35 gm	60 gm
Weight loss	15 gm	30 gm

Observations after preparation of Kajjali

Qty of Sodhita Parada	25gm
Qty of Sodhita Gandhaka	25gm
No of hours grinded	40 hours
Wt of kajjali obtained	48gm
Loss of wt	2gm

Results of Kajjali preparation

Features	Time table
Slakshnatwa	7 hrs 30 minutes
Rekhapurnatwa	7 hrs 30 min
Varitaratwa	10 hrs
Unama	10 hrs
Nischandratwa	40hrs

Result of Preparation of Jwarankusa rasa

Time taken for practical	3 days
Quantity of raw drugs taken	96 gm
Quantity of final product	106 gm
Weight gain	10gm

DISCUSSION

It consists of collection of raw materials, processing of raw materials and preparation of *Kajjali* and preparation of *Jwarankusa rasa*. The herbal drugs powdered are sieved through 85. In *Parada Sodhana*, *Mardana* by *Kumari swarasa*, *Parada* was converted to small globules and in *Chitraka Kashaya sodhana*, *Parada* form fine globules converted to fine paste and had cement like appearance. On washing with hot water it was observed that small globules of parade

were rejoined into a single globule. Least weight loss was observed in *Kumari swarasa* and more in *Bhavana* in *Kakamachi swarasa*. The final product obtained was brighter and clean than initial sample of mercury.

Gandhaka sodhana method adopted was *Kurma puta* method. It is because *Gandhaka* could be retained in *Grtha* and *Ksheera* for longer period (4 hours). Hence *Gandhaka* could be purified well with this method. Author of *Rasa Tarangini* himself says that

Gandhaka will be purified by a single attempt. The purified *Gandhaka* looked shining yellow and with smell of *Grtha* and *Ksheera* as droplets instead of fine powder before. It became smooth and soft in consistency with a peculiar smell and bright yellow in colour. *Ksheera* and *Grtha* are used for treatment of *Asuddha dosha* of *Gandhaka*. Hence they have the ability to remove the *Visha* of *Gandhaka*.

Haritala sodhana is done by *Swedana* in *Churnodaka*. There is increase in alkalinity of *Haritala* after purification with *Churnodaka*. Loss on drying and total ash decreased as inorganic matter reduced after *Sodhana* and acid insoluble ash increased and solubility in chemicals increased.

Tankana sodhana is *Utphullikarana* method by *Rasa Tarangini* as it is easy and economically cheaper.

Vatsanabha sodhana by *Sthapana* method in *Gomutra*. *Vatsanabha* is cut into small pieces may increase the penetrating capacity of liquid where it is dipped. Cow's urine being acidic in nature may help reducing the toxic effects of alkaloids to a therapeutic minimum. There is possibility that these toxic substances may be dissolved and oozed out into solution for which a urine solution is advised to be changed every morning. Keeping it under sun may help in dissolution of water soluble toxic substances into the resulting solution.

CONCLUSION

Jwarankusa rasa can be prepared from *Suddha Parada*, *Suddha Gandhaka*, *Suddha Haritala*, *Suddha Tankana*, *Suddha Vatsanabha*, *Sunti* given *Bhavana* in *Brngaraja swarasa* as per *Bhaishajya ratnavali Jwaradhikara*. *Sodhana* has broader concept other than purification. *Sodhana* is essential for further pharmaceutical process. *Sodhana* of ingredients has been done as per reference. Genuine samples collected

for reputed sources have been subjected to *Sodhana* and further process has been done for the preparation of the *Jwarankusa rasa* of suitable quality. Further analytical studies have been recommended for substantiating the quality of the final product.

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Cite this article as:

Jamaliya V M, R.Rajam. Pharmaceutical Study on Jwarankusa Rasa. International Journal of Ayurveda and Pharma Research. 2022;10(8):5-13.

<https://doi.org/10.47070/ijapr.v10i8.2487>

Source of support: Nil, Conflict of interest: None Declared

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