

PHARMACEUTICAL ANALYSIS OF ABHRAKA SHODHANA BY NIRVAPA IN
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ABSTRACT

RasaShastra is the alchemy of Ayurveda where we find the use of metals and mineral compounds in treatment of diseases evidentially. It is the divine science which teaches to convert even *Visha* into edible medicine by the process of *Shodhana*, which improves the strength of the body or cure a disease. The Acharya with their profound knowledge of science classified the mineral compounds and the metals into different categories and sub categories. *Abhraka* which is classified under *Maharasa* by various Acharya is a substance capable of pacifying all 3 *doshas* of the body and could rejuvenate the body but only in its edible form and thus conversion of *Abhraka* to its edible form is done by the process of *nirvapana* (heating and dipping) and this process of conversion is considered as purification process. The media used in the process of *Shodhana* has very important role in either breaking down or finishing the chemical constituent that is not required. Every treatment of a drug in particular media for a particular extent has a role in the modification of the characters. Pertaining to this dissertation entitled "Analytical Study to evaluate the effect of *Nirvapa* in different media on Krishna *Vajrabhraka*" was carried out *Abhraka Shodhana* by *Nirvap* in different media, to develop standard manufacturing procedures of *Abhraka Shodhana* in different media and to analyse all the samples of media and *Abhraka* – before and after *Shodhana*. The pharmaceutical part contains the complete details of 4 methods of *Abhraka shodhana*, with observations and yield.

KEYWORDS: RasaShastra, *Shodhana*, *Nirvapa*, *Abhraka Shodhana*.**INTRODUCTION**

Rasa Shastra is the alchemy of Ayurveda where we find the use of metals and mineral compounds in treatment of diseases evidentially. It is the divine science which teaches to convert even *Visha* into edible medicine by the process of *Shodhana*, which improves the strength of the body or cure a disease.

Now a day, the predictable bearers of the society have started calculation the conducts of our antiquated science of *Rasa Shastra*. We are standing by the fact that *Rasa Shastra* exhibits itself as *deha vada* and *loha vada*.^[1] The later was successfully attained in the past by the intellect of our *Acharya*, concurrently as the years elapsed; *lohavada* was all the more unintelligible and baffling causing the *dehavada* to flourish enjoying much attention and a polite welcome from all the attributes.

The Acharya with their profound knowledge of science classified the mineral compounds and the metals into different categories and sub categories. *Abhraka* which is classified under *maharasa* by various Acharya is a substance capable of pacifying all 3 *doshas* of the body

and could rejuvenate the body but only in its edible form and thus conversion of *Abhraka* to its edible form is done by the process of *Nirvapana* (heating and dipping) and this process of conversion is considered as purification process (*Shodhana*). The media used in the process of *Shodhana* has very important role in either breaking down or finishing the chemical constituent that is not required. Every treatment of a drug in any particular media for a particular extent has a role in the modification of the characters.

Need For Study

Though *Abhraka* is widely used in practice and is given such an importance in the classics and even texts nowadays, till date no standard procedure of its *Shodhana*, which is considered as the primary step of processing of the *Abhraka* is documented.

This study is done to evaluate the effect of *Shodhana* on *Abhraka* with different media.

Hypothesis

Null Hypothesis: There is no difference in *Abhraka*, purified by different media.

Alternate Hypothesis: There is difference in *Abhraka*, purified by different media.

AIMS AND OBJECTIVES

- 1) To carry out *Abhraka Shodhana* by *Nirvapa* (heating and quenching) in different media.
- 2) To develop standard manufacturing procedures of *Abhraka Shodhana* in different media.
- 3) To analyze all the samples of media and *Abhraka* – before and after *Shodhana*.

Pharmaceutical Study^[3]

Details of the processing of *Abhraka Shodhana* by various *nirvapa* media in different batches along with pharmaceutical observations like duration, specific findings, and yield obtained after the process etc. was recorded.

Abhraka Shodhana

“प्रतप्तसप्तवाराणिनिक्षिप्तकञ्जिकेऽभ्रकम्।

निर्दोषं जायते नूनं प्रक्षिप्तं वाऽपि गोजले ॥

त्रिफलाक्वथिते चापि गवां दुग्धे विशेषतः।”

Principle: *Nirvapa* (Heating and Quenching)

1. 7 times *Nirvapa* in *Kanji* (Sour gruel)
2. 7 times *Nirvapa* in *Gomutra* (Cow urine)
3. 7 times *Nirvapa* in *Triphala Kwatha* (Decoction of three myrobalans)
4. 7 times *Nirvapa* in *Godugdha* (cow milk).
 - Site of procurement: Market and Pharmacy of Parul Institute of Ayurved
 - Site of Commencement: *Rasa Shastra & Bhaishajya Kalpana* Laboratory, Parul Institute of Ayurved
 - Time required: 8 days.

Apparatus required

1. Heat source
2. An iron pan
3. Two stainless steel vessels
4. A pair of tongs
5. A Measuring cylinder
6. Weighing machine
7. Tissue paper / blotting paper
8. Clean cotton cloth.

Principle: *Nirvapa*

METHODOLOGY**Method 1^[4]****Ingredients**

<i>Ashuddha Abhrakachurna</i>	In g
<i>Godugdha</i>	In ml
<i>Water</i>	In ml

Procedure

150 g of raw *Abhraka* was weighed and heated in an iron pan. 2l of milk was taken in a steel vessel with the help measuring jar. The temperature of stove was maintained at full. The pieces of *Abhraka* were flipped with the help of tongs for equal exposure of heat. It took 5 hours to achieve the red hot stage.

When the *Abhraka* pieces became totally red hot they were quenched in the milk and left for 4 to 5 minutes. Later the milk was separated by filtering it through cotton cloth and collected for drying.

Residual quantity of milk was measured. Temperature of iron vessel and *Abhraka* were noted by using pyrometer. The similar method was followed for further six times for all the three batches. For every *nirvapa*, fresh milk was taken. After 7th *Nirvapa*, *Shodhita Abhraka* was taken in stainless steel tray and spread it well. Tray was kept in an oven at 500⁰C for 8 hours to evaporate the water which is absorbed by *Abhraka* during the *Shodhana*.

The results and observations of this method of *shodhana* is as follows:

Nirvapa	Weight of Raw abhraka (in gm)	Cow milk (in l)	Duration to attained red hot (in minutes)	Milk remaining after quenching (in l)	Weight loss (in g)
1 st	150	2	300	1.5	9
2 nd	141	2	60	1.6	3
3 rd	138	2	60	1.5	2
4 th	136	2	30	1.5	4
5 th	132	2	60	1.3	3
6 th	129	2	60	1.5	3
7 th	126	2	60	1.5	2
Final	124	2×7	630	1.4	26

Nirvapa	Highest temperature of iron pan (in °C)	Highest temperature of abhraka(°C)	Initial temperature of milk(°C)	Temperature of milk after quenching (°C)
1 st	946	846	28	78
2 nd	950	846	29	76
3 rd	857	850	28	78
4 th	850	900	29	78
5 th	940	800	29	76
6 th	950	830	28	78

Method 2^[5]

Ingredients

<i>AshuddhaAbhrakachurna</i>	In g
<i>Gomutra</i>	In ml
<i>Water</i>	In ml

Procedure

150 g of raw *Abhraka* was weighed and heated in an iron pan. 2lof cow urine was taken in a steel vessel with the help measuring jar. The temperature of stove was maintained at full. The pieces of *Abhraka* were flipped with the help of tongs for equal exposure of heat. It took 5 hours to achieve the red hot stage.

When the *Abhraka* pieces became totally red hot they were quenched in the milk and left for 4 to 5 minutes. Later the milk was separated by filtering it through cotton cloth and collected for drying.

Residual quantity of urine was measured. Temperature of iron vessel and *abhraka* were noted by using pyrometer. The similar method was followed for further six times for all the three batches. For every *nirvapa*, fresh urine was taken. After 7th *Nirvapa*, *Shodhita Abhraka* was taken in stainless steel tray and spread it well. Tray was kept in an oven at 500°C for 8 hours to evaporate the water which is absorbed by *abhraka* during the *shodhana*.

The results and observations of this method of *shodhana* is as follows:

BATCH B1

Nirvapa	Weight of Raw Abhraka (in gm)	Cow Urine (in l)	Duration to attained red hot (in minutes)	Cow Urine remaining after quenching (in l)	Weight loss (in g)
1 st	150	2	400	1.5	6
2 nd	144	2	60	1.3	5
3 rd	139	2	50	1.7	4
4 th	135	2	30	1.2	2
5 th	133	2	60	1.3	6
6 th	126	2	20	1.4	3
7 th	123	2	40	1.3	2
Final	122	2×7	660	1.38	28

Nirvap	Iron pan/Kadhai (0C) after heating	Abhraka(0C)	Initial temp of Urine	Urine After quenching temp of Urine
1.	950	846	28	78
2.	947	830	27	76
3.	857	850	28	77
4.	840	900	27	78
5.	940	850	28	78
6.	930	830	28	76
7.	940	838	29	78
Avg	914.85	849.14	27.85	77.28

Method 3^[6]

Ingredients

<i>Ashuddha Abhraka churna</i>	In g
<i>Triphala kwatha</i>	In ml
<i>Water</i>	In ml

Procedure

1kg of *Triphala churna* was boiled with 16l of water, reduced to 2l and filtered for each *Nirvapa*.

150 g of raw *Abhraka* was weighed and heated in an iron pan. 2lof *Triphala kwatha* was taken in a steel vessel with the help measuring jar. The temperature of stove was maintained at full. The pieces of *Abhraka* were flipped with the help of tongsfor equal exposure of heat. It took 5 hours to achieve the red hot stage.

When the *Abhraka* pieces became totally red hot they were quenched in the *Triphalawkwatha* and left for 4 to 5

minutes. Later the milk was separated by filtering it through cotton cloth and collected for drying.

Residual quantity of *Triphala kwatha* was measured. Temperature of iron vessel and *Abhraka* were noted by using pyrometer. The similar method was followed for

further six times for all the three batches. For every *Nirvapa*, fresh *Triphalakwathawas* taken. After 7th *Nirvapa*, *Shodhita Abhraka* was taken in stainless steel tray and spread it well. Tray was kept in an oven at 500°C for 8 hours to evaporate the water which is absorbed by *abhraka* during the *shodhana*.

The results and observations of this method of *shodhana* is follows:

BATCH C1

Nirvapa	Weight of Raw abhraka (in g)	Triphala kwath (in l)	Duration to attain red hot (in minutes)	Triphala kwath remaining after quenching (in l)	Weight loss (in g)
1 st	150	2	600	1.5	7
2 nd	143	2	60	1.4	6
3 rd	136	2	30	1.7	3
4 th	133	2	50	1.3	3
5 th	130	2	30	1.3	6
6 th	124	2	20	1.5	2
7 th	122	2	20	1.3	3
Final	120	2×7	810	1.42	30

Nirvap	Iron pan/Kadhai (0C) after heating	Abhraka(0C)	Initial temp of Trifala kwath	Trifala After quenching temp of Trifalakwath
1.	946	846	40	80
2.	950	846	40	85
3.	857	850	40	83
4.	850	900	45	83
5.	940	800	40	85
6.	950	830	40	85
7.	940	800	37	83
Avg	919	953.14	40.28	83.42

Method 4^[7]

Ingredients

<i>AshuddhaAbhrakachurna</i>	In g
<i>Kanji</i>	In ml
<i>Water</i>	In ml

Procedure

As an initial requirement the kanji was prepared first. This particular method of preparation of kanji is specially indicated for *dhatushodhana*. The kanji as explained in *paribhashaprakarana* is a rare preparation hence; kanji was prepared as described by Yadavji Trikamji.

First of all 500g of rice was taken and was boiled in 14 times of water, till the rice gets cooked. The liquid portion is filtered and collected for use. To the collected water mustard power, black slat, *saindhava* and *jeeraka*, balls of black gram lentils fried in mustard oil were added. In addition, pieces of *mulaka* and leaves of bamboo were also added and the vessel is stored for 7 days, aiming fermentation. On completion of fermentation, the liquid portion was filtered and taken for use.

150 g of raw *Abhraka* was weighed and heated in an iron pan. 2lof kanji was taken in a steel vessel with the help

measuring jar. The temperature of stove was maintained at full. The pieces of *Abhraka* were flipped with the help of tongs for equal exposure of heat. It took 5 hours to achieve the red hot stage. When the *Abhraka* pieces became totally red hot they were quenched in the kanji and left for 4 to 5 minutes. Later the *kanji* was separated by filtering it through cotton cloth and collected for drying.

Residual quantity of kanji was measured. Temperature of iron vessel and *abhraka* were noted by using pyrometer. The similar method was followed for further six times for all the three batches. For every *nirvapa*, fresh kanji was taken. After 7th *Nirvapa*, *Shodhita Abhraka* was taken in stainless steel tray and spread it well. Tray was kept in an oven at 500°C for 8 hours to evaporate the water which is absorbed by *abhraka* during the *shodhana*.

The results and observations of this method of shodhana is as follows:

BATCH D1

Nirvapa	Weight of raw abhraka (in g)	Kanji (in l)	Duration to attained red hot (in minutes)	Kanji remaining after quenching (in l)	Weight loss (in g)
1 st	150	2	600	1.5	7
2 nd	143	2	60	1.4	6
3 rd	136	2	30	1.7	3
4 th	133	2	50	1.3	3
5 th	130	2	30	1.3	6
6 th	124	2	20	1.5	2
7 th	122	2	20	1.3	3
Final	120	2×7	810	1.42	30

Nirvap	Iron pan/Kadhai (0C) after heating	Abhraka(0C)	Initial temp of Kanji	Kanji After quenching temp of kanji
1.	946	846	28	78
2.	950	846	29	76
3.	857	850	28	78
4.	850	900	28	78
5.	940	800	29	78
6.	950	830	28	76
7.	940	800	29	78
Avg	919	838.85	28.42	76.27

OBSERVATIONS OF PHARMACEUTICAL STUDY

Method 1: Observations

1. Hissing sound occurs with emergence of vapours on rapid quenching of red hot *Abhraka*.
2. The temperature of milk increased more than 40⁰c on every quenching.
3. The milk turned brownish from white, with dust of *Abhraka*.
4. On every successive *nirvapa*, the *Abhraka* became softer and the layers became more separable.
5. From 4th *nirvapa*, the *Abhraka* became lighter and started to fly as dust on heating.
6. Typical milk smell was observed on heating *Abhraka*.
7. The particle became too soft and developed golden colour from 3rd *nirvapa* and the final product acquired colour of *Vimala*.

Method 2: Observations

1. Hissing sound occurs with emergence of vapours on rapid quenching of red hot *Abhraka*.
2. The temperature of Urine increased more than 40⁰c on every quenching.
3. The Urine turned dark brownish green, with dust of *Abhraka*.
4. On every successive *nirvapa*, the *abhraka* became softer and the layers became more separable.
5. From 4th *Nirvapa*, the *Abhraka* became lighter and started to fly as dust on heating.
6. Typical Urine smell was observed on heating *Abhraka*.
7. The particle became too soft and developed golden colour from 3rd *nirvapa*.

Method 3: Observations

1. Hissing sound occurs with emergence of vapours on rapid quenching of red hot *Abhraka*.
2. The temperature of *Triphala kwath* increased more than 40⁰c on every quenching.
3. The *Triphala kwath* turned dark brownish clour with dust of *Abhraka*.
4. On every Successive *nirvapa*, the *abhraka* became softer and the layers became more separable.
5. From 4th *nirvapa*, the *abhraka* became lighter and started to fly as dust on heating.
6. Typical Urine smell was observed on heating *abhraka*.
7. The particle became too soft and developed golden colour from 3rd *nirvapa*.

Method 4: Observations

1. Hissing sound occurs with emergence of vapours on rapid quenching of red hot *Abhraka*.
2. The temperature of Kanji increased more than 40⁰c on every quenching.
3. The Kanji turned white to white brown colour with dust of *Abhraka*.
4. On every successive *Nirvapa*, the *Abhraka* became softer and the layers became more separable.
5. From 4th *Nirvapa*, the *abhraka* became lighter and started to fly as dust on heating.
6. Typical fermented smell was observed on heating *Abhraka*.
7. The particle became too soft and developed golden colour from 3rd *nirvapa*.

DISCUSSION ON PHARMACEUTICAL STUDY

Shodhana is the process of purification done for metallic, mineral and toxic compounds to remove impurities and make them therapeutically effective. The media used for *shodhana* helps the drug to reach the target organ. The *shodhana* of *abhraka* was done in 4 methods described in *Rasaratna Samuchchaya* and the details are as follows:

A bulk of 3kg of *abhraka* was procured for the process.

Method 1

It was done by heating 150g of *abhraka*, till it becomes red hot and quenching it in 2l of cow's milk. The process was repeated another 6 times and done in 3 batches. An average of 80.44% *shuddha abhraka* was obtained out of 150g taken for purification.

Method 2

It was done similar to method 1, substituting *ksheera* with *go-mutra*. An average 79.77% of *shuddha abhraka* was obtained out of 150g taken for purification.

Method 3

It was done similar to method 1, substituting *ksheera* with *Triphala kwatha*. An average 78.44% of *shuddha abhraka* was obtained out of 150g taken for purification.

Method 4

It was done similar to method 1, substituting *Ksheera* with *kanji*. An average 79.33% of *shuddha abhraka* was obtained out of 150g taken for purification.

CONCLUSION

The alternate hypothesis is accepted as there is substantial difference in *abhraka* obtained after all different methods of *shodhana* by the recordings of pharmaceutical and analytical study.

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