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Research Article

PHARMACEUTICAL AND ANALYTICAL STUDY OF NARIKELA LAVANA.

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ABSTRACT:

Lavanakalpana is herbomineral dosage form is prepared by using predominantly lavanas with putagni sanskara(heat treatment).Which is for the treatment of digestive system diseases. Lavanakalpana is the intermediate stage between Mashi (Black Ash) and Kshara (White Ash). Preparation of Narikela lavana quoted in Ayurveda text Bhavaprakaşa and Rasatarangiņi by different procedures by inclusion and exclusion of Narikela jala (water) respectively with Saindhava lavana. Proper quality of final product only obtained by maintaining proper temperature pattern during pharmaceutical procedure. In case of Narikela (Coconut) Lavana (Rock salt) maximum temperature required for conversion of raw material into proper quality (Supaka) of final product was between 800°C to 820°C.This maximum temperature was maintained for 15-20 minutes and then allows going down till swangashita (self cooling). Lavana Kalpana is the combination of organic and inorganic constituents and therefore retain its sendriytva (Organic nature). Narikela Lavana prepared without its water contains less percentage of Potassium (K) as compared to Narikela Lavana with water. Narikela Lavana prepared using Narikela without its water possess more water soluble extractive and slightly less water insoluble matter as compared to Narikela Lavana prepared with water.

KEY WORDS: Lavanakalpana, putagni, swangashita, Narikela Lavana.

INTRODUCTION:

Ayurveda is one of the most ancient systems of medicine. Rasashastra and Bhaishajya Kalpana are the integral parts of Ayurveda which chiefly deals with the Ayurvedic Pharmaceutics. Bhaishajya Kalpana is pharmaceutical branch of Ayurveda dealing mainly with herbal and herbomineral formulations .For the preparation of quality drug following 3 steps are important.

- 1) Standardization of raw material.
- 2) In process validation of drug.
- 3) Quality control of Final product.

Rationale behind selection of this topic :

Panchvidha kashaya kalpana (Swarasa, kalka, kwatha, hima, & phanta -various dosage forms) is the basic kalpana of Bhaishajya Kalpana. Which are pancharasatmaka devoid of salts (lavanavarjita). Later on churna (powder), gutivatikalpana (Tablets), snehakalpana (Lipids), sandhankalpana (Fermentation), arkakalpana (extracts), etc are derived from Panchvidha kashaya kalpana. Innovation of new kalpanas (Dosage form) to accomplish the desired effect of medicines on particular diseases done time to time.

Lavanakalpana is one of them, which got incorporated by using predominantly lavanas with putagni sanskara (heat treatment). Which is for the treatment of digestive system diseases. Diseases of digestive system are increasing due to today's sedentary life style, ignorance towards dietetics, hasty food habits, late night dinner and stress of work.

Narikela lavana is one of the lavanakalpana which has become prevalent in therapeutics in recent times. This is a herbomineral drug prepared from Narikela (Coconut) and Saindhava lavana (Rock salt).

Preparation of *Narikela lavana* quoted in *Ayurveda* texts *Bhavaprakasha* and *Rasatarangini* by different procedures. By inclusion and exclusion of *Narikela jala* (Coconut water) respectively with *Saindhava lavana*.

Due to easy availability of Narikela and Saindhava lavana. Its effective therapeutic utility. cost effectiveness and fewer requirements of equipments. However work regarding Narikela lavana yet to be done pharmaceutically and analytically. There is a need of further exploration of Narikela lavana.

Need of Standardization of Herbal Drugs:

The main objective behind these is to establish safety, efficacy and acceptability of drugs. To fulfill these criteria raw material identification, standardization and S.O.P of the pharmaceutical procedure are important. However much more work regarding the establishment of standard operating procedure for Lavana Kalpana is yet to be done.

Hence keeping in mind the need of pharmaceutical and analytical study of Narikela lavana topic is selected entitled.

"Pharmaceutical and analytical study of Narikela lavana."

MATERIAL AND METHODS:

Materials used for the dissertation and methodology followed during the project work was as follows:

1) For pharmaceutical study -

materials:

1) Raw material for pharmaceutical study was procured from local market.

Supakwa Narikela (Cocos nucifera)

Authenticated sample Lavana(Saindhava lavana)

20 Narikela fruits were procured from the local market in Pune and 2.5 Kg Saindhava Lavana from Lokhande Ayurvedic Store Pune. Then Narikela fruits and Saindhava Lavana were stored at cool and dry place. The fruit was authenticated as Cocos nucifera at Indian Drugs Research Association and Laboratory Pune (I.D.R.A.L. Pune) and Lavana as Saindhava Lavana (Rock salt) at C.P.G.S& R.A.Tilak Ayurved Mahavidyalaya Pune. These raw samples were used for further Pharmaceutical work.

2) Equipments -

Equipments were used for Preparation of Narikela Lavana as,

a)Putayantra/Kosthi (Fuenace), Muffle furnace b) K-Thermocouple-

This instrument is a portable, compact sized digital thermometer designed to use external Thermocouple temperature K-type as sensor.Temperature Scale: Celsius or Fahrenheit user selectable.

Measurement Range: -50°C to 1300°C (-58°F to 2000°F).

c) Using cowdungs as sourse of heat -

d) Knife -for removal of shell of Narikela and to make hole at top of Narikela.

- e) Steel vessels
- f) Clav smeared cloth for matakapada
- g) Khalvayantra(morter and pestel)

Method for preparation of Narikela lavanapilot study:

By performing pilot study repeating complete procedures for preparation of *Narikela lavana*. Observations were noted and appropriate (Standard 'Pharmaceutical Protocol') method selected. Then further pharmaceutical work was planned.

Methodology for preparation of Narikela lavana:

Narikela lavana was prepared with the references from Bhavpraksa and Rasatarangini as follows-

A fully ripe coconut was taken, the fibrous shell was removed and hole was made at top of the coconut. Then coconut was taken as along with / without its water. Powdered *Saindhava lavana* was poured through the hole .The coconut was then covered by clay smeared cloth (matakapada). Dried and put into the *puta* (pit of fire) for cooking. After cooling the nut was broken. Charred coconut containing *lavana* was collected and made in to nice powder (Narikela lavana). There were some modification done while preparing Narikela Lavana as using different sources of heat viz.Cowdungs and Electric Muffle furnace.

In this study there is no exact opinion about how much heat (Puta) to be given to get Supaka/Siddhi (Good quality of finished product).

Concept about untold heat pattern in classical references as given in anuktaputa-

In the absence of any recommendation about the type of *Puta* to the applied it should be decided by considering the Nature of the substance subjected to *Puta paka*. If it is *mrudu dravya* (soft material) then the Puta having low capacity should be choose but if it is a Madhyama or Kathina dravya (hard material) then the *Puta* having moderate or high degree of heating capacity should be used.

Rasa Taranginikara also mentioned the same opinion about the Anukta Puta that if there is no indication in the text about specific Puta ,the scholar should asses the type of *puta* on the basis of the hardness or softness of minerals and metals decide accordingly.

For fixation of Agniputa pramana (heat quantity) Narikela lavana by both references were prepared in *Gajaputa* using cowdung cakes and in Muffle furnace maintaining temperature pattern for *Gajaputa* using reference from dissertation work done on Standardization of puta. Also Narikela Lavana prepared by using 2 kg (10-15) cowdung cakes in *puta yantra* and temperature pattern recorded and same pattern followed for preparation in Muffle furnace used as heat source.

1) For analytical study-

The analytical work was done using all the necessary instruments, chemicals and reagents in the respective laboratories.

Method:

Analytical study of finally prepared *Narikela lavana* was done by *Ayurvedic* and modern parameters as follows,

A) Ayurvedic parameters-

Panchabhoutica pariksha -

Shabda (Sound), Sparsa (Touch), Rupa (Appearance), Rasa (Taste), Gandha (Smell).

B) Modern parameters-

1) Organoleptic tests- Touch, Taste, Appearance, odor etc.

2) Physico-chemical tests- pH, Ash value, Loss on drying, Assay for sodium , chloride & potassium etc.

2) **Pharmaceutical work:** By performing pilot study repeating complete procedures for preparation of *Narikela lavana*. For assessment of

- > Approximate time required for the procedure.
- > Temperature during the procedure.
- Equipments used for the procedure.
- Amount of raw material.
- > Difficulties occurring during the procedure.
- > To find out the yield of final drug.
- Organoleptic tests of the final drug.

Observations were noted and appropriate (Standard 'Pharmaceutical Protocol') method selected. Then further pharmaceutical work was planned.

Expt.no 1(PS1) (*Puta* in Cowdungs):

Title- Preparation of *Narikela lavana* by taking *Narikela* without water.

Ref- Rasatarangini.

Raw material for pharmaceutical study will be procured from local market.

Table-1

No.	Ingredients	Quantity
1.	Narikela	1
2.	Saindhava Lavana	100gm

Details of Narikela:

Table-2	
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	B	01
No.	Parameter	Observation
1.	Weight of Narikela	510 gms
	without shell	
2.	Volume of Narikela	70 ml
	water	
3.	Horizontal	31.7 cms
	circumference	
4.	Vertical	31.8 cms
	circumference	
5.	Length of kernel	0.9 cms
6.	pH of Narikela water	6.30

Equipments:

- *Puța yantra*, cowdung, Clay smeared cloth for *matakapada*, thermocouple, steel vessels, knife, *khalvayantra* etc.

Size and weight of cowdung cakes:

Table-3

1	Total weight of cowdungs	2 Kg
2	Average weight of cowdung	232 Gms
3	Average diameter of cowdung	24.5 Cms
4	Average thickness of cowdung	2.5 Cms
5	Average circumference of	79.5 Cms
	cowdung	

Procedure:

1] The fully ripe coconut was taken, the shell was removed and hole was made at the top of the *Narikela* then water removed from it.

2] Powdered *Saindhava lavana* was pored through the hole using funnel and wooden sticks till rises to level of the hole. The hole is again closed using same piece obtained during; hole making at the top of *Narikela*.

3] Then this *Narikela* filled with *Saindhava Lavana* was covered by clay smeared cloth and dried.

4] This was put into a *Putayantra* containing 2 Kg cowdung.In the *Putayantra* at the bottom 2/3 cowdungs cut in pieces were arranged in circular manner.

5] The dried clay smeared *Narikela* containing *Saindhava Lavana* was placed over it and the remaining 1/3 cowdungs were placed covering the sides and the upper surface of the *Narikela*.

6] With the help of camphor tabs and a match stick the cowdungs were put to fire.

7] *Puta* was kept for *Svangasita* (self cooling). After self cooling *Narikela* was taken out from *Puta yantra*, and then the wrapping and the external shell was removed. The burnt kernel and the *Saindhava lavana* was collected and powdwred in *khalva yantra* and observations were noted.



Observation: It was observed that final product was completely burnt and grayish black colored

powder of kernel and *Saindhava Lavana* was obtained.

Table-4

IUDIC	, 1	
No	Observations	Details
1	Intial temperature	26ºC
2	Maxmium temperature attained	819ºC
3	Total time required to puta	6.35hrs
4	Total yield finished product	102.8 gms

Expt.no 2(PS2) (Puta in Cowdungs)

Title- Preparation of *Narikela Lavana* by taking *Narikela* without water. Ref- *Bhaishajya Ratnavali* Raw material for pharmaceutical study will be procured from local market

Table-5.

No.	Ingredients	Quantity
1.	Narikela	1
2.	Saindhava Lavana	96gm

Details of *Narikela*:

Table-6 No. Parameter Observation 1. Weight of Narikela 498 gms without shell 2. Volume of Narikela 68 ml water 3. Horizontal 31.3 cms circumference 4. Vertical 31.4 cms circumference 5. Length of kernel 1.00 cms 6. pH of Narikela water 5.85

Equipments:

- *Puta yantra*, cowdung, Clay smeared cloth for *matakapada*, thermocouple, steel vessels, knife, *khalvayantra* etc.

Size and weight of cowdung cakes: Table-7

1	Total weight of	2 Kg
	cowdungs	
2	Average weight of	234 Gms
	cowdung	
3	Average diameter of	25 Cms
	cowdung	
4	Average thickness of	2.7 Cms
	cowdung	
5	Average	80.5 Cms
	circumference of	
	cowdung	

Procedure:

1] The fully ripe coconut was taken, the shell was removed and hole was made at the top of the *Narikela*.

2] Powdered *Saindhava lavana* was pored through the hole using funnel and wooden sticks till rises to level of the hole. The hole is again closed using same piece obtained during ; hole making at the top of *Narikela*.

3] Then this *Narikela* filled with *Saindhava Lavana* was covered by clay smeared cloth and dried.

4] This was put into a *Putayantra* containing 2 Kg cowdung. In the *Putayantra* at the bottom 2/3 cowdungs cut in pieces were arranged in circular manner.

5] The dried clay smeared *Narikela* containing *Saindhava Lavana* was placed over it and the remaining 1/3 cowdungs were placed covering the sides and the upper surface of the *Narikela*.

6] With the help of camphor tabs and a match stick the cowdungs were put to fire.

7] *Puta* was kept for *Svangasita*. After self cooling *Narikela* was taken out from *Puta yantra*, and then the wrapping and the external shell was removed. The burnt kernel and the *Saindhava lavana* was collected and powdwred in *khalva yantra* and observations were noted.

Observation:

It was observed that final product was completely burnt and grayish black colored powder of kernel and *Saindhava Lavana* was obtained.

Table-8

No	Observations	Details
1	Initial temperature	32°C
2	Maximum temperature	810°C
	attained	
3	Total time required to	6.55 hrs
	puta	
4	Total yield finished	98.4 gms
	product	

Expt.no 3(PS3) (*Puta* in Muffle furnace)

Title- Preparation of *Narikela Lavana* by taking *Narikela* without water.

Ref- Rasatarangini.

Raw material for pharmaceutical study will be procured from local market.

Table-9

No.	Ingredients	Quantity
1.	Narikela	1
2.	Saindhava Lavana	100gm

Details of Narikela:

No.	Parameter	Observation
1.	Weight of Narikela	512 gms
	without shell	
2.	Volume of Narikela	80 ml
	water	
3.	Horizontal	32.6 cms
	circumference	
4.	Vertical	31.4 cms
	circumference	
5.	Length of kernel	1.00 cms
6.	pH of Narikela water	6.55

Table-10

Equipments:

- Muffle furnace, Clay smeared cloth for *matakapada*, steel vessels, knife, *khalvayantra* etc.

Procedure:

1] The fully ripe coconut was taken, the shell was removed and hole was made at the top of the *Narikela* then water removed from it.

2] Powdered *Saindhava lavana* was pored through the hole using funnel and wooden sticks till rises to level of the hole. The hole is again closed using same piece obtained during; hole making at the top of *Narikela*.

3] Then this *Narikela* filled with *Saindhava Lavana* was covered by clay smeared cloth and dried.

4] The dried clay smeared *Narikela* containing *Saindhava Lavana* was placed into a Muffle furnace and maximum temperature was set to 800°C.

5] After reaching to maximum temperature, it was maintained for 20 minutes then temperature knob turned off till get room temperature.

6] When Muffle furnace got room temperature (*Swangashita*) then *Narikela* was taken out from furnace and the wrapping and the external shell was removed. The burnt kernel and the *Saindhava lavana* was collected and powdered in *khalva yantra* and observations were noted.



Observation:

It was observed that final product was completely burnt and grayish black colored powder of kernel and *Saindhava Lavana* was obtained.

Table-11

No	Observations	Details
1	Initial temperature	31ºC
2	Maximum temperature attained	814ºC
5	Total time required to <i>puta</i>	7.00hrs
6	Total yield finished product	102.1 gms

Expt.no 4(PS4) (*Puta* in Muffle furnace)

Title- Preparation of *Narikela Lavana* by taking *Narikela* with water.

Ref- Bhaishajya Ratnavali.

Raw material for pharmaceutical study will be procured from local market.

Table-12

No.	Ingredients	Quantity
1.	Narikela	1
2.	Saindhava Lavana	108gm

Details of *Narikela*:

Table-15				
No.	Parameter	Observation		
1.	Weight of <i>Narikela</i> without shell	514gms		
2.	Volume of Narikela water	70 ml		
3.	Horizontal circumference	32.7 cms		
4.	Vertical circumference	31.8 cms		
5.	Length of kernel	1.00 cms		
6.	pH of Narikela water	5.85		

Equipments:

- Muffle furnace, Clay smeared cloth for *matakapada*, steel vessels, knife, *khalvayantra* etc. **Procedure**:

1] The fully ripe coconut was taken, the shell was removed and hole was made at the top of the *Narikela*.

2] Powdered *Saindhava lavana* was pored through the hole using funnel and wooden sticks till rises to level of the hole. The hole is again closed using same piece obtained during; hole making at the top of *Narikela*.

3] Then this *Narikela* filled with *Saindhava Lavana* was covered by clay smeared cloth and dried.

4] The dried clay smeared *Narikela* containing *Saindhava Lavana* was placed into a Muffle furnace and maximum temperature was set to 800°C.

5] After reaching to maximum temperature, it was maintained for 20 minutes then temperature knob turned off till get room temperature.

6] When Muffle furnace got room temperature (*Swangashita*) then *Narikela* was taken out from furnace and the wrapping and the external shell was removed. The burnt kernel and the *Saindhava lavana* was collected and powdered in *khalva yantra* and observations were noted.

Observation:

It was observed that final product was completely burnt and grayish black colored powder of kernel and Saindhava Lavana was obtained.

Table-14

Tuble					
No	Observations	Details			
1	Initial temperature	31°C			
2	Maximum	810°C			
	temperature attained				
5	Total time required to	7.30 hrs			
	puta				
6	Total yield finished	110.4 gms			
	product				

Observations:

On the basis of the pharmaceutical and analytical work the following observations were seen:

lable-15						
No.	Parameters	PS1	PS2	PS3	PS4	
1	Yield	19.04%	16.57%	19.19%	17.75%	
		(102.8gm)	(98.4gm)	(102.1gm)	(110.4gm)	
2	Max.Temperatur	819ºC	810°C	814°C	810°C	
	e					
3	Time	6.35hrs	6.55hrs	7.00hrs	7.30hrs	
4	End point	Gray powder	Gray powder	Gray powder	Gray powder	
5	Heat source	Cowdungs	Cowdungs	Muffle furnace	Muffle furnace	

In process observations-



For preparation *Narikela Lavana* with both methods to standardize the *Agniputa pramana* pilot study was planned. Study was conducted by using Cowdungs and Muffle furnace as a heat source. Pilot study was firstly performed in *Gajaputa* and temperature pattern recorded. Using same temperature pattern in Muffle furnace

Narikela Lavana was prepared. Then *Narikela Lavna* was prepared in 10-15 Cowdunds (2kg) and same temperature pattern was maintained in Muffle furnace to prepare *Narikela Lavana*. It was observed that in *Gajaputa* and by using 2 kg cowdung and maintaining same temperature in Muffle furnace gives *Supaka* (Proper quality

finished product).Also in this study seven matakapadas were done for preparation in Gajaputa while single matakapada was done for preparation in 2kg cowdungs study. For study of Agniputa pramana and quality of finished product Narikela Lavana was prepared in few cowdungs (1.5kg) and same pattern of heat used in Muffle furnace gives black amorphous powder with half burnt odor, presence of oil, more moisture percentage and neutral pH of final product. Narikel Lavana was prepared using saravsamputa in muffle furnace gives deep black ,soft but slight amorphous powder with unpleasant ,Astringent and salty taste, presence of oil, more moisture percentage and slight alkaline pH.

This pilot work was help for making supportive framework to do pharmaceutical work and for assessment time, temperature, yield and physical changes in *Narikela Lavana* preparation. After *swangashita of Agniputa* (cooling) the nut was broken. Charred coconut kernel containing *lavana* was collected and made in to nice powder (*Narikela lavana*).Gray coloured, crystalline, free flowing powder is the end point of the preparation process. Total four samples of final product i.e. *Narikela Lavana* were prepared and further send for physic-chemical analysis.

1) Yield and time:

The yield of *Narikela Lavana* prepared by taking *Narikela* without its water with *Saindhava Lavana* (was more than *Narikela* taken with its water with *Saindhava Lavana* (*Bhaishajya Ratnavali*).Due to removal of water from *Narikela* more space available for poured *saindhava lavana* in it; hence yield is more in this procedure. The final product yield percentage was depends on how much quantity of *Saindhava lavana* poured in *Narikela*.

Time required for preparation of *Narikela Lavana* by taking *Narikela* with its water with *Saindhava Lavana* was more as compared to *Narikela* taken without its water with *Saindhava Lavana*. It was due to more heat and time required to evaporate water content and complete burning of *Narikela* along with *Saindhava Lavana* till self cooling of *puta*.

Yield and time required for preparation of

Narikela Lavana using Muffle furnace as a heat source was noted more as compared to use of Cowdungs as a heat source. About more yield in Cowdungs as a heat source was possible due to no exact control on quantum of heat and early cooling possible due open contact of *putayantra* with surroundings.

Maximum temperature required for conversion of raw material into proper quality (*Supaka*) of final product was between 800°C to 820°C. This maximum temperature was maintained for 15-20 minutes and then allows going down till self cooling (*swangashita*).

Three factors can be considered while discussing about the yield of *Narikela Lavana*-

a. Type of heat source

b.Proper heat pattern (Max. Temp. between 800°C-820°C)

c. Total time required to prepare proper quality of finished drug (*supaka*).

1)pH value-

The pH value indicates the acidic or alkaline nature of the substance. If the pH is below 7, the substance is acidic in nature. If the pH is above 7, the substance is alkaline. In comparison to raw material pH of *Narikela* and *Saindhava Lavana* with final product *Narikela lavana* shows more alkalinity in final product.

Raw material *Saindhava Lavana* contains more percentage of Sodium (Na) and slightly less percentage of Potassium (K) as compared to final product *Narikela Lavana*. These results indicates due to heat treatment Sodium(Na) and water content of *Narikela* get converted into compound such as Sodium Hydroxide (NaOH) which alkaline in nature. Hence pH change from acidic to alkaline in nature in final product *Narikela Lavana* by application of heat (*Agniputa*).

2) Assay for Na, Cl and K :

As per I.P.2006, API part 2nd vol.1st reference assay done with Flame-Photometry and Trituration method at renowned Laboratory.

Tuble 10							
No.	Assay for	PS1	PS2	PS3	PS4		
1	Sodium(Na)	31.95%	30.32%	35.77%	31.74%		
2	Potassium(K)	0.574%	1.098%	1.05%	1.13%		
3	Chloride(Cl)	57.79%	54.90%	55.85%	56.73%		

Table-16





Assay of both raw material *Saindhava Lavana* sample and finished product *Narikela Lavana* prepared with both methods shows percentage of Sodium (Na) and Chloride (Cl) was more in raw material *Saindhava Lavana*.While percentage of potassium (K) was noted more in final product. Here we note that pH of final product is alkaline in nature was fortunately due to formation of Sodium Hydroxide (NaOH) compoud. Here possibility of formation of other compounds of Sodium (Na) and Chloride (Cl) due to heat application. Hence less percentage of Sodium (Na) and Chloride (Cl) noted in final product.

Percentage of Potassium (K) noted slightly more in final product .Here it was due to addition of Potassium (K) molecule from *Narikela* Kernel and its water.

3) Water insoluble matter-

It is nothing but the total organic content of final product *Narikela Lavana*. Presence of

organic contents indicates presence of organic carbon in final product.

4) Limit test for Heavy metals Lead (Pb) and Arsenic (As)-Table-17

-							
	N	Limit	PS1	PS2	PS3	PS4	
	0.	test for					
	1	Lead	<20p	<20p	<20p	<20p	
		(Pb)	pm	pm	pm	pm	
	2	Arsenic(<3pp	<3pp	<3pp	<3pp	
		As)	m	m	m	m	

Limit test is useful for standardization of *Lavana Kalpana*. It shows safety Limit of heheavy metals in final drug.



Figure 1

CONCLUSION:

The discussion held in previous chapter leads to the following conclusion.

Lavana Kalpana is a dosage form in which bulk of raw material is reduced to a greater extent by application of certain quantum of heat.

Lavana Kalpana is prepared using herbal material along with equal or excess quantity of salts by *Anathadhuma* method.

There are three *samskara* involved in the preparation of *Lavana Kalpana* viz. *Agni, Kala,* and *Bhajana*. Out of these *Agni* plays the most

important role to obtain proper quality of final product (*supaka*).

Lavana Kalpana is the intermediate stage between Mashi and Kshara. Proper quality of final product only obtained by maintaining proper temperature pattern during pharmaceutical procedure. In case of Narikela Lavana maximum temperature required for conversion of raw material into proper quality (*Supaka*) of final product was 800°C 820^oC.This maximum between to temperature was maintained for 15-20 minutes and then allows going down till self cooling (swangashita).

There are three important changes taking place during conversion of raw material to Narikela Lavana viz.

Evaporation or loss of some constituents which are thermolabile and volatile and are undesirable in this dosage form.

Retention of some constituents which are therapeutically active organic and inorganic constituents or formations of new chemical combinations which are therapeutically active take place.

Conversion of some constituents into organic carbon which possess adsorption property therapeutically helpful in hyperacidity diseases (Amlapitta, Parinamashula etc).

Deep grey color ,fine, free flowing crystalline powder, odorless and salty taste are the properties of good quality *Narikela Lavana* as final product.

Yield of Narikela Lavana by taking Narikela without its water is more as compared to Narikela taken with its water for pharmaceutical preparation.

The final product yield percentage was depends on how much quantity of Saindhava lavana poured in Narikela.

Time required for preparation of Narikela Lavana by taking Narikela with its water with Saindhava Lavana was more as compared to Narikela taken without its water with Saindhava Lavana.

Narikela Lavana prepared using Narikela without its water possess more water soluble extractive and slightly less water insoluble matter as compared to *Narikela Lavana* prepared with water. As per panchabhautika composition Agni, Vayu and Akash are dominantly present in Lavana Kalpana so it is used in treating Vibhandha, Yakruta-Pliha vikara, Parinamshula, Vatavyadhi etc. by reviling obstruction and cessation of pain and inflammation. Lavana Kalpas work as doing Anulomana and Sransan.

pH of Narikela Lavana noted alkaline in nature.

Narikela Lavana prepared without its water contains less percentage of Potassium(K) as compared to Narikela Lavana with water may be helpful in kidney diseases (Renal calculi) and more Potassium(K) containing *Narikela Lavana* may be helpful in Gastro-Intestinal disorders.

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