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PHARMACEUTICAL PREPARATION OF *HARITAKYADI VARTI*: A CLASSICAL AYURVEDIC FORMULATION

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ABSTRACT

Haritakyadi Varti is a classical Ayurvedic formulation described in ***Bhaishajya Ratnavali* (64/195)** for the management of *Netra Rogas* (ocular disorders). The formulation consists of ***Haritaki* (*Terminalia chebula*)**, ***Haridra* (*Curcuma longa*)**, ***Pippali* (*Piper longum*)**, ***Saindhava Lavana* (rock salt)**, with ***Jala* (water)** used as the *Bhavana Dravya* (triturating medium). The present article focuses on the pharmaceutical preparation of *Haritakyadi Varti*, emphasizing classical principles, standardization of processes, and scientific relevance. The preparation of *Varti Kalpana* ensures uniformity, stability, therapeutic efficacy, and patient acceptability, thereby making it a suitable dosage form for ophthalmic therapeutic applications.

KEYWORDS: *Haritaki* (*Terminalia chebula*), *Haridra* (*Curcuma longa*), *Pippali* (*Piper longum*)

INTRODUCTION

Ayurveda emphasizes the importance of pharmaceutical processing (*Sanskara*) in enhancing the therapeutic potential, bioavailability, stability, and safety of medicinal formulations. *Varti Kalpana* is a classical solid dosage form primarily used for external and localized therapeutic actions, especially in *Netra Chikitsa* (ophthalmic therapy).

Haritakyadi Varti is a polyherbal formulation indicated in *Netra Kandu* & *Netra Timir*, combining drugs possessing *Chakshushya* (eye-benefiting), *Shothahara* (anti-inflammatory), *Krimighna* (antimicrobial), *Ropana* (healing), and *Tridoshaghna* properties. The pharmaceutical preparation plays a crucial role in ensuring uniform drug distribution, fine particle size, homogeneity, and stability of the formulation.

Concept *of Varti Kalpana*

Varti Kalpana refers to the preparation of cylindrical or stick-shaped solid dosage forms obtained by triturating powdered drugs with suitable liquid media (*Bhavana Dravya*). This dosage form is specially designed for **local application**, **precise dosing**, **easy handling**, and **targeted action**, particularly in ophthalmic, nasal, and other local therapies.

Classical texts describe *Varti* as

वर्तिरिव स्वरूपत्वात् वर्ती नाम्ना प्रकीर्तिता ।[1]

Powdered drugs are triturated and made into the shape of a wick of lamp which is thicker at middle and thinner at its ends.

Haritakyadi Varti

This formulation was prepared by adopting the materials and method described in *Bhaishajya Ratnavali* of 18th century.[2]

हरीतकी हरिद्रा च पिप्पल्यो लवणानि च ।
कण्डूतिमिरजिद्वर्त्तिनं क्वचितप्रतिहन्यते ॥
(भै.र. ६४/१९५)

Ingredients of *Haritakyadi Varti*

Drug Name	Botanical/Scientific Name	Pharmacological Properties
Haritaki	*Terminalia chebula*	*Tridoshaghna, Chakshushya, Rasayana, Ropana*
Haridra	*Curcuma longa*	*Shothahara, Krimighna, Raktashodhaka*
Pippali	*Piper longum*	*Deepana, Yogavahi, Srotoshodhaka*
Saindhava Lavana	Rock salt	*Sukshma, Tridoshaghna, Chakshushya*
Jala (*Bhavana Dravya*)	Water	Homogenization, particle size reduction, binding agent

AIM AND OBJECTIVES

- To validate each raw ingredient of *Haritakyadi Varti.*
- To prepare *Haritakyadi Varti* with developing Standard Manufacturing Procedure (SMP) and Standard Operating Procedure (SOP).
- To establish Standard Analytical Parameters of *Haritakyadi Varti*.

Pharmaceutical Process

The Pharmaceutical process was carried out in two following stages as-

(A) Pre-Pharmaceutical process.

(B) Pharmaceutical Process.

(A) Pre-Pharmaceutical Process

The Pre-Pharmaceutical Process involve the following.

1. Procurement of Raw material.
2. Separation of Foreign matter.
3. Preparation of powder of the ingredients.

1. Procurement of Raw materials

All the materials were procured from *Kanhaiya Lal Ashok Kumar, Yahiyaganj* Shop *(*GMP certified), Lucknow, as per its acceptable features quoted in *Ayurvedic* literatures & authenticated by the experts of *Dravyaguna* department of State Ayurvedic College & Hospital, Lucknow as per the criteria described in drug review.

2. Separation of foreign matter

Crude drugs were weighted individually. By careful inspection, foreign matters like dust, sand etc. were removed. Then the entire ingredients were cleaned by cloth. The weight of the drugs was noted again to calculate the loss of weight and was stored in separate airtight food grade plastic container.

Table No. – 1.1: Showing removal of foreign matter from crude drugs and loss calculation.

Serial No.	Ingredient	Quantity Procured (gm)	Quantity remained after cleaning (gm)	Percentage of Loss (%)
1	*Haritaki*	500	495	1
2	*Haridra*	500	500	_
3	*Pippali*	500	490	2

3. Preparation of powder from the raw drugs

Cleaned raw drugs were pounded separately in *Ulukhala Yantra*. Then they were powdered using the mixer grinder and sieved through 120 no. mesh size. The fine powders thus obtained were weighed separately and stored in airtight plastic containers.

For the preparation of fine powder 500 grams of each of *Haritaki*, *Haridra*, *Pippali* and *Saindhav Lavana* were taken.

In the process of powdering *Ulukhala yantra* and mixer grinder was used for the preparation of fine powder of *Haritaki*, *Haridra*, *Pippali* and *Saindhav Lavana*.

Table No. – 1.2: Showing observations during the powdering of raw drug.

Serial No.	Ingredient	Weight of raw drug (gram)	Powder Obtained(gram)	Loss of Weight(gram)	Percentage of Loss (%)
1	*Haritaki*	500	483.7	16.3	3.26
2	*Haridra*	500	494	6	1.2
3	*Pippali*	500	490	10	2.04
4	*Saindhav Lavana*	500	497	3	0.6

OBSERVATION

During the preparation of powder of raw drugs showed specific colour, odour, taste, and appearance. These specific characteristics were depending on their natural form. The various observations during preparation of powder were shown in table below.

Reason for loss

1. The primary reason for the loss of *Haritaki* powder during processing is removal of seeds and presence of fiber content in the pericarp of fruit.
2. The reason for loss of *Haridra* powder during the powdering process are the loss of volatile oils and moisture through evaporation and mechanical factors such as dust dispersion and equipment residue.

3. The reason for loss of *Pippali* powder is due to small seeds which cannot be grinded and sieved through sieve.
4. The reason for loss of *Saindhav Lavana* is due to its hygroscopic nature.

Table No. – 1.3: Showing various observations during the preparation of powder of raw drugs.

Serial No.	Ingredient	Colour of powder drug	Odour	Taste	Form
1	*Haritaki*	Brown	Pungent	Bitter & Astringent	Powder
2	*Haridra*	Yellowish Orange	Aromatic	Bitter	Powder
3	*Pippali*	Brown	Characteristic Pungent	Bitter, Pungent	Powder
4	*Saindhav Lavana*	Pink	*Nirgandha*	Saltish Sweet	Powder

Precautions taken

- ❖ Properly dried raw drugs were taken.
- ❖ Fine powder of each ingredient was made separately.
- ❖ All the equipment's were cleaned properly during the process each time.
- ❖ Much care was taken to prevent loss during the preparation of powder

HARITAKI POWDER ***HARIDRA POWDER*** ***PIPPALI POWDER*** ***SAINDHAV LAVANA POWDER***

(B) Pharmaceutical Process

Preparation of *Haritakyadi Varti*

Three samples of *Haritakyadi Varti* were prepared by using same ingredients and *Jala* as *Bhavana Dravya*. Three samples of *Haritakyadi Varti* were labelled as **S1, S2** and **S3** respectively. In all the 3 samples the quantity of chief ingredients *Haritaki*, *Haridra*, *Pippali* and *Saindhav Lavana* were the same. *Bhavana* of *Jala* was given. *Yava Akriti* and each *Varti* of length ~ 2cm (according to AFI) were prepared.

Table No.- 1.4: Showing the *Bhavana Drava* and the number of *Bhavana* given.

Serial No.	*Haritakyadi Varti* sample (S)	Number of *Bhavana* given	*Bhavana Drava*
1	S 1	7	*Jala*
2	S 2	7	*Jala*
3	S 3	7	*Jala*

Standard Operating Procedure (SOP) of *Haritakyadi Varti*

Procure authentic ingredients of *Haritakyadi Varti*
↓
Cleaned and dried each ingredient separately
↓
Raw drugs made into powder
↓
Mixed the fine powder of ingredients
↓
Make homogenous paste with the help of *Bhavana Dravya* (*Jala*)
↓
Varti prepared (Manually)
↓
Dried under shade in room temperature
↓
Stored in air tight glass container

Preparation of *HARITAKYADI VARTI* Sample 1 (S1)

Table No.: - 1.5: Showing the ingredients of *Haritakyadi Varti* for sample S1.

Serial no.	Name of the ingredient	Part used	Form	Quantity (gram)
1	*Haritaki*	Fruit	Fine Powder	25
2	*Haridra*	Rhizome (dried)	Fine Powder	25
3	*Pippali*	Fruit	Fine Powder	25
4	*Saindhav Lavana*	-	Fine Powder	25

Procedure

- 25 grams of fine powder of each ingredient from 1 to 3 (table no. 4.5) were weighed and kept separately.
- Fine powder of *Saindhav Lavana* was weighed in equal quantity to other ingredients (25 grams) and kept separately.
- Now all the powder of ingredients from 1 to 4 were mixed thoroughly to make a homogenous mixer in a steel tray.
- Then this homogenous mixture was shifted into a medium size *Khalva Yantra*.
- The first *Bhavana* was given with approx. 55ml of *Jala*.
- It was triturated in *Khalva Yantra* for 8 hours in 1 day.
- The second *Bhavana* was given with 55 ml of *Jala*.
- The trituration for second time was carried out for 8 hours in 1 day.
- The third *Bhavana* was given with 55 ml of *Jala* and it takes 6 hours i.e. quarter day and so on as mentioned below. (Table no 1.6)
- After attaining a suitable consistency, the paste was then shifted to a stainless-steel tray.
- Manual method was adopted to prepare *Haritakyadi Varti* of *Yava Akriti* and each ~ 2 cm length.
- All the *Vartis* were dried under shade in room temperature.
- Completely dried *Varti*s were kept in clean air tight glass container.

OBSERVATIONS

- Homogenous mixture of the fine powder of the ingredients was yellow in color.
- The final paste was greenish brown in color.
- As the number of *Bhavana* increases the color of the paste was converted from yellow to yellowish brown and then finally greenish brown.
- Time taken in the *Bhavana* process was gradually reduced from first to seven. (as mentioned in Table No. – 1.6)
- Freshly prepared *Vartis* were greenish brown in colour.
- Completely dried *Varti* were yellowish - brown in colour.
- To complete one *Bhavana*, it took 8 hours.
- Atmospheric temperature was ranging from 42ºC Max. - 26ºC Min.
- Humidity – approx. 32% (daily range 69% - 9 %)

Table No. 1.6: Showing various observations in the preparation of *Haritakyadi Varti* sample S1.

Number of *Bhavana*	Colour	Odour	Duration in hours	Duration in Days	Quantity of *Jala* required(ml)
First	Yellow	Characteristic	8	1	55
Second	Yellow	Characteristic	8	1	55
Third	Yellowish Brown	Characteristic	6	¾	55
Fourth	Yellowish Brown	Characteristic	4	¾	55
Fifth	Greenish Brown	Characteristic	4	½	55
Sixth	Greenish Brown	Characteristic	4	½	55
Seventh	Greenish Brown	Characteristic	4	½	55

Precautions taken

- All the equipment's were cleaned properly before the process started.
- Much more care was taken to prevent loss of quantity during the whole process.
- Homogenous mixture of the powder of all ingredients was of prior concern.
- *Mardana* was done with much care to facilitate homogenous mixture of ingredients with *Jala*.
- Care was taken to dry the *Vartis* under shade in room temperature.
- Prepared *Vartis* were properly dried and kept in clean air tight glass container.

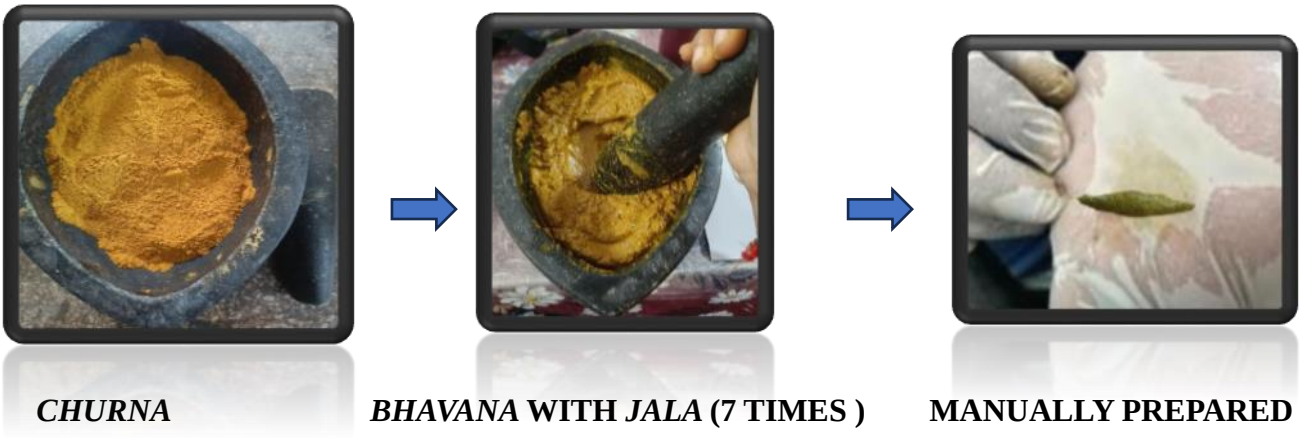
RESULT

Total weight of the powder of ingredient = 100 grams
Total quantity of *Jala* used = 385 ml
Total weight of *Varti* after *Bhavana* = 97 grams
Total loss in weight after 7 *bhavana* = 3 grams
Percentage of loss = 3 %
Total no of *Vartis* made - 108
Weight of *Varti* – *0.8946 gm*

Reason for loss

1. Adherence of material to *Khalva Yantra.*
2. Loss during transfer of the mass.
3. Loss during scraping of *Khalva Yantra.*
4. Loss during preparation of *Vartis* (manually).

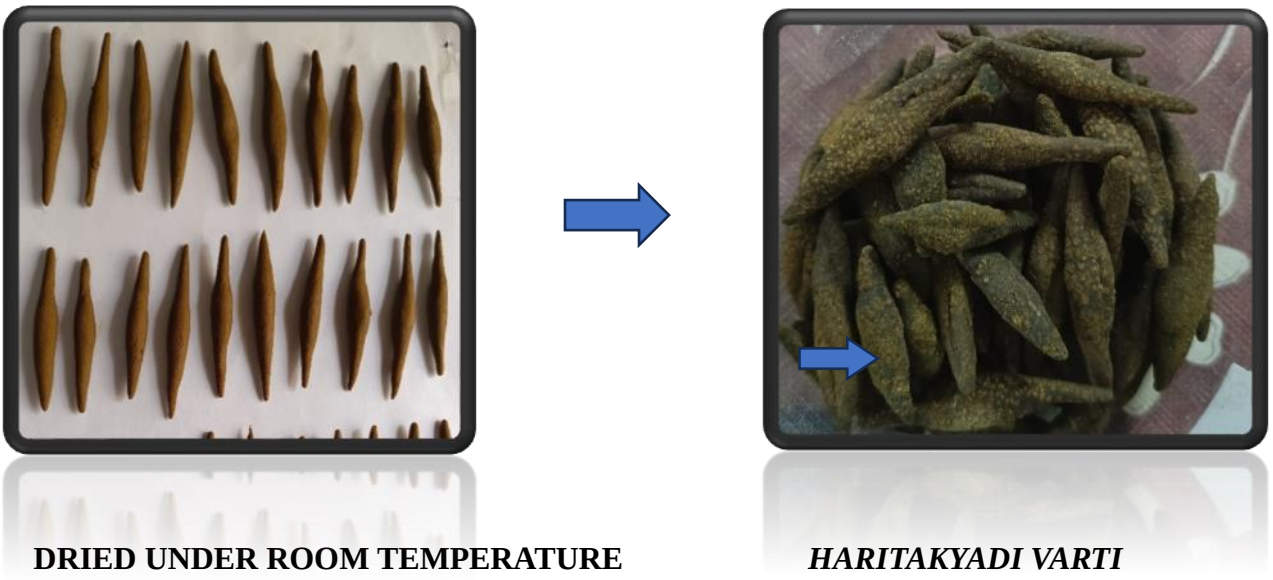
Like-wise three batches of *Haritakyadi Varti* Samples **S1, S2** and **S3** were prepared.



CHURNA **OF ALL INGREDIENTS**

***BHAVANA* WITH *JALA* (7 TIMES)**

MANUALLY PREPARED *HARITAKYADI VARTI*



DRIED UNDER ROOM TEMPERATURE

HARITAKYADI VARTI

Table No.: - 1.7: Showing different outcome in the preparation of sample S1, S2 and S3.

Sample	No. of *Bhavana*	Odour	Total duration (day)	Total duration (hour)	Total quantity of *Jala* used(ml)	Weight loss in final product in gram	Colour of *Varti*
S1	7	Characteristic	7	38	385	3	Yellowish brown
S2	7	Characteristic	7	38	385	4	Yellowish brown
S3	7	Characteristic	7	38	385	4	Yellowish brown

Table No. - 1.8: Showing different outcome in the preparation of sample S1, S2 and S3.

Sample	Total weight of the powder of ingredients (grams)	Total quantity of *Jala* used(ml)	Total weight of *Varti* after *Bhavana*	Total loss in weight after *Bhavana*	Total percentage of loss
S1	100	385	97	3	3%
S2	100	375	96	4	5%
S3	100	370	96	4	5%
Average	100	376.6	96.3	3.6	4.3%

DISCUSSION

Pharmaceutical processes are techniques which modify the natural products into therapeutically potent dosage form, which are easily absorbable into the biological systems by specific processing methods resulting in the assimilation of newer properties. In the present research work three (3) different samples of *Haritakyadi Varti* were prepared. This formulation was prepared by adopting the materials and method described in *Bhaishajya Ratnavali* of 16th century.[5] Prepared the formulation with developing Standard Manufacturing Procedure (SMP) and Standard Operating Procedure (SOP).

Number of *Bhavana*

In the SOP of *Haritakyadi Varti*, the number of *bhavana* is not mentioned in the *Bhaishajya Ratnavali* So, the numbers of *bhavana* adopted herewith were as general principle.

7 number of *bhavana*– *Vaidyaka Paribhasha Pradip*[3] clearly mentioned the procedure for seven (7) times of *Bhavana*, where no such reference of number of *bhavana* is available for a particular formulation. Considering this reference of *Vaidyaka Paribhasa Pradipa*, the seven (7) times of *Bhavana* were given in three batches of *Haritakyadi Varti.*

The Pharmaceutical processes carried out during the preparation of *Haritakyadi Varti* was dealt under various sections as follows.

- *Dravya Sangraha* (Collection of ingredients)
- *Churna Nirmana* (Preparation of powders of crude drugs)
- *Bhavana* (Trituration)
- *Varti Nirmana* (Preparation of *Haritakyadi Varti*)
- *Shoshana* (Drying)

CONCLUSION

The pharmaceutical preparation of *Haritakyadi Varti* represents a perfect integration of classical Ayurvedic pharmaceutical principles with scientific pharmaceutical methodology. The systematic processes of powdering, sieving, mixing, *Bhavana*, *Varti* formation, drying, and storage ensure the production of a standardized, stable, and therapeutically potent formulation. The use of Jala as *Bhavana Dravya* enhances homogeneity and drug potentiation without altering the natural properties of the ingredients. Thus, *Haritakyadi Varti* stands as an ideal example of classical *Varti Kalpana* with high pharmaceutical and therapeutic significance, especially in the field of Ayurvedic ophthalmology.

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