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Pharmaceutical Standardization and Preliminary Assessment of *Trinakantamani Pishti*

Author: Bhavin M.Chavda¹

Co Authors: Bharat D. Kalsariya² and Darshan K. Parmar³

¹⁻³Upgraded department of Rasashastra and Bhaishajya Kalpana, Government Ayurveda College, Vadodara, Gujarat, India

ABSTRACT

Trinakantamani (*Kaharuba*, *Kaherva*, *Kerbo*) is incorporated in Ayurveda from Unani system of medicine in 19th century. *Trinakantamani Pishti* is well-known formulation of Ayurveda used for *Raktarsha*, *Raktapitta* and *Raktapradara*. It is described in *Bheshaja Samhita*, *Bhasma-Pishti Prakarana*. In present study raw drugs were authenticated with Ayurvedic Pharmacopeia of India parameters. *Bhavana Dravya* used for *Trinakantamani Pishti* were *Sohweta Aparajita Mula Kwatha*, *Jambiri Nimbu Swarasa*, *Ashwattha Tvak Swarasa* and *Shatavari Mula Swarasa*. Color of *Trinakantamani* powder changed from dark yellow to light brown. Average liquid media used for *Bhavana* were 140, 113.33, 150 and 118 ml respectively. There is no any major changes found in all the batches of *Trinakantamani Pishti*. Standard manufacturing process was developed by preparing three different batches. *Trinakantamani Pishti* prepared by this method did not found any substantial difference in pharmaceutical procedure. Physico-chemical parameters for each batch did not show any major changes in all the parameters except in sulphated ash.

Key Words *Pishti*, Standardization, *Swarasa*, *Trinakantamani*

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INTRODUCTION

Rasa Shastra is pharmaceuticals part of Ayurveda, in which metals, minerals, herbals and some animals origin drugs are used to prepare medicine in Indian subcontinent. *Trinakantamani* (*Kaharuba*, *Kaherva*, *Kerbo*) is incorporated in Ayurveda from Unani system of medicine in 19th century made up of two words *Trina* (Grass) and *Kanta* means attractive. *Kaharuba* is Persian¹ word, which is made up of two words i.e. *Kah* and *Ruba* the meaning of which is *Kah*¹ = Dry grass and *Ruba*¹ = Puller, means Grass puller.

Trinakantamani is basically fossil resin of pine family trees.

*Trinakantamani Pishti*² is well known and efficacious Rasa Shastriya medicine. It is being widely used for *Raktatisara* (Diarrhoea with bleeding), *Raktaprahavika* (Bacillary dysentery), *Raktapitta* (Bleeding disorder) and *Raktapradara*³ (Menorrhagia or Metrorrhagia) by Ayurveda Physician as well as Unani Hakim.

In present era of globalization, there is need of standardization for Ayurveda medicine to provide good quality drugs with higher efficacy and

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potency. So here an attempt has been made to develop standard manufacturing process (SMP) of *Trinakantamani Pishti* and preliminary assessment was done by physico-chemical parameters.

AIM AND OBJECTIVES

- 1) To standardize *Trinakantamani Pishti*.
- 2) To evaluate by preliminary physico-chemical parameter.

MATERIALS AND METHODS

Ingredients: *Trinakantamani* powder, *Shweta Aparajita Mula*, *Jambiri Nimbu*, *Ashwattha Tvak* and *Shatavari Mula*.

Instruments: *Tambada Khalva Yantra*, Electric Weighing Machine, Measuring beaker, Spoon, Mixer, Sieve – 200 mesh, Air tight container.

Procurement of raw material:

Raw *Trinakantamani* was procured from herbovedaoversaes.com and raw ingredients used for making *Bhavana Dravya* like *Shweta Aparajita Mula*, *Jambiri Nimbu* was collected from farmers of Jamnagar, Gujarat. *Ashwattha Tvak* was collected from Dhanvantari Udhyan of Government Ayurved College, Vadodara, Gujarat. *Shatavari Mula* was collected from Government Ayurved Pharmacy, Rajpipla, Gujarat.

Identification and Authentication- Procured *Trinakantamani* was authenticated by Neel Gem Testing Laboratory, Ahmedabad, Gujarat (ISO 9001:2000 Certified lab) as Amber Stone. All

raw drugs were identified and authenticated by Pharmacognosy department of Food and Drugs Laboratory, Vadodara, Gujarat by following API guidelines. All genuine and authenticated samples were used for the preparation of *Trinakantamani Pishti*.

Manufacturing of *Trinakantamani Pishti*:

Shweta Aparajita Mula Kwatha, *Jambiri Nimbu Swarasa*, *Ashwattha Tvak Swarasa* and *Shatavari Mula Swarasa* were used as *Bhavana Dravya*. Trituration had been done for 8 hours considering as one day for each respective media⁴.

Pilot batch: 50 g fine powder of *Trinakantamani* was levigated for 8 hours with each liquid media. Required quantity of liquid media were 100, 130, 100 and 100 ml for *Bhavana* of *Shweta Aparajita Mula Kwatha*, *Jambiri Nimbu Swarasa*, *Ashwattha Tvak Swarasa* and *Shatavari Mula Swarasa* respectively. After drying of levigation material, yield was 150 % and final product was light orange in color, citric smell, sour taste and soft in touch.

Main batches:

Fine powder of raw *Trinakantamani* (as per **Figure 1**) was used for preparation of *Trinakantamani Pishti*. First of all, levigation was done with *Shweta Aparajita Mula Kwatha* (as per **Figure 2**). After proper drying of material, levigation was done with *Jambiri Nimbu Swarasa* (as per **Figure 4**), *Ashwattha Tvak Swarasa* (as per **Figure 6**), *Shatavari Mula Swarasa* (as per **Figure 8**) respectively. Material was properly dried after each *Bhavana*. Completion of all *Bhavana*, *Trinakantamani*

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Pishti was further triturated to get fineness then weighed and stored in air tight container. Total three batches were prepared.

All the three batches of *Trinakantamani Pishti* were analysed by organoleptic characters and

physico-chemical parameters i.e. loss on drying⁵, total ash⁶, acid insoluble ash⁷, water insoluble ash, acid soluble ash, water soluble ash⁶, sulphated ash⁷.

OBSERVATIONS AND RESULTS

Table 1 General observation during each *Bhavana*

Sr. No.	Name of liquid media	Observation	Change in color
1	<i>Shweta Aparajita Mula Kwatha</i>	Initially, liquid media is not proper mixing with powder after 10 min easy to do levigation.	Dark yellow to light yellow
2	<i>Jambiri Nimbu Swarasa</i>	Initially, liquid media is sticking to the powder.	Light yellow to pale yellow
3	<i>Ashwattha Tvak Swarasa</i>	In starting phase, proper mixing with powder and after 10 min easy to do levigation.	Pale yellow to dark yellowish
4	<i>Shatavari Mula Swarasa</i>	After completion of <i>Bhavana</i> , due to sticky nature of material, lump formation was seen and stucked to the surface of <i>Khalva Yantra</i> , which was hard to remove.	Dark yellowish to light brown

Table 2 Details of ingredient and liquid media used for each *Bhavana*

Sr. No.	Name of Ingredient	Batch 1	Batch 2	Batch 3	Average
1	<i>Trinakantamani</i> powder	150 g	150 g	150 g	150 g
2	<i>Shweta Aparajita Mula Kwatha</i>	150 ml	150ml	120 ml	140 ml
3	<i>Jambiri Nimbu Swarasa</i>	110 ml	120 ml	110 ml	113.33 ml
4	<i>Ashwattha Tvak Swarasa</i>	165 ml	145 ml	140 ml	150 ml
5	<i>Shatavari Mula Swarasa</i>	125 ml	120 ml	110 ml	118 ml

Table 3 Initial weight and final weight of *Trinakantamani* powder after each *Bhavana* with different *Bhavana Dravya*

<i>Bhavana Dravya</i>	Time taken for each <i>Bhavana</i> (hr.)	<i>Trinakantamani</i> powder					
		Batch-1		Batch-2		Batch-3	
		I.W.	F.W.	I.W.	F.W.	I.W.	F.W.
<i>Shweta Aparajita Mula Kwatha</i>	8 hr.	150	160	150	154	150	152
<i>Jambiri Nimbu Swarasa</i>	8 hr.	160	172	154	170	152	163
<i>Ashwattha Tvak Swarasa</i>	8 hr.	172	174	170	171	163	167
<i>Shatavari Mula Swarasa</i>	8 hr.	174	178	171	175	167	170

I.W.= Initial weight F.W. =Final Weight

Table 4 Results of all batches of *Trinakantamani Pishti*

Sr. No.	Parameters	Batch- 1	Batch- 2	Batch- 3
1	Quantity of <i>Trinakantamani</i> powder(g)	150	150	150
2	Total time required for four <i>Bhavana</i> (hrs.)	32	32	32
3	Final quantity of <i>Pishti</i> (g)	178	175	170
4	Final quantity of <i>Pishti</i> (%)	118.66	116.66	113.33
5	Gain (g)	28	25	20
6	Gain (%)	18.66	16.66	13.33
7	Reason of Gain	Due to addition of solid contents of <i>Bhavana Drava</i>		

Table 5 Organoleptic characters of *Trinakantamani Pishti*

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Sr.No.	Parameter	Batch- 1	Batch- 2	Batch- 3
1	Color	Light brown	Light brown	Light brown
2	Odour	Citric	Citric	Citric
3	Taste	Sour	Sour	Sour
4	Touch	Soft	Soft	Soft

Table 6 Physico-chemical parameters of *Trinakantamani Pishti*:

Sr.No.	Parameter	Batch- 1	Batch- 2	Batch- 3	Average
1.	Loss on drying (%)	0.349	0.399	0.369	0.3723
2.	Total ash (%)	0.8483	1.0967	0.9825	0.975
3.	Acid insoluble ash (%)	0.0998	0.0900	0.0800	0.0800
4.	Water soluble ash (%)	0.7473	0.6979	0.7000	0.7100
5.	Acid soluble ash (%)	99.91	99.91	99.92	99.91
6.	Water insoluble ash (%)	99.26	99.31	99.92	99.49
7.	Sulphated ash (%)	0.91	1.80	1.50	1.40

Unit operative procedure of *Trinakantamani Pishti*

Figure 1: Powder of *Trinakantamani*

Figure 2: *Shweta Aparajita Mula Kwatha*

Figure 3: Color of powder during trituration with *Shweta Aparajita Mula Kwatha*

Figure 4: *Jambiri Nimbu Swarasa*

Figure 5: Color of powder during trituration with *Jambiri Nimbu Swarasa*

Figure 6: *Ashwattha Tvak Swarasa*

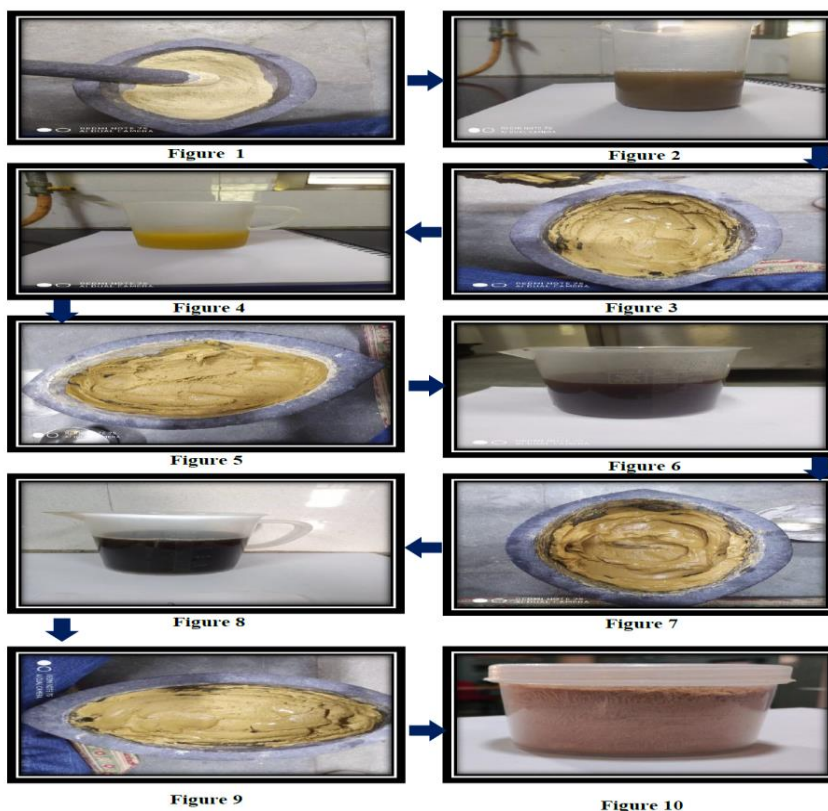
Figure 7: Color of powder during trituration with *Ashwattha Tvak Swarasa*

Figure 8: *Shatavari Mula Swarasa*

Figure 9: Color of powder during trituration with *Shatavari Mula Swarasa*

Figure 10: *Trinakantamani Pishti*

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RESULTS AND DISCUSSION

All the raw drugs used for preparation of *Trinakantamani Pishiti* complies physico-chemical and pharmacognostical parameter mentioned in Ayurvedic pharmacopeia of India. *Shweta Aparajita Mula*, *Ashwattha Tvak*, *Shatavari Mula* were within the standard limit of API. Standard parameter of *Jambiri Nimbu* is not mentioned in API, so physico-chemical parameter done for *Jambiri Nimbu* can be used as standard. Standard manufacturing process was followed in all the three batches. Physico-chemical parameters for each batch did not show any major changes in all the parameters except in sulphated ash.

Average *Bhavana Dravya* used for levigation were *Shweta Aparajita Mula Kwatha* (140 ml), *Jambiri Nimbu Swarasa* (113.33 ml), *Ashwattha Tvak*

Swarasa (150 ml) and *Shatavari Mula Swarasa* (118 ml). (Table No.2). By giving *Bhavana* of *Shweta Aparajita Mula Kwatha*, initially liquid media was not properly mixing with powder and after 10 min of levigation, trituration process was easily performed. (Table No.1). In 2nd *Bhavana* by *Jambiri Nimbu Swarasa*, initially liquid media was stucked to the powder and surface of the mortar. (Table No.1). In 3rd *Bhavana* by *Ashwattha Tvak Swarasa*, in starting phase of levigation, liquid media was properly mixed with powder and trituration was easily performed (Table No.1). In 4th *Bhavana* of *Shatavari Mula Swarasa*, after sometime of levigation due to sticky nature of material, lump formation was seen and it was stucked to the surface of *Khalva Yantra*, which was hard to remove (Table No.1).

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During levigation by all four liquid media, color changes was observed from dark yellow to light yellow in *Shweta Aparajita Mula Kwatha* and then became light yellow to pale yellow after levigation with *Jambiri Nimbu Swarasa*. Then it was turned into dark yellowish after *Bhavana of Ashwattha Tvak Swarasa*. (**Table No.1**).

Average yield was found 178 g, 175 g and 170 g in each batch which indicates 18.66 % , 16.66 % and 13.33 % after completion of levigation (**Table No.4**).gain of weight was due to addition of solid contents of *Bhavana Drava*. Total 96 (23*3=96) hour levigation was done for pharmaceutical preparation of *Trinakantamani Pishti* (**Table No.3**). Color of *Trinakantamani* was changed from dark brown to light brown (**Table No.5**).*Trinakantamani Pishti* has citric odour with sour taste and soft in touch (**Table No.5**).Physico-chemical parameters like loss on drying, total ash, acid insoluble ash, water insoluble ash ,acid soluble ash , water soluble ash were depicted in Table No. 6.

CONCLUSION

For standardization of any medicinal drug or product, first and foremost step should be pharmaceutical standardization. Eight hours trituration was required for levigation with each liquid media during all three batches, which is depicted in Table **No.3**. Average 16.21 % weight gain of *Trinakantamani Pishti* were found, which is depicted in Table **No.4**. There is no any major changes found in physico-chemical parameter for

all batches of *Trinakantamani Pishti* mentioned in **Table No.6** Organoleptic characters complies same characters for all three batches. So here by after analysing organoleptic characters and physico-chemical parameters standard manufacturing process for *Trinakantamani Pishti* was established through this study.

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