



## Research Article

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### PHARMACEUTICAL STANDARDIZATION OF ABHIJIT TAIL

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**ABSTRACT**

In *Ayurvedic* therapeutics drug therapy has given prime importance, there is a very well developed sub-discipline entirely devoted to drug formulations known as 'Bhaisahjya Kalpana' which deals with the pharmaceuticals of a paramount product of excellent quality. In present scenario demand of herbal medicines is increasing day by day. Commercialization and competition necessitated standardization in present era to ensure about the safety, efficacy and quality of the medicine by mean of various parameters viz equipment and process validation. Thus, keeping all the above stated facts in mind, this particular topic was selected to work upon which will provide a complete knowledge about the formulation regarding its pharmaceutical standardization.

**Keywords:** Standardization, Tail Kalpana, Pharmaceuticals, Murcchana.

**INTRODUCTION**

Standardization is the need of present scenario. Copious formulations have been depicted by Acharyas in classical texts which are still followed to cure ailments. But without validation and standardization of formulation one cannot be certain about the safety and efficacy of it. Thus for assurance of excellence, efficacy and performance of any formulation standardization is essential. With the development of Ayurved, various new dosage forms came into existence. Although Tail Kalpana has not been included under primary five dosage forms still it has its glorious terrain. Abhijit Tail is one such formulation, quoted by

Acharya Chakrapani in his vibrant classical text Chakradatt for treating Timir Rog. Acharya has mentioned this peculiar formulation under Netra Rog Chikitsa Prakaran <sup>1</sup>. In the present research work, pharmaceutical standardization of Abhijit Tail has been studied.

**MATERIAL & METHODS**

To validate the procedure, following steps were included in current study-

1. Raw Drug Authentication
2. Process Validation

**Raw Drug Authentication**

**Table 1: Procurement & Processing of Raw Drugs**

Ingredients	Procurement	Processing	Place of Authentication
Krishn Til seeds ( <i>Seasemum indicum</i> )	Local market of Srinagar, Hardwar, Rishikesh	Krishn Til Tail extraction	Authentication as per API protocols in P.G. Dept of Dravya Gun, UAU, Rishikul Campus, Hardwar
All dry herbs	Pannalal Traders, Hardwar	Cleaning & drying	
Amalaki ( <i>Emblica officinalis</i> ) fruits	Local market of Hardwar	Amalaki Juice extraction	
Go-Dugdha	Local milkman, Hardwar	Boiling	

**Process Validation**

**Place of Manufacturing:** The pharmaceutical study was carried out in Hans Ayurved Bhawan pharmacy, Hardwar. The room temperature during pharmaceutical procedure was ranged between 28°C to 31°C.

Abhijit Tail Pak procedure was conducted into four experiments.

**Table 2: Detail of ingredients required for the preparation of Abhijit Tail**

Ingredients	Sample I	Sample II	Sample III
Murcchit Til Tail ( <i>Seasemum indicum</i> )	7000 ml	2000 ml	2000 ml
Mulethi Kalka ( <i>Glycirrhiza glabra</i> )	1,750 gm	500 gm	500 gm
Amalaki Swaras ( <i>Emblica officinalis</i> )	28 L	08 L	08 L
Go-Dugdha	28 L	08 L	08 L

**OBSERVATIONS & RESULTS**

**Experiment-1: Preparation of Yavkut Churna<sup>2</sup> & Kalka<sup>3</sup> for Til Tail (*Seasemum indicum*) Murcchana-**

To prepare Kalka for Tail Murcchana, all three samples, required amount of Yavkut Churna of ingredients<sup>[4]</sup> was taken from Churna obtained in experiment no. 01.

**Table 3: Amount of ingredients and the successive quantity of coarse powder along with the % yield and % loss obtained in the experiment**

Ingredients	Amount taken	Powder obtained	% yield	% loss	Required amount of Churna for Kalka preparation		
					S I	S II	S III
Amalaki ( <i>Embllica officinalis</i> )	250 gm	225 gm	90.00	10.00	112.5 gm	35 gm	35 gm
Haritaki ( <i>Terminalia chebula</i> )	250 gm	220 gm	88.00	12.00	112.5 gm	35 gm	35 gm
Bibhitaka ( <i>Terminalia belerica</i> )	250 gm	225 gm	90.00	10.00	112.5 gm	35 gm	35 gm
Haridra ( <i>Curcuma longa</i> )	250 gm	228 gm	91.20	08.80	112.5 gm	35 gm	35 gm
Mustaka ( <i>Cyprus rotandus</i> )	250 gm	218 gm	87.20	12.80	112.5 gm	35 gm	35 gm
Lodhra ( <i>Symplocos racemosa</i> )	250 gm	205 gm	82.00	18.00	112.5 gm	35 gm	35 gm
Vaankur ( <i>Ficus bengalensis</i> )	250 gm	230 gm	92.00	08.00	112.5 gm	35 gm	35 gm
Ketaki ( <i>Pandanus tectorius</i> )	250 gm	220 gm	88.00	12.00	112.5 gm	35 gm	35 gm
Tagara ( <i>Valeriana officinalis</i> )	250 gm	225 gm	90.00	10.00	112.5 gm	35 gm	35 gm
Nalika ( <i>Nelumbo nucifera</i> )	250 gm	220 gm	88.00	12.00	112.5 gm	35 gm	35 gm
Manjishtha ( <i>Rubia cordifolia</i> )	1000 gm	823 gm	82.30	17.70	450 gm	137.5 gm	137.5 gm
Water	-	-	-	-	Q. R.	Q. R.	Q. R.

**Experiment 02- Til (*Seasemum indicum*) Tail Murcchana<sup>4</sup>**

**Table 4: Detail of drug ingredients used for Til (*Seasemum indicum*) Tail Murcchana**

Ingredient	Sample I	Sample II	Sample III
Raw Til Tail	7200 ml	2200 ml	2200 ml
Murcchana Dravyas Kalka	Obtained from experiment 01		
Water	7200 ml	2200 ml	2200 ml

**Table 5: Detail of observations of Til (*Seasemum indicum*) Tail Murcchana of sample I, II and III**

Observation	Time			Temperature		
	S I	S II	S III	S I	S II	S III
Tail was viscous, yellow colored	10:00 am	10:00 am	11:00 am	30°C	30°C	30°C
Small bubbles were seen at the top of the heated Tail	10:10 am	10:10 am	11:05 am	80°C	80°C	80°C
Fumes were started to seen, smell of Til Tail/ was predominantly felt	10:15 am	10:15 am	11:15 am	120°C	130°C	120°C
After addition of bolus of Kalka, effervescence appeared	10:30 am	10:20 am	11:30 am	75°C	75°C	70°C
Tail started to separate out through mass of Kalka	04:20 pm	02:30 pm	03:45 pm	80°C	80°C	75°C
Kalka could be rolled into Varti, no crackling sound was heard.	04:50 pm	02:40 pm	03:58 pm	78°C	72°C	75°C

**Yield**

**Table 6: Detail of % yield and % loss of Murcchit Tail**

Sample No.	Initial amount	Yield	% Yield	% Loss
Sample I	7200 ml	6850 ml	95.13	04.28
Sample II	2200 ml	2080 ml	94.54	05.46
Sample III	2200 ml	2050 ml	93.18	06.82

**Table 7: % yield, % loss of Yavkut Churna of Mulethi & required amount for Kalka preparation**

Sample	Amount taken	Powder obtained	% yield	% loss	Required amount
Sample I	2250 gm	1828 gm	81.25	18.75	1750 gm
Sample II	630 gm	506 gm	80.33	19.67	500 gm
Sample III	630 gm	502 gm	79.66	20.34	500 gm

**Experiment 03: Amalaki (*Emblca officinalis*) Swaras [5] preparation-**

**Table 8: % yield, % loss of Amalaki Swaras & required amount of Amalaki Swaras**

Sample	Amalaki fruits	Yield of Swaras	% yield	% loss	Required amount
Sample I	43.00 kg	28 Liter	65.11	34.89	28 Liter
Sample II	11.50 kg	08 Liter	69.56	30.44	08 Liter
Sample III	12.00 kg	08 Liter	66.66	33.34	08 Liter

**Experiment 04: Abhijit Tail preparation**

**Table 9: Detail of observations during preparation of Abhijit Tail of Sample I<sup>st</sup>**

Observation	Day	Time	Temp
Small bubbles and fumes at the top of the heated Tail	D 1	10 am	120°C
After addition of Mulethi Kalka effervescence appeared		10.10 am	85-90°C
After addition of boiled milk color of Tail turned milky orange		10.45 am	85°C
Boiling and vaporization of milk		11 am	90°C
The mixture became little thicker.		11 am-04 pm	90°C
Milk cream was appeared at the top.	D 2	10 am-12 pm	85°C
All milk was evaporated.		12 pm- 04 pm	80-85°C
After addition of Amalaki Swaras, color of Tail changed to dark brown with specific odour of Amalaki.	D 3	10.10 am	80°C
Vaporization of Amalaki Swaras was seen.		10.10am-04 pm	85-90°C
Vaporization of Amalaki Swaras was seen.	D 4	10 am-03 pm	85-90°C
The mixture became little viscous.	D 5	10am-02 pm	85°C
Bulk of brown colored mass of Kalka was separated		2:15 pm	80°C
Thick blackish slurry like filtrate was heated.		2:25-04 pm	80°C
Mixture turned to blackish mass	D 6	10 am-12 pm	80°C
Separation of Tail through black tar-like mass of Kalka		12pm-02 pm	75-80°C
Kalka could be rolled into Varti, no crackling sound was heard when Tail dipped cloth piece was put on fire		03:45 pm	75-80°C

**Table 10: Detail of observations during preparation of Abhijit Tail of Sample II<sup>nd</sup> & III<sup>rd</sup>**

Observation	Day	Time		Temperature	
		S II	S III	S II	S III
Small bubbles and fumes at the top of the heated Tail	D 1	10.05 am	10.05 am	120°C	120°C
After addition of Mulethi Kalka effervescence appeared		10.10 am	10.10 am	90°C	90°C
Evaporation of water was seen		10.15 am-03.00 pm	10.15 am-03.00 pm	85°C	85°C
Addition of milk turned color of Tail- milky orange	D 2	10.10 am	10.15 am	90°C	90°C
Boiling and evaporation of milk was seen, mixture became thicker		10.40 am-02.20 pm	10.40 am-02.45 pm	90°C	90°C
Milk cream was appeared at the top	D 3	10:00 am-12:00 pm	10:00 am-12:00 pm	80°C	80°C
All milk was evaporated		12:00 pm-03:00 pm	12:00 pm-03:00 pm	85°C	85°C
After addition of Amalaki Swaras, color of Tail changed to dark brown with specific odour of Amalaki		03.10 pm	03.10 pm	78°C	78°C
Vaporization of Amalaki Swaras was seen	D 4	3.10 pm-04:00 pm	3.10 pm-04:00 pm	90°C	90°C
Vaporization of Amalaki Swaras was seen		10:00 am-03:00 pm	10:00 am-03:00 pm	90°C	90°C
The mixture became little viscous	D 5	10:00am-12:00 pm	10:00am-12:00 pm	85°C	86°C
Bulk of brown colored mass of Kalka was separated		12:15 pm	12:15 pm	80°C	80°C
Thick blackish slurry like filtrate was heated		12:25 pm-04:00 pm	12:30 pm-04:15 pm	80°C	80°C
Mixture turned to blackish mass	D 6	10:00 am-10.15 am	10:00 am-10.20 am	80°C	80°C
Separation of Tail through black tar-like mass of Kalka		10.40 am	10.45 am-10.50 am	70-75°C	76°C
Kalka could be rolled into Varti, no crackling sound was heard when Tail dipped cloth piece was put on fire		01.20 pm	12.50 am	75°C	72°C

**Yield**

**Table 11: Detail of % yield and % loss of Abhijit Tail**

Sample No.	Initial amount	Yield	% yield	% gain
Sample I	7000 ml	7500 ml	107.1	07.1
Sample II	2000 ml	2100 ml	105.00	05.00
Sample III	2000 ml	22500 ml	107.5	07.5

## DISCUSSION

**Tail Murcchana:** Before Tail Pak, Murcchana was done. Murcchana is a pre-procedure of Tail Pak which is believed to remove Ama<sup>6</sup> and Gandha Doshas of Tail<sup>7</sup>. Murcchana Sanskar imparted Good color and smell- Haridra (*Curcuma longa*), Manjishtha (*Rubia cordifolia*) and Vatankur (*Ficus bengalensis*) are supposed to be responsible for appealing color and Ketaki Pushpa (*Pandanus tectorius*) and Nalika (*Nelumbo nucifera*) possess pleasant odour and supposed to remove Gandh dosa of Tail.

During Yavkut Churna preparation of Murcchana drugs between 10-18 % loss was seen due to manual errors such as scattering during crushing. Drugs having more fibrous part showed more % loss. During Murcchana mean 5.52 % Loss of Tail was seen due to absorption of Tail by Kalka of Murcchana Drugs.

**Tail Pak:** In order to extract maximum active principle of ingredients and to avoid any chances of burning of material, Tail Pak was done in Manda-Madhyamagni i.e. 60- 90°C. Continuous stirring was done during Tail Pak because it enhances the extraction process by weakening of bonds. It reduces the thickness of Tail and disperses the concentration of solution homogenously. Marked % Loss i.e. 30-35% was seen during Amalaki Swaras preparation due to removal of seed of Amalaki (*Emblica officinlis*) fruit and pulp as residue. % Loss during Mulethi (*Glycyrrhiza glabra*) Kalka preparation was up to 20 % due to its higher fibrous content. Mulethi (*Glycyrrhiza glabra*) Kalka was first subjected to Pak with Milk and Amalaki (*Emblica officinlis*) Swaras was added only after complete evaporation of milk. The reason behind it was that Amalaki (*Emblica officinlis*) Swaras has acidic pH, which leads denaturation of milk proteins and curdling of milk. During Abhijit Tail preparation, mean 6.54 % gain was seen. It was due to imbibition of milk fat to the Tail. 3.5% milk fat presents in 100 gm of Milk.

## CONCLUSION

In order to standardize any formulation it is essential to validate drugs as well as procedure. To develop SOP of Abhijit Tail total

three samples of it were prepared under closely similar environment and observations were done accordingly. It was seen that during Tail Murcchana % loss was seen but during Tail Pak there was % gain i.e. there was overall gain in the preparation which is a good sign for commercial purpose. Being an indication of Netra Rogas, it was very interesting to know that most of the Murcchana drugs were having Chakshushya property also.

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