

## QUALITY CONTROL PARAMETERS OF BRIHAT DASHAMULA TAILA: A PRELIMINARY STUDY

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**ABSTRACT**

Standard analytical parameters of a number of Ayurvedic oils have been described in API. Brihat Dashamula Taila is one of the most commonly used oil by Ayurvedic Physicians. But there no standard analytical parameters are available in any authentic texts. Therefore this study aimed to set the quality control parameters with SOP of Brihat Dashamula Taila and found values like Refractive index (1.47 at 40°C), specific gravity (0.923 at 25°C) Acid value (1.2), Iodine value (92.6) and Saponification value (86.34) may be considered as standard.

**Key Words:** Dashamula, Brihat Dashamula Taila, Acid value, Iodine value, Refractive index.

**INTRODUCTION**

Dashamula is the important compound formulation of Ayurveda and has been advocated with promising results in various diseases<sup>1</sup>. There are a number of products with “Dashamula” as main ingredients are described in Ayurvedic classics Dashamula Grhita, Dashamool-arishta, Dashamula Kwatha<sup>2</sup> etc. The demand of Dashamula in the market is highly growing because of its utility in preparing various formulations. Owing to the indiscriminate collection, over exploitation and uprooting of whole plants bearing roots like Bilva (*Aegle marmelos* Corr.), Agnimantha (*Clerodendrum multiflorum* linn.) Shyonaka (*Oroxylum indicum* Vent.), Gambhari (*Gmelina arborea* Roxb.) Patala (*Stereospermum suaveolens* DC.). This valuable tree has become vulnerable in Karnataka and Andhrapradesh and endangered in Kerala, Maharashtra, M.P. and Chhattisgarh<sup>3,4</sup> and is feared to become endangered soon in other states too. Due to unavailability of drugs in all sessions and different regions of country make it one of the most adulterated formulations. Therefore Government approved communities recommend the use of stem bark in conditions of large amount of production<sup>5</sup>. This is the drug of choice in Tridosha (Vata, Pita, Kapha) and Vata vyadhi. In different texts Acharyas have mentioned it for different indications.

The term ‘Dashamula’ described many times by Charaka and Shusrta also mention the drugs of this group, which includes both Kaniya and Mahat Panchamoola<sup>6</sup>. Charaka has included this ten drugs under Shothahara Dashemani<sup>7</sup> and Pancha-panchamula<sup>8</sup>. The ten drugs together are used in the remittent fever and puerperal fever, inflammation of the chest and affections of the brain and in generally other diseases caused by Tridoshas<sup>9</sup>.

Brihat Dashamula Taila is one of the most important remedy and commonly used by Ayurvedic Physicians for Pana (Internal), Shiro (Head disorders), Nasya karma(nasal) and in different therapeutic indications i.e. Shiro Roga, Karna, Gulma, Vata Vyadhi<sup>10</sup>. There are fourteen references of oils mentioned in different texts of Ayurveda by the name of Dashamula Taila, Dashamula Taila (Brihat), Dashamula Taila (Maha), Dashamula Taila (Swalp), Dashamula Taila (Madhayam)<sup>11</sup>. Dashamula Taila having the ingredients of Dashamula and Tila Taila (Sesame oil), Sarshap Taila (Brassica oil), Eranda taila (Castor oil) Cow Ghee are used to prepare it.

**MATERIALS & METHODS****Plant Material**

Raw drugs (Table no.2) are collected from pharmacy GAU, Jamnagar. The raw drugs are identified and authenticated by macro and micro characters in the Pharmacognosy Laboratory, IPGT & RA, GAU and Jamnagar.

**Preparation of Drug**

Brihat Dashamula Taila has been prepared with reference of Bhaishajya Ratnavali (65/94-98)<sup>12</sup>. Three batches were prepared in the department of R.S& B.K, IPGT & RA, GAU, and Jamnagar in prescribed ratio.

Tila Taila (Sesame oil) treated to prepare Murchita Tila<sup>13</sup>. All the herbal raw materials thoroughly washed and dried (Table no.2). All the ingredients cleaned and weighed accurately and allowed to dry. The dried ingredients Pulverized (Kwatha dravya) numbered 13 to 25 in the formulation to a coarse powder, Specified amounts of water added and reduce the volume to one fourth by given mild heat. Filtered with muslin cloth to obtain the other ingredients (Kalka dravya) numbered 13 to 25 in the formulation composition powder and pass through sieve number 85. Powdered ingredients transferred to wet grinder and grind with sufficient quantity of water to prepare a homogeneous blend (Kalka). Murchita Tila taken in a stainless steel vessel and heated it mildly. Increments of Kalka and stirred thoroughly while adding the Kawath and Juice. Than kalka was taken out with the help of the ladle and tested for sneha siddhi lakshanas and stage of the Paka. After achieving all sidhi lakshnas it was allow for cooling and kept in the glass container.

**Physicochemical Evaluation**

In physical evaluation, Refractive index, Specific gravity, Acid value, Iodine value and Saponification value are studied as per standards<sup>14</sup>. Extracts obtained by exhausting crude drugs are indicative of approximate measures of certain chemical compounds they contain, the diversity in chemical nature and properties of contents of drug. The determinations were performed by preparing three batches (Table no.5). Before preparing the preparation all physicochemical tests were done for Sesame Oil (Table no.1).

**TLC Conditions**

**Adsorbent layer:** Silica gel G

**Solvent system:** Hexane: Diethyl ether :Acetic acid (4.5: 5.5 0.1)

**Sample:** Unsaponifiable matter

**Detection:** UV 366 nm

**Spray reagent :** Liebermann buchard reagent

**RESULTS & DISCUSSION**

- When Sneha paka completes the following Sidhi-Lakshana were observed.<sup>15</sup>
- Foam is observed when Taila paka completes.
- There was not any sound when taila put over the fire.
- Sneha Kalka becomes wick like when rolled between two fingers.
- There was no sound when Sneha kalka is sprinkled over fire.

Specific colour, odour and taste of the ingredients become marked when paka is over.

That Results of Tila taila (Sesame oil) are given in Table no.1. The Prepared Finished product is Greenish Yellow color, characteristic odor and appearance is not Shiny as compared to Sesame oil (Table no.4). Table no.5 narrated the values for physicochemical parameters for Brihat Dashamula Taila shows that Specific Gravity is (0.92%) and Refractive index is (1.473 at 40<sup>0</sup> C). Acid value is less which indicates absence of free fatty acids present. Saponification value of finished product is high which indicates presence of fatty acids with low molecular weight because saponification value is inversely proportional to the molecular weight. Iodine value is (86.02%). It may be due to greater amount of unsaturated fatty acids present in it. Kries test for Rancidity was performed after preparing the samples and found negative. In T.L.C, the pattern of separated component selected portion of extract. Six and four spots were detected when observed under long Ultra violet radiation and visually after spray reagent exposure respectively mention in Table no.6.

### CONCLUSION

The Quality Control Parameter to ensure the quality of product. The parameters may be used as a standard for Brihat Dasamoola Taila i.e. Refractive index (1.47 at 40<sup>0</sup>C), specific gravity (0.923 at 25<sup>0</sup>C) Acid value (1.2), Iodine value (92.6) and Saponification value (86.34) The results are being reporting for the first time, could be useful in the identification and standardization of Brihat Dashamula Taila. The data produced in the present investigation is also helpful in the inclusion in various pharmacopoeias.

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Table no. 1: Physicochemical results for Sesame oil

S.no.	Parameters	Results ( % w/w )
1.	Refractive index	1.479
2.	Specific gravity	0.914
3.	Acid value	0.786
4.	Iodine value	86.02
5.	Saponification value	52.625
6.	Rancidity test	-ve

Table no. 2: Ingredients Used and Quantity

Ingredients	Botanical name	Part used	Qty.as per classics	Qty taken
Bilva	<i>Aegle marmelos</i> Corr	Rt.	250g	250g
Shyonaka	<i>Oroxylum indicum</i> Vent.	Rt./st. Bk.	250g	250g
Agnimantha	<i>Clerodendrum multiflorum</i>	Rt.	250g	250g
Gambhari	<i>Gmelina arborea</i> Linn.	Rt.	250g	250g
Patla	<i>Stereospermum suaveolens</i> (L.F)	Rt./St . Bk	250g	250g
Shalparni	<i>Desmodium gangeticum</i> DC.	Rt.	250g	250g
Prushniparni	<i>Uraria picta</i> Desv.	Rt.	250g	250g
Brihati	<i>Solanum indicum</i> Linn.	Rt.	250g	250g
Kantakari	<i>Solanum virginianum</i>	Rt.	250g	250g
Gokshura	<i>Tribulus terrestris</i> Linn.	Ft.	250g	250g
Jala for kawath	Water		12l	12l
Reduced to	Water		1.5 l	1.37 l
Nirgundi Swarasa	<i>Vitex negundo</i>	Lf.	768ml	700ml
Ardra Swarasa	<i>Zingiber officinale</i> Ros.	Lf.	768ml	700ml
Pippali	<i>Piper longum</i>	Ft.	24 g	11 g
Chavya	<i>Piper retrofractum</i> Vahl.	Ft.	12 g	11 g
Chitraka	<i>Plumbago zeylanica</i>	Rt.	12 g	11 g
Sunthi	<i>Zingiber officinale</i> Ros.	Rz.	12 g	22 g
Maricha	<i>Piper nigrum</i>	Ft.	24 g	22 g
Sveta Jiraka	<i>Cuminum cyminum</i>	Ft.	12 g	11 g
Krishna Jiraka	<i>Carum carvi</i>	Ft.	12 g	11 g
Sarsapa	<i>Brassica campestris</i>	Sd.	12 g	11 g
Nisotha	<i>Operculina turpethum</i>	St.	12 g	11g
Haridra	<i>Curcuma longa</i>	Rz.	12 g	11g
Daruharidra	<i>Berberis aristata</i>	Rt.	12 g	11 g
Yavakshara	Pott. Carbonate	-	12 g	11 g
Saindhava	Rock salt	-	12 g	11 g
Jala	Water	-	1.5 l	1.37 l
Oil	<i>Sesamum indicum</i> Linn.	Sd.	768 ml	700 ml

Table no. 4: Organoleptic results for Oils

S.No	Characters	Til Tailaa	Brihat Dashamula Tailaa
1.	Colour	Yellow	Greenish yellow
2.	Odour	Characteristic	Agreeable

Table no. 5: Physicochemical results

S.no.	Parameters	Batch-A	Batch-B	Batch-C	Average values
1.	Refractive index*	1.474	1.468	1.477	1.47
2.	Specific gravity**	0.9236	0.9235	0.9223	0.923
3.	Acid value <sup>#</sup>	1.2	1.3	1.3	1.26
4.	Iodine value <sup>#</sup>	92.2	92.7	92.9	92.6
5.	Saponification value <sup>#</sup>	86.24	86.45	86.34	86.34
6.	Rancidity test	-ve	-ve	-ve	-

\*At 40°C, \*\*At 25°C, # % w/w

Table no. 6: Chromatographic separation of Unsaponifiable matter on Silica gel G

Solvent System : Hexane :Diethyl ether :Acetic acid (4.5 :5.5 : 0.1 )			
Slide	Conditions	Number of spots	R <sub>f</sub>
A	Long UV	5	0.37,0.43,0.48,0.62,0.95
B	After spray with Anisaldehyde sulphuric acid	4	0.45,0.51,0.64,0.89



A



B