



EXPERIMENTAL STUDY

## PHARMACEUTICAL AND ANALYTICAL STUDY OF HINGUTRIGUNA TAILA

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### Abstract

*Sneha kalpana* in Ayurveda pharmaceuticals includes the four types of *Sneha*. They are *ghrita*, *taila*, *vasa*, and *majja*. Among these, *taila* and *ghrita* are more popular in therapeutic use. *Hingutriguna taila* is one among them mentioned in *Ashtanga hridaya chikitsa sthana*, *gulma prakaranam*. *Hingutriguna taila* is a medicated oil preparation, indicated internally for *Gulma*, *udara* like conditions. This formulation comprises of *Hingu*(*Ferula asafoetida*), *Saindhavam*, *Eranda tailam* and *Rasona rasa*, and was prepared in the ratio of 1:3:9:27. Its analytical study like organoleptic characters and physico- chemical parameters were carried out based on the references available in API. The total oil obtained was 93.8 % and the loss was 6.2%. Organoleptic characters of *Hingutriguna taila* showed Pale reddish brown colloidal liquid with characteristic pungent smell of *Lasuna*. Physico- chemical parameters like Loss on drying, Acid value, Iodine value, Saponification value, Refractive index and HPTLC fingerprint were tested. The Saponification value of *Hingutriguna taila* is low compared to *eranda taila* indicates the less presence of short chain fatty acids, which may cause less absorption. Acid value is a relative measure of rancidity; low acid value of *Hingutriguna taila* indicates less chance of decomposition of *taila*. Loss on drying determines the quantity of moisture in a given sample. Stability, shelf life and microbiological safety depend on this value. Loss on drying 0.7% of *Hingutriguna taila* indicates that, less moisture content is present in the oil. Iodine value, indicates the degree of unsaturation of fat or oil. Since the iodine value obtained for *Hingutriguna taila* is low, chances of getting rancid is also low. In API and AFI, standard analytical parameters of *Hingutriguna taila* are not available. As a result, analytical investigations done on *Hingutriguna taila* can be used as a reference for further studies.

### Introduction

*Sneha kalpana* in Ayurveda pharmaceuticals includes mainly the preparations with *taila* and *ghrita*. It is a unique dosage form having both water soluble as well as lipid soluble active ingredients. *Hingutriguna taila* is a widely used Ayurvedic formulation. This formulation has been told in the classics and proved to have efficient therapeutic utility in curing *Gulma*. It has four ingredients, viz., *Bharjita hingu*, *Saindhava lavana*, *Eranda taila* and *Rasona*

*swarasa*. Since *Eranda taila* is beneficial in curing *Vataroga* and *Hinguniryasa* is said to be *agrya* in *Chedaneeya Deepaneeya Bhedaneeya Anulomika Vatakapha samana* according to *Charaka Samhita*<sup>1</sup>, this formulation is a sure choice for treating the diseases coming under the spectrum of *Gulma*.

*Hingutriguna taila* has been mentioned by *Acharya Vagbhata* in *Ashtanga Hridaya Gulmachikitsa*<sup>2</sup>. The name *Hingutriguna* is derived from the ratio of its ingredients, as *Hingu niryasa* is taken 1 part, *Saindhava lavana* is taken 3 parts, *Eranda taila* is taken 9 parts and *Rasona swarasa* is taken 27 parts so that all the ingredients are taken in multiples of three.

Thus, this formulation is prepared as a *Sneha kalpana yoga* and is widely used for *Gulma*, *Udara*, etc. as internal administration.

## Materials and Methods

### PHARMACEUTICAL STUDY

All raw materials and buttermilk were purchased from local market .

SI No :	Ingredients	Quantity
1	<i>Hingu</i>	45 g
2	<i>Eranda taila</i>	405 ml
3	<i>Rasona swarasa</i>	1215 ml
4	<i>Saindhava</i>	135 g

*Hingu shodhana* was done by powdering it and doing *bharjana* in *goghrita*<sup>3</sup>. *Saindhava* was powdered well and heated to make it devoid of water content. *Lasuna* was deshused and immersed in buttermilk for 12 hours and washed with hot water the next day<sup>4</sup>. Its *swarasa* was obtained by grinding it in a mixer grinder and squeezing it through a clean cloth.

#### Preparation of *taila*-

*Taila* was prepared as per the reference from *Ashtanga hridaya gulma chikitsa*.

405 ml of *Eranda taila* (three times to *Saindhava*) was poured into a thick bottomed vessel kept on fire. Then, 1215 ml of *Lasuna swarasa* (three times to *Eranda taila*) was added to it. Heating was continued in *mandagni* till the oil attains *madhayama paka*. Then, the *taila* was filtered through a four folded cloth into a vessel containing powdered *Bharjita Hingu* and *Saindhava*. It was mixed well till it became a homogenous mixture.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

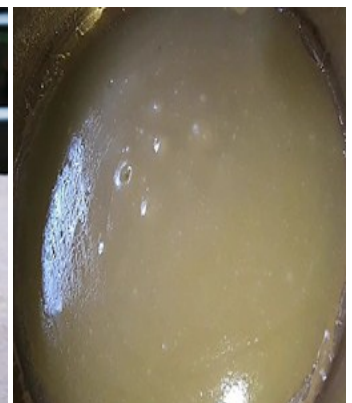


Figure 6

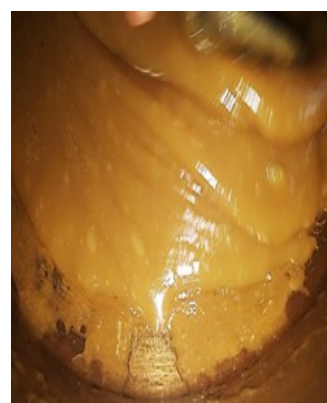


Figure 7

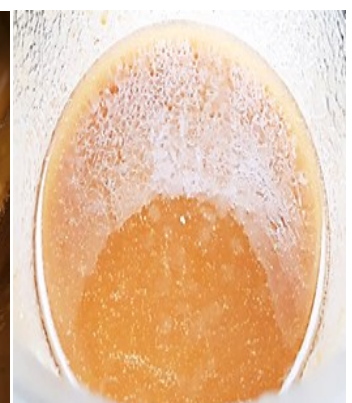


Figure 8

**Figure 1** – *Rasona* soaked in *Takra*, **Figure 2** – *Saindhava* being powdered, **Figure 3** – *Bharjita Hingu*, **Figure 4** – *Rasona swarasa*, **Figure 5** – *Eranda taila*, **Figure 6 and 7** – Different stages of preparation of *Hingutriguna Taila*, **Figure 8** – *Hingutriguna Taila*.

## INGREDIENTS AND PROPERTIES OF HINGUTRIGUNA TAILA

SI No	Drug	Rasa	Guna	Virya	Vipaka	Karma	Rogagnata	Pharmacological Action
1	Hingu	Katu	Laghu, Snigdha, Tikshna	Ushna	Katu	Kapha-vatahara, Dipana Ruchya, Pachana	Shulahara, Sothahara, Jwarahara, Kushtahara, Netrya	Appetizer, Antispasmodic, Anitmicrobial, Analgesic
2	Eranda taila	Madhura Katu Kashaya	Tikshna, Guru, Snigdha	Ushna	Madhura	Tridosha shamaka	Gulmahara, Swayathu hara, Udavarta hara	Purgative
3	Saindhava	Lavana	Laghu, Snigdha	Sita	Madhura	Rochana Dipana Vrishya	Hikkanashana, Chakshushya, Hridya	Appetizer Digestive
4	Rasona	Amla varjitha pancharasa	Tikshna, Snigdha, Guru, Sara	Ushna	Katu	Kapha-vata hara	Jwaraghna, Shulaghna, Gulmahara, Ruchikara	Carminative Aphrodisiac, Anti helminthic

## ANALYTICAL STUDY

Analytical tests helps in deriving the physical and chemical properties of the sample. It also gives idea about the organic or inorganic chemical nature of the sample, stability of a drug when stored for long time and presence of various bioactive molecules .

Analysed at : Arya Vaidya Sala, Kottakkal, Malappuram, Kerala

Analysis date : 01/08/2023

Loss on drying: Loss on drying is a procedure used to determine the moisture content in the given sample.<sup>5</sup> The result obtained is 0.7.

Saponification: This indicates the presence of short chain fatty acids in the given sample that helps in easier absorption.<sup>6</sup> The value of saponification is found to be 159.3.

Acid value: It is a measure of the amount of carboxylic acid groups such as fatty acids in a chemical compound or a mixture of compounds.<sup>7</sup> Acid value in the sample is 1.7.

Iodine value: It indicates the measure of unsaturation in an oil.<sup>8</sup> Iodine value obtained is 70.2l.

HPTLC: It is used to assess the presence of bio active constituents in the given sample.

HPTLC of *Hingutriguna taila* has got 7 peaks, each at 254 nm and 366 nm.

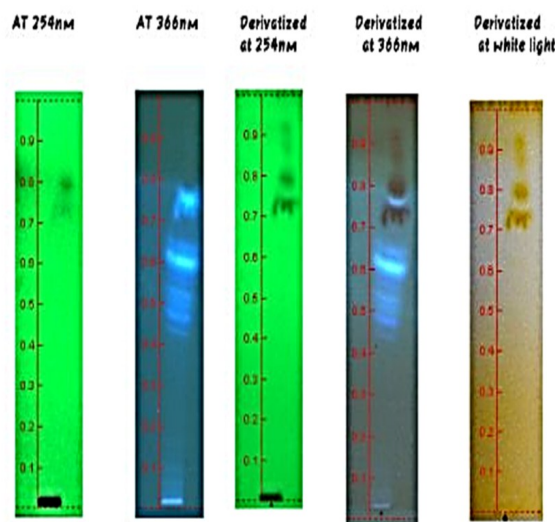
Refractive index: Refractive index depends upon various compounds like colour, density, temperature and the number of solutes present in the medium.<sup>9</sup>

## OBSERVATIONS

SI No:	TEST PARAMETER	UNIT	RESULT	STANDARD
01	Description	-	Pale reddish brown colloidal liquid	-
02	Loss on drying	% w/w	0.7	-
03	Acid value	-	1.7	-
04	Iodine value	-	70.2	-
05	Saponification value	-	159.3	-
06	Refractive index	-	1.477	-
07	HPTLC fingerprint	-	-	-

## HPTLC FINGERPRINT

## 03.TLC PLATE VIEWS OF HINGUTRIGUNA TAILA (AGNISIDDHA METHOD) SAMPLE





Rf value and %area of hingutriguna taila sample at 254nm

PEAK NO:	Rf value	Area(AU)	%Area(AU)
1	0.30	736.2	3.82
2	0.37	780.3	4.06
3	0.41	1011.5	5.25
4	0.44	111.6	5.75
5	0.62	4033.8	20.96
6	0.73	7525.5	39.09
7	0.77	4051.5	21.05

Total peak number:7

Total area:19249.4(AU)

Rf value and %area of hingutriguna taila sample at 366nm

PEAK NO	Rf value	Area (AU)	% Area (AU)
1	0.12	101.0	0.59
2	0.35	831.5	4.84
3	0.44	945.9	5.51
4	0.52	4076.4	23.73
5	0.68	8775.6	51.08
6	0.76	244.5	1.42
7	0.88	2206.1	12.83

Total peak number – 07

Total area – 17181 AU

## DISCUSSION

The formulation *Hingutriguna taila* was evaluated for organoleptic and physico-chemical characters. It is a pale reddish brown colloidal liquid with pungent salty taste and smell of garlic is more prominent.

0.7 is the value of loss on drying in the given sample.

The value of saponification is found to be 159.3 which is relatively low compared to castor oil, may indicate less absorption.<sup>10</sup>

Acid value in the sample is 1.7. As acid value is directly proportional to rancidity, more the acid value, more the rate of decomposition of the sample. Here, the obtained result is low, hence the chance of rancidity is low.

Iodine value indicates the measure of unsaturation in an oil. If the unsaturation is greater, the possibility of oil to go rancid also increases. Since, iodine value obtained for *Hingutriguna taila* is 70.2, the chance of getting rancidity is low.

As the refractive index of *Hingutriguna taila* sample is same as that of the refractive index of castor oil which is low, indicates the less chance of rancidification of the *Hingutriguna taila*.

HPTLC is used to assess the presence of bio active constituents in the given sample. HPTLC of *Hingutriguna taila* has got 7 peaks each at 254 nm and 366 nm indicating it's possible active compounds in the matrix, which may be responsible for the therapeutic activity of the same.

## Conclusion

*Hingutriguna taila* is a herbal preparation mentioned in *Ashtanga Hridaya Chikitsasthana Gulma chikitsaadyaya*, which consists of ingredients like *Hingu*, *Saindhava*, *Lasuna rasa*, and *Eranda taila*. The analytical values like loss on drying, saponification, acid value, iodine value, refractive index and HPTLC has been done. In API & AFI, the standard analytical parameters of *Hingutriguna taila* are not available. A monograph has been proposed here to identify and evaluate the quality of *hingutriguna taila*. The current study only analyses a single sample, which may be regarded as a baseline for the manufacture of *Hingutriguna taila*.

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## References

1. R.K. Sharma and Bhagwan Dash, Charaka Samhita, Vol I Sutrasthana, Reprint 2018, Chowkhambha Sanskrit Series Office Varanasi, Ch – 25/40, P – 426.
2. Prof. K.R. Srikantha Murthy, Vagbhata's Ashtanga Hridayam, Vol II Chikitsasthana, Reprint 2014, Choukhambha Krishnadas Academy, Ch – 14/39, P – 407.
3. V.M. Kuttikrishna Menon, Kriyakaumudi, ed 1986, India Press Kottayam, Annexure 2, P – 854.
4. Dr. Brahmanand Tripathi, Sarangadhara Samhita ,ed 1990,Chaukhamba subharati Prakashan, Varanasi, Madhyamakhanda pg no:168
5. Dept of AYUSH ,Ministry of Health and Family Welfare Gpvt of India ,The Ayurvedic Pharmacopoeia of India first edition ,part 2,vol 2,appendix 2,The controller of publications, civil lines ,New Delhi, page 161.
6. Dept of AYUSH ,Ministry of Health and Family Welfare Gpvt of

- India ,The Ayurvedic Pharmacopoeia of India first edition ,part 2,vol 2,appendix 3,The controller of publications, civil lines ,New Delhi, page 221.
7. Dept of AYUSH ,Ministry of Health and Family Welfare Gpvt of India ,The Ayurvedic Pharmacopoeia of India first edition ,part 2,vol 2,appendix 3,The controller of publications, civil lines ,New Delhi, page 223.
  8. Dept of AYUSH ,Ministry of Health and Family Welfare Gpvt of India ,The Ayurvedic Pharmacopoeia of India first edition ,part 2,vol 2,appendix 3,The controller of publications, civil lines ,New Delhi, page 222..
  9. Dept of AYUSH ,Ministry of Health and Family Welfare Gpvt of India ,The Ayurvedic Pharmacopoeia of India first edition ,part 2,vol 2,appendix 3,The controller of publications, civil lines ,New Delhi, page 212..
  10. Kandula Thanuja Reddy etal, Qualitative analysis of marketed castor oil according to Indian pharmacopiea and FSSAI ,World journal of Pharmaceutical research ,vol-8,issue 7,may 2019

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