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Pharmaceutico-Analytical Study of Hingutriguna Taila: An Ayurvedic Formulation

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ABSTRACT
Hingutriguna taila is an Ayurveda formulation discussed by our Acharya Vagbhata in Gulma chikitsa best ama pachaka ,shoolahara and also plays important role in treating Amavata (Rheumatoid arthritis). The Pharmacognostic investigations were carried out in terms of analytical study such as Organoleptic, physicochemical analysis and HPTLC examination by optimizing the solvent systems. This present study deals with analytical study of Hingutriguna taila. Here drugs used in the preparation of formulation are certified authentically and used . This forms the first step in the standardization of a formulation. Herbal drugs, singularly or in combinations contain numerous compounds in complex matrices plation reparation of formu in which no single active constituent is responsible for the overall efficacy. The present work will provide referential information for the correct identification and standardization of the crude drug and will ensure the use of only genuine and uniform material in preparation of Hingutriguna taila in future. These findings will be useful in establishing quality control standards and standardization of Hingutriguna taila in future.Result of Phytochemical study of Hingutriguna taila reveals the that the HPTLC profile generated in this particular study can be considered as a preliminary tool ascertaining the authenticity of Hingutriguna taila.
Keywords: *Hingutriguna taila, Pharmacognosy, HPTLC.*

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INTRODUCTION

Preparation of various kinds of medicated taila(oils) and ghrita(ghee) know as Sneha kalpana having comparatively longer shelf life .our Acharyas have discussed about the use of medicated oil and ghee in various diseases except Urusthamba, specially indicated in Vata Vyadhis. Ayurveda gives importance to both Antahparimarjana chikitsa (internal purification) and Bahirparimarjana chikitsa (external purification). Bahirparimarjana chikitsa like, lepa (paste), upanaha (poultice), udvartana (dry powder massage), abhyanga (massage) etc. Hingutriguna taila helps in improving digestion and balances Vata.It is frequently used in the treatment of a Amavata which is called as Rheumatoid arthritis.This taila is given internally 5ml-10ml before food daily for a period of one month.This taila includes Hingu,Eranda taila,Saidhava lavana and Rasona [1].

As the world's population is nearing 8billion, with this rate of growth, 3/4th of the world's population can't afford the products of western pharmaceutical industries. Therefore, they have to rely upon the traditional medicine, which are derived from plants [2-3]. One third of all pharmaceuticals are of plant origin. Though considerable advances are made in the pharmaceutical sciences, but the quality control and quality assurance still remain a challenge because of the high variability of chemical components involved. Many preparations have been mentioned in Ayurvedic text books for the treatment of Amavata (Rheumatoid arthritis). Hingutriguna taila is one such known formulation [4-8].

The present communication reports the Physiochemical analysis and HPTLC analysis. The challenge ahead of this is to authenticate the therapeutic efficacy and safety of the plant, using standard methods

MATERIAL AND METHODS

COLLECTION OF SAMPLE

The Crude drugs mentioned in Astanga Hrdaya in Gulma chikitsa for the preparation of Hingutriguna taila were collected from Pavamana pharmacy and drug authentication done [4]. The crude drugs used in taila preparation are given in Table 1.according to them.

CHEMICALS AND INSTRUMENTS

Compound microscope, glass slide, cover slip, watch glass, other common glass ware were the basic apparatus and instruments used for the study. The solvents used for extraction includes Ethanol, Ethyl acetate, Glycerine, HCL and Sodium hydroxide were of analytical grade.

Chromatographic Analysis HPTLC

Sample preparation for HPTLC

Sample obtained in the procedure for the determination of unsaponifiable matter is dissolved in 10 ml of chloroform this was followed for the sample of Hingutriguna taila, and chloroform soluble portion was used for HPTLC.

HPTLC [8]:

3, 6, 9µl of the chloroform fraction of samples of Hingutriguna taila was applied on a precoated silica gel F_{254} on aluminum plates to a band width of 8mm using Linomat 5 TLC applicator. The plate was developed in Toluene – Ethyl acetate (9:1) and the developed plates were visualized under short UV, long UV and after derivatization in vanillin-sulphuric acid spray reagent and scanned under UV 254nm, 366nm and 620nm (Post derivatisation). Rf, color of the spots and densitometric scan were recorded.

RESULTS

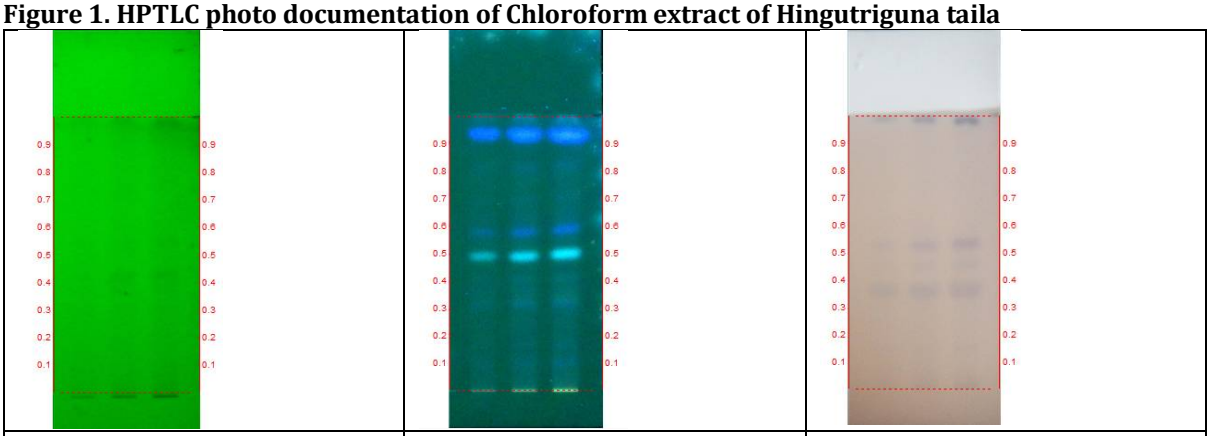
Table no 1. ORGANOLEPTIC PARAMETERS OF HINGUTRIGUNA TAILA

SLNO	PARTICULARS	HINGUTRIGUNA TAILA
1	Appearance	Translucent Viscous Liquid
2	Colour	Greenish blue
3	Odour	Pleasant odour

Table no 2. PHYSIOCHEMICAL PARAMETERS OF HINGUTRIGUNA TAILA

SLNO	PARAMETERS	RESULTS
1	ACID VALUE	6.03-6.32ch glass
2	Saponification value	148.04-151.4
3	pH	7.7
4	Specific Gravity	0.9
5	Viscosity	0.01428
6	Weight	1.26
7	PEROXIDE VALUE	6
8	Rancidity	Oil is not oxidized

Figure 1. HPTLC photo documentation of Chloroform extract of Hingutriguna taila



Short UV	Long UV	Post derivatisation

Track 1 - **Chloroform extract of Hingutriguna taila**– 3µl
Track 2 - **Chloroform extract of Hingutriguna taila**– 6µl
Track 3 - **Chloroform extract of Hingutriguna taila**– 9µl

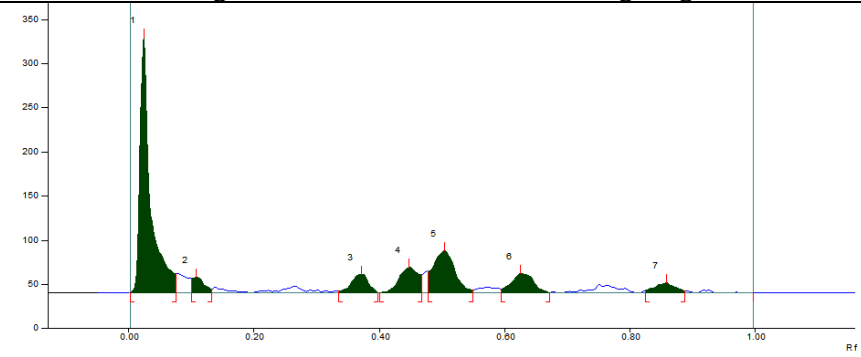
Solvent system – Toluene: Ethyl acetate (9.0: 1.0)

Table 1: R_f values of sample of Hingutriguna taila

Short UV	Long UV	Post derivatisation
-	-	0.15 (Purple)
0.32 (Green)	0.33 (F. blue)	-
-	-	0.36 (Purple)
0.37 (Green)	-	-
0.43 (Green)	0.42 (F. blue)	0.42 (Purple)
-	0.50 (F. aqua blue)	-
0.54 (Green)	-	0.53 (Purple)
-	0.60 (F. blue)	-
-	0.68 (F. blue)	-
-	0.82 (F. blue)	-
-	0.93 (F. blue)	-

*F – Fluorescent; L –Light; D – Dark

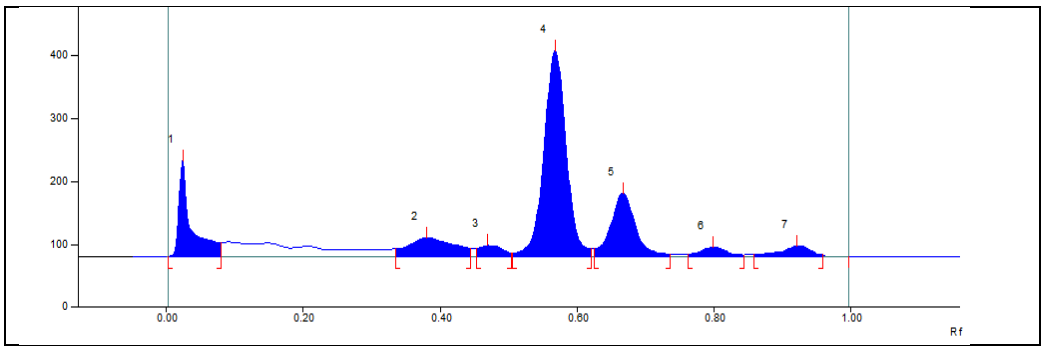
Figure 2. Densitometric scan of Hingutriguna taila



Track 7, ID: Hingutriguna taila

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	0.2 AU	0.02 Rf	289.2 AU	66.16 %	0.08 Rf	21.5 AU	3491.0 AU	51.52 %
2	0.10 Rf	16.3 AU	0.11 Rf	17.6 AU	4.02 %	0.13 Rf	4.1 AU	254.9 AU	3.76 %
3	0.34 Rf	1.7 AU	0.37 Rf	21.1 AU	4.83 %	0.40 Rf	0.2 AU	408.7 AU	6.03 %
4	0.40 Rf	0.0 AU	0.45 Rf	28.6 AU	6.54 %	0.47 Rf	20.5 AU	626.5 AU	9.25 %
5	0.48 Rf	24.2 AU	0.50 Rf	47.6 AU	10.89 %	0.55 Rf	3.1 AU	1169.2 AU	17.26 %
6	0.60 Rf	4.4 AU	0.63 Rf	22.1 AU	5.06 %	0.67 Rf	0.1 AU	556.4 AU	8.21 %
7	0.83 Rf	3.0 AU	0.86 Rf	10.9 AU	2.50 %	0.89 Rf	2.2 AU	268.8 AU	3.97 %

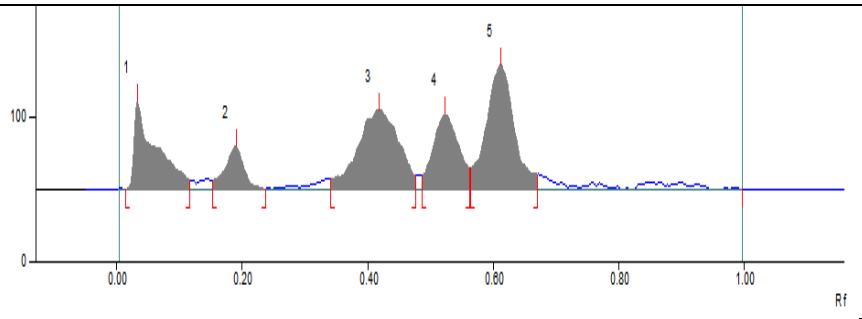
Fig 2a. At 254nm



Track 7, ID: Hingutriguna taila

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	0.4 AU	0.02 Rf	153.0 AU	23.08 %	0.08 Rf	22.0 AU	2011.8 AU	13.23 %
2	0.34 Rf	12.3 AU	0.38 Rf	30.1 AU	4.54 %	0.45 Rf	13.3 AU	1452.5 AU	9.55 %
3	0.45 Rf	13.6 AU	0.47 Rf	17.8 AU	2.69 %	0.50 Rf	4.9 AU	449.8 AU	2.96 %
4	0.51 Rf	4.9 AU	0.57 Rf	328.1 AU	49.48 %	0.62 Rf	12.9 AU	7684.2 AU	50.54 %
5	0.63 Rf	12.3 AU	0.67 Rf	101.2 AU	15.27 %	0.74 Rf	3.5 AU	2608.6 AU	17.16 %
6	0.76 Rf	3.2 AU	0.80 Rf	15.6 AU	2.36 %	0.85 Rf	2.7 AU	437.8 AU	2.88 %
7	0.86 Rf	3.1 AU	0.92 Rf	17.2 AU	2.59 %	0.96 Rf	3.0 AU	559.2 AU	3.68 %

Fig 2b. At 366nm



Track 7, ID: Hingutriguna taila

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	0.2 AU	0.03 Rf	60.7 AU	21.49 %	0.12 Rf	6.5 AU	1515.7 AU	16.84 %
2	0.15 Rf	6.6 AU	0.19 Rf	29.4 AU	10.40 %	0.24 Rf	0.5 AU	649.2 AU	7.21 %
3	0.34 Rf	7.4 AU	0.42 Rf	54.9 AU	19.44 %	0.48 Rf	9.4 AU	2578.9 AU	28.66 %
4	0.49 Rf	10.1 AU	0.52 Rf	51.5 AU	18.26 %	0.56 Rf	14.8 AU	1511.8 AU	16.80 %
5	0.56 Rf	15.0 AU	0.61 Rf	85.9 AU	30.42 %	0.67 Rf	10.5 AU	2743.8 AU	30.49 %

Fig 2c. At 620nm

Remarks

The given sample of Hingutriguna taila has been standardized as per standard testing protocol. Results of HPTLC photo documentation, densitometric scan, R_f values are presented in respective tables and figures. Unsaponifiable matter dissolved in Chloroform was applied in 3 different concentrations 3, 6 and 9µl in Toluene: Ethylacetate (9:1) solvent system with modification adding five drops of Formic acid, The developed plate was scanned at 254nm eluted 7 peaks out of which phytoconstituent of our interest Ferulic

acid was eluted at 0.37 (6.03%), At 366nm 7 peaks were observed Ferulic acid was at Rf 0.38 (9.55%), after derivatisation with spraying reagent VSA (Vanillin sulphuric acid) 5 peaks were witnessed.
Ferulic acid has Rf 0.35±0.03 it has antioxidant, Carbon di-oxide formation reducing property, anti-ulcer benefit, it was also found to be effective in colic and worm infestations.

Table no 3: CRUDE DRUGS OF HINGUTRIGUNA TAILA

SNO	DRUG NAME	HINDI NAME	BOTANICAL NAME	FAMILY	PART USED
1	HINGU	Hing,Hingra	Ferula Assafoetida	Apiaceae	Oleo-gum resin
2	ERANDA TAIL	Erand,Erandi,Arand,Rand	Ricinus Communis	Euphorbiaceae	Root
3	SAINDHAVA	Saindhava/Rock salt			
4	RASONA	Rasun	Allium Sativum	Alliaceae	Bulb

DISCUSSION

The detailed Pharmacognostical study of plant help us to differentiate between closely related species of the same genus or related genera of the same family. It is also the first step to standardize a drug which is the need of the hour. If the plant drugs are adulterated, then the quality of preparation cannot give the desirable result. Any plant which is used medicinally requires detailed study prior to it's because the therapeutic efficacy absolutely depends on the quality of the plant drug used. The pH conventionally represents the acidity & alkalinity [9-11],
Phytochemical tests are used to detect the presence of functional groups, which plays very important role in the expression of biological activity. Present study reveals the presence of tannins, mucilage, ascorbic acid, alkaloids, saponins, glycosides, flavonoids and carbohydrates in the formulation; whereas absence of Sterols/Terpenoids and Starch

CONCLUSION

The above discussion reveals that the characters of the drugs used in Hingutriguna taila are similar as per the references of API. The phytochemical parameters of the drug and the HPTLC profile generated in this particular study can be considered as a preliminary tool ascertaining the authenticity of Hingutriguna taila.

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