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ANALYTICAL STUDY OF *BHIRINGRAJADI TAILA*: AN AYURVEDIC FORMULATION

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ABSTRACT

This study focuses on *Bhiringrajadi Taila*, an Ayurvedic oil-based formulation used for *Nasya* therapy in treating *Timira*, a *Vata*-dominant eye disorder. The research aims to analyze its physical and organoleptic properties, pH, heavy metal content, and microbiological safety. By evaluating these parameters, the study seeks to ensure the formulation's quality, safety, and therapeutic effectiveness for addressing *Urdhvajatrugatarogas*, particularly Timira. The findings will contribute to understanding *Bhiringrajadi Taila's* potential in clinical Ayurvedic practice.

KEYWORDS: Ayurveda, *Bhiringrajadi Taila*, *Timira*, Physiochemical analysis.

INTRODUCTION

Rasashastra and *Bhaishajya Kalpana* are branches of Ayurveda that focus on various aspects of Ayurvedic medicine, including purification, preparation, dosage, and indications. *Snehakalpana* refers to the pharmaceutical process used to create oleaginous (oil-based) medicaments by combining substances like *Kalka, Kwatha,* and *Drava dravyas* in specific proportions. These mixtures undergo a unique heating process for a precise duration to meet certain pharmaceutical criteria essential for therapeutic purposes. This method enhances the solubility of active principles in forms such as *Kalka, Churna*, etc., within substances like *Sneha, Takra, and Kanji.* Ayurvedic texts describe four main types of *Sneha.*[1] *Ghrita, Taila, Vasa, and Majja. Taila* preparations, for instance, involve boiling oil with prescribed *Kashaya* and *Kalka* drugs according to a specific formula, where the proportion is typically one part of *Kalka*, four parts of *Sneha*, and sixteen parts of *Drava dravyas.*

Bhiringrajadi Taila (*Chakradutta Netraroga chikitsa* 59/180) has been selected for *Nasya* purpose. *Nasya* is directly indicated for *Timira Roga* by *Acharya Charaka.*[2] Nasa is a gateway of drug administration in case of *Urdhvajatrugatarogas* as *Nasya* treatment modality work on *Chakshurindriya*. *Timira* is a *Vata Nanatmajvyadhi* so *Vata* is causative factor to manifest the *Timira.*[3] *Sneha* is the best drug to pacify the vitiated *Vata Dosha.*

AIMS AND OBJECTIVES

1. To analyse the physical or the organoleptic character of drug.
2. To find out the pH, heavy metal content and microbiological study of *Bhiringrajadi Taila*

MATERIAL AND METHODS

Collection of Drug: The Raw drugs were collected from the Midback Private Limited Pharmacy, Saharanpur.

Identification and Authentication

The raw drugs were identified and authenticated by Dravyaguna Department of Gurukul Campus Haridwar Uttarakhand Ayurved University and the voucher of the specimen was kept in the department. The final drug was prepared in Midback Private Limited Pharmacy, Saharanpur.

Table No. 1: Ingredients and composition of *Bhiringrajadi Taila.*[4]

Drug	*Botnical Name*	*Family Name*	*Dosha Shamakta*	*Karma*
Bhiringraja	*Eclipta alba*	*Asteraceae*	*Kapha-Vata Shamak*	*Chakshusya, Balaya, Rasayna*
Yasthimadhu	*Glycyrrhiza glabra*	Fabaceae	*Vata-pita Shamak*	*Chakshushya, Dahashamaka, Vedanasthapana, Medhya,Mridurechana,*

				Jeevaniya, Rasayana, Balya
Tila Taila	*Sasamum indicum*	Pedaliaceae	*Vata Shamaka*	*Balya, Sthairyakara, Brimhana, Deepana, Shula prashamana, Bastikarmartha- Pathya.*

BHIRINGRAJA

YASTIMADHU

TILA TAILA

Method of Preperation[5]

The *Bhiringrajadi Taila* was prepared by classical method of *Tailapaka.*

For *Tailapaka*

1. *Tila Taila* – 3lit
2. *Bhiringraj Rasa* – 12 kg
3. *Yastimadhu Kalka* – 270gm.

- Preparation of *Bhiringaraj Rasa*: Fresh juice obtained from macerated whole plant of *E. alba* was considered as *Bhiringaraj Rasa*.

- Preparation of *Kalka*: Each *Kalka Dravya* was taken in a vessel and mixed, followed by addition of sufficient amount of water until a uniform paste was obtained.

- *Murchita Tila Taila* was indirectly heated on a mild flame with *Bhiringa Rasa* and *Yastimadhu Kalka*. Mixture was stirred intermittently till it became slimy.

- The mixture was kept standing overnight. Next day, the heating was continued till the mixture attained *Sneha Siddhi Lakshana*.

- Finally, the mixture was filtered when hot through muslin cloth and stored in bottle containers until use.

Preparation *Bhiringaraja Rasa.*

Table No. 2: Pharmacodynamics of *Bhiringrajadi Taila.*

DRUG	*RASA*	*Guna*	*Virya*	*Vipaka*	*Part Used*	*Ratio*
Bhiringraja	*Katu Tikta*	*Ruksha, Laghu*	*Ushna*	*Katu*	*Panchanga &* seed	*1*
Yasthimadhu	*Madhur*	*Guru snigdha*	*Sheeta*	*Madhur*	Root	0.09
Tila Taila	*Madhur*	*Guru, Snigdha*	*Ushna*	*Madhur*	Seed	4

Table No. 3: Organoleptic Parameters of *Bhiringrajadi Taila.*

Properties	***Bhiringrajadi Taila***
Colour	Light Brown
Odour	Characteristic
Texture	Viscous
Taste	-

PHYSIOCHEMICAL PROPERTIES OF *Bhiringrajadi Taila*

Various tests for physical and chemical parameters of *Bhiringrajadi Taila* was carried out such as acid value, specific gravity, refractive index, peroxide value, saponification value, iodine value, mineral oil.

Table No. 4: Physiochemical Parameters of *Bhiringrajadi Taila.*

Test Parameters	**Result**
Specific gravity at 40 degree C	0.762
Refractive index at 40 degree C	1.4646
Acid Value	1.08
Peroxide value	2.20
Saponification value	196.22
Iodine value	103.01
Mineral oil	Absent

MICROBIOLOGICAL ANALYSIS

Bhiringrajadi Taila was evaluated for the total fungal count and total bacterial count.

Table No. 5: Microbiological limit test of *Bhiringrajadi Taila.*

Microorganism	**Result**
Total Bacterial Count (cfu/ml)	<10
Yeast and Mould count (cfu/ml)	<10
E. coli	Absent
S. aureus	Absent
P. aeruginosa	Absent
Salmonella sp.	Absent

AFLATOXINS

Table no. 6: Aflatoxins in *Bhiringrajadi Taila.*

B1 (ppb)	Complies
B1+B2+G1+G2 (ppb)	Complies

HEAVY METAL IN *BHIRINGRAJADI TAILA*

Heavy metals such as lead (Pb), cadmium (Cd), mercury (Hg), and arsenic (As) were detected using spectrometery. Every heavy metal in *Taila* is within the normal range.

Table No. 7: Heavy Metals in *Bhiringrajadi Taila.*

Total Heavy metal (mg/kg)	***Result***
Lead (Pb) ppm	1.42
Cadmium (Cd) ppm	0.05
Arsenic (As) ppm	<0.50
Mercury (Hg) ppm	<0.13

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TEST REPORT

Sample	**Common Name**	**: TAILA**		**Report No.**	**: AYF20230905074**
	Generic Name	**: NS**		**Report Dated**	**: 12/09/2023**

Batch/Lot No.	Pack Size	Mfg. Date	Exp. Date	Batch Size	Sample Quantity
NS	NS	NS	NS	NS	100 ml

Condition (If provided) : NS **Sample reference** : NS

Sample Manufactured By : NS **Mfg. License No. of Customer** : NS

Sample Supplied By : NS

Sample Submitted By (Name & Address of Customer) : Dr. Parul Rawat, P.G.College Rishikul Haridwar U.K

Sample received on/ : 05/09/2023 **Analysis started on** : 05/09/2023 **Analysis completed on** : 12/09/2023

Reference to Protocol : The Ayurvedic Pharmacopoeia of India.

S. No.	Test Parameters	Results	Specifications		Method Reference
			Minimum	Maximum	
01	Description	Medicated oil, light brown in colour with characteristic odour.			Visual
02	Specific gravity at 40°C	0.762	0.760	0.771	API
03	Refractive index at 40°C	1.4646	1.4646	1.4659	API
04	Acid value	1.08		3.0	API
05	Peroxide value	2.20		6.0	API
06	Saponification value	196.22	188	200	API
07	Iodine value	103.01	88	106	API
08	Mineral Oil	Absent	Should be absent		API
09	**Aflatoxins**				
	B1 (ppb)	Complies		2	API
	B1+B2+G1+G2 (ppb)	Complies		5	API
10	**Heavy Metals**				
	Lead (Pb) ppm	1.42		10.0	API
	Cadmium (Cd) ppm	0.05		0.3	API
	Arsenic (As) ppm	<0.50		3.0	API
	Mercury (Hg) ppm	<0.13		1.0	API

Authorized Signatory
(Balwant Singh)

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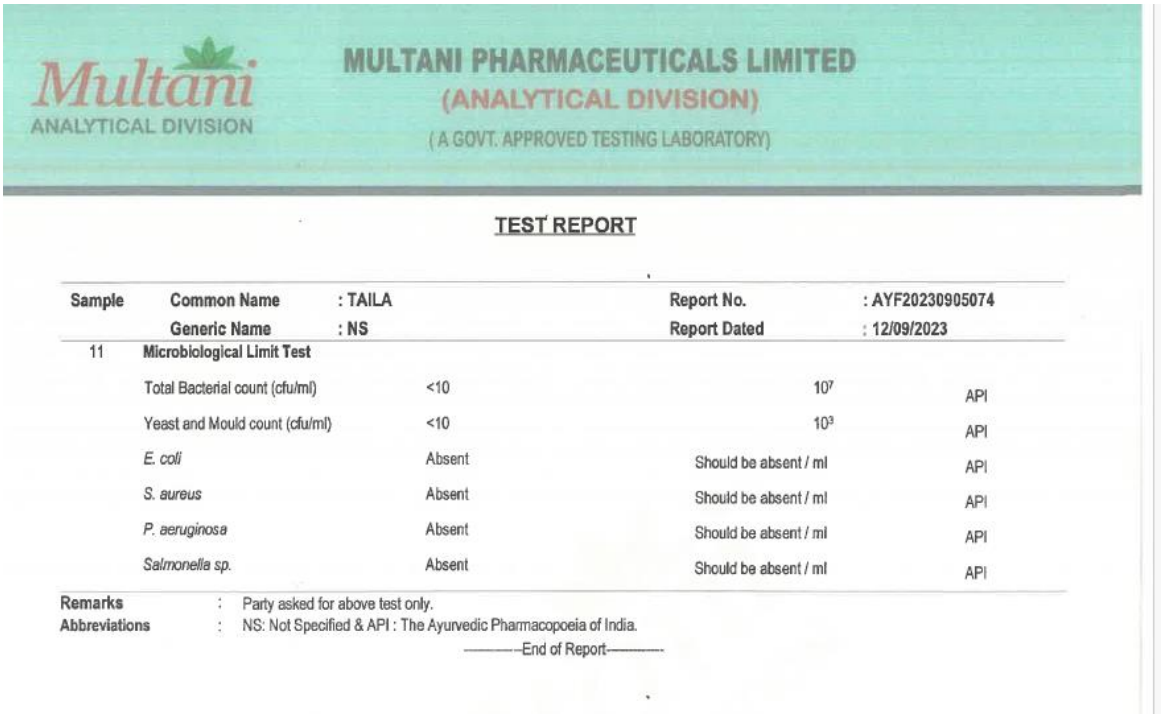

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TEST REPORT

Sample	Common Name : TAILA		Report No.	: AYF20230905074
	Generic Name : NS		Report Dated	: 12/09/2023
11	**Microbiological Limit Test**			
	Total Bacterial count (cfu/ml)	<10	10^7	API
	Yeast and Mould count (cfu/ml)	<10	10^3	API
	E. coli	Absent	Should be absent / ml	API
	S. aureus	Absent	Should be absent / ml	API
	P. aeruginosa	Absent	Should be absent / ml	API
	Salmonella sp.	Absent	Should be absent / ml	API

Remarks : Party asked for above test only.
Abbreviations : NS: Not Specified & API : The Ayurvedic Pharmacopoeia of India.

----------End of Report----------

RESULT AND DISCUSSION

The pharmacological assessment of the medication was prepared on the final form of drug i.e. *Bhiringrajadi Taila*. The prepared drug's chemical and physical properties are the subjects of the analytical evaluation. The readings were within the normal range as specified by the WHO standards for herbal preparation.[6] It was determined that *Bhiringrajadi Taila* was safe to use based on the analysis above.

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