

# Analytical Study of Pathaadi Taila: An Ayurvedic Oil Based Formulation

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**Abstract**—Pathaadi Taila is a classical Ayurvedic formulation primarily used in Nasya therapy for managing disorders of the head and neck region, particularly Chronic Rhinosinusitis. It is composed of medicinal herbs such as Paatha, Haridra, Moorva, Daru Haridra, Pippali, Jaatipallav, and Danti, processed in a base of Tila Taila.

This study presents an analytical evaluation of Pathaadi Taila with an aim to standardize its formulation through organoleptic, physicochemical, and phytochemical parameters. Parameters such as pH, refractive index, specific gravity, saponification value, iodine value, and acid value were assessed to ensure quality, stability, and efficacy of the oil. Additionally, High Performance Thin Layer Chromatography (HPTLC) and other qualitative phytochemical tests were performed to detect the presence of key bioactive compounds.

The analytical findings support the therapeutic potential of Pathaadi Taila in inflammatory and infective conditions of the upper respiratory tract. This study also emphasizes the importance of standardization in Ayurvedic pharmaceuticals to validate traditional formulations in the context of modern pharmacological parameters.

**Index Terms**—Pathaadi Taila, Nasya, Chronic rhinosinusitis, Peenasa, anti-inflammatory, sinusitis

## I. INTRODUCTION

The purpose of this article is to conduct a detailed analytical study of *Pathaadi Taila*, focusing on its preparation, therapeutic properties, and chemical composition. The formulation is typically used in the management of *Dushta Pratishyaya*<sup>1</sup> (Chronic Rhinosinusitis), Migraine, Sinusitis and other head-

related diseases that are aggravated by imbalances in the *Kapha and Vata doshas*. *Pathaadi Taila* is a polyherbal oil preparation which is described in *Charak Samhita*, *Chikistasthana* in *Trimarmiyedadhaya*<sup>2</sup>, containing ingredients like *Haridra*, *Daruharidra*, and *Moorva* further enhance the formulation *Kandughana*, *Vednasthana* and *Shothahar* effects contributing to the resolution of chronic nasal infection and hypersensitivity.

The *Prakshepa Dravyas* in the formulation work synergistically to alleviate *Kapha* and relieve congestion, restore nasal patency and improve olfaction. Therefore, *Pathaadi Taila* provides a targeted therapeutic approach in the management of *Dushta Pratishyaya* (Chronic Rhinosinusitis) by delivering medicine directly to the site of pathology.

## II. OBJECTIVE

a) To analyse traditional and modern evidence regarding *Pathaadi Taila Nasya* in Chronic Rhinosinusitis

## III. MATERIALS AND METHODS

### Collection of Raw Materials

The raw drugs for the study were procured from the Herbal Automation Kankhal, Haridwar, Uttarakhand. The final product that is *Pathaadi Taila* was prepared in GMP certified Nagarjuna Ayurvedic Pharmacy, Dehradun, Uttarakhand. The ingredients were identified by the PG Department of *Dravyguna*, Rishikul Campus, Haridwar.

Table 1: Composition of *Pathaadi Taila*.

SR.NO.	Name of Drug	Botanical Name	Family	Quantity
1.	Haridra <sup>3</sup>	Curcuma longum	Zingiberaceae	250gm
2.	Daruharidra <sup>4</sup>	Berberis aristata	Berberidaceae	250gm
3.	Moorva <sup>5</sup>	Marsdenia tenacissima	Asclepiadeaceae	250gm
4.	Pippali <sup>6</sup>	Piper longum	Piperaceae	250gm
5.	Danti <sup>7</sup>	Baliospermum Montanum	Euphorbiaceae	250gm
6.	Jaatipallav <sup>8</sup>	Jasminum sambac	Oleaceae	250gm
7.	Paatha <sup>9</sup>	Cissampelos Pareria	Menispermaceae	250gm



Figure 1.  
*Haridra*



Figure 2.  
*Daruharidra*



Figure 3.  
*Moorva*



Figure 4.  
*Pippali*



Figure 5. *Danti*



Figure 6. *Jaatipallav*



Figure 7. *Patha*

Method of preparation of *Pathaadi Taila*

*Pathaadi Taila* was prepared by first coarsely crushing 250 g of the combined herbal drugs—*Patha*, *Haridra*, *Moorva* root, *Daruharidra*, *Pippali*, *Jatipallav* leaves, and *Danti* root. One-fourth of this mixture (≈62.5 gm) was ground into a fine paste (*Kalka*), while the remaining portion was boiled in 4 litres of water to yield a decoction reduced to approximately 1 litre. The decoction was then combined with 1 litre of pre-processed and *Murchita Tila Taila* (which was done with *Manjistha*, *Haridra*, and *Nagamotha*) and the prepared *Kalka*, and the mixture was gently cooked over low to medium heat. The oil was considered properly infused when bubbling slowed, the *Kalka* no

longer adhered to fingers, and the characteristic medicinal aroma was released. After cooling, the medicated oil was strained and stored in a clean container, resulting in therapeutically potent *Pathaadi Taila* prepared according to classical *Sneha Paka* and *Tila Murchana* principles.



FIG. FINAL PRODUCT

Analytical study

Prepared final product i.e. *Pathaadi Taila* was analysed by employing various analytical parameters.

Organoleptic study

Organoleptic characteristics like colour, appearance of *Pathaadi Taila* was observed.

Physiochemical analysis

Table 2: Organoleptic parameters of *Pathaadi Taila*

PARAMETER	RESULT
Colour	Pale yellow
Appearance	Oily liquid
Peroxide value	17.53meq/kg
Mineral oil	Absent
Rancidity	Present
Moisture	0.06%

Table 3: Microbiological analysis of *Pathaadi Taila*

PARAMETER	RESULT
Total microbial plate count	298 cfu/ml
Total yeast & mould count	35 cfu/ml
S. aureous	Absent
P. aeruginosa	Absent
Salmonella	Absent
E. coli	Absent

Table 4: Heavy metals analysis of *Pathaadi Taila*

Heavy metals	Value in ppm
Arsenic	0.02
Lead	0.56
Cadmium	0.01

Mercury	0.04
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High-Performance Thin Layer Chromatography (HPTLC) :

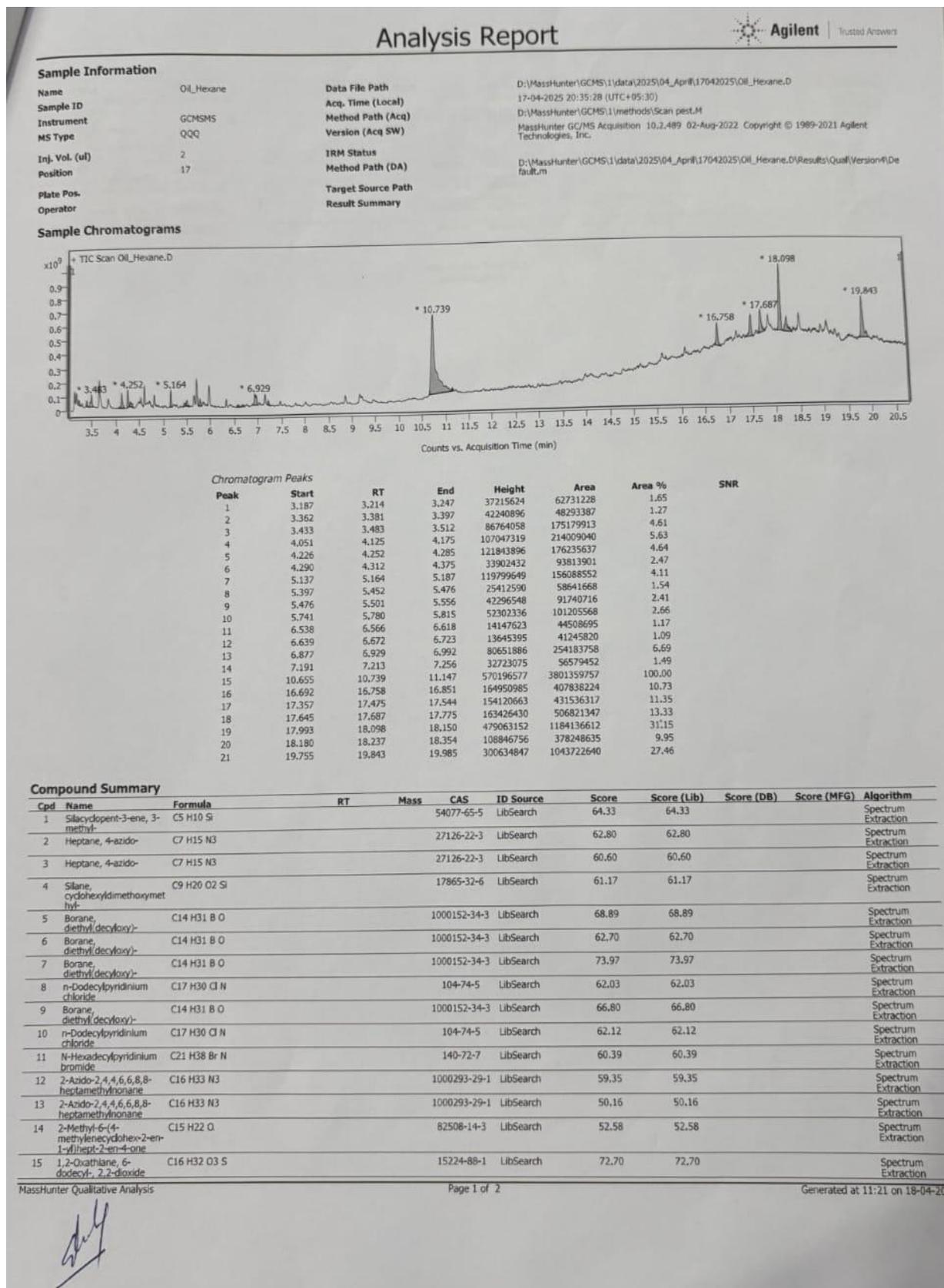
Definition: HPTLC is a sophisticated, automated version of traditional Thin Layer Chromatography (TLC), used for separating, identifying, and quantifying compounds in complex mixtures. It is especially valued for its speed, precision, and ability to analyse multiple samples simultaneously under identical conditions.

HPTLC involves the use of high-quality precoated plates with a uniform, small particle size of the stationary phase (commonly silica gel). The sample is applied precisely using an automatic applicator, which ensures accuracy and reproducibility. The plate is then developed in a controlled solvent system (mobile phase) inside a specially designed chamber. After development, the separated components are visualized under UV light or by using specific chemical reagents (derivatization). The separated spots or bands are scanned using a densitometer or scanner, allowing quantitative as well as qualitative analysis.

Preparation of test solution: Mass Scanning of 20ml of sample by GCMSMS.

Take 0.5 micro litre sample in 10 ml volumetric flask and makeup up to mark by 1:1 Ethyl acetate : Hexane Vortex the sample for 20 minute then take supernatant layer for the mass scanning of Sample.

Preparation of spray reagent:





## Enviro Calibration Lab Pvt. Ltd.

S 2&3, Phase-II, RICO Ind. Area, Bhawadi, Dist. Alwar (Raj.) 301019  
Govt. Approved Laboratory | ISO 9001 | ISO 14001 | ISO 45001

### Test Report

<b>Sample Name</b> : Pathaadi Oil	<b>Report No</b> : ECL/FA/2504069002
<b>Submitted By</b> : Vidhi	<b>Date of Receipt</b> : 09/04/2025
<b>Period of Analysis</b> : 09/04/2025-19/04/2025	<b>Report Date</b> : 19/04/2025
<b>Sample Qty</b> : 20ml	

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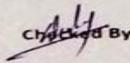
RESULTS OF ANALYSIS

<b>Reference to Protocol</b>	IHS	
<b>Description</b>	Pale yellow colored oily liquid	
<b>Identification (By TLC)</b>	Complies	
<b>Moisture</b>	0.06%	
<b>Acid value</b>	1.54	
<b>Peroxide Value</b>	17.53meq/kg	
<b>Rancidity</b>	Present	
<b>Heavy metals</b>		<b>Limits</b>
<b>Arsenic</b>	0.02ppm	NMT-3ppm
<b>Lead</b>	0.56ppm	NMT-10ppm
<b>Cadmium</b>	0.01ppm	NMT-0.3ppm
<b>Mercury</b>	0.04ppm	NMT-1ppm
<b>Microbiology Contamination</b>		
<b>Total microbial plate count</b>	298cfu/ml	NMT-10 <sup>6</sup> cfu/ml
<b>Total yeast &amp; mould count</b>	35cfu/ml	NMT-10 <sup>3</sup> cfu/ml
<b>S. aureous</b>	Absent/ml	
<b>P. aeruginosa</b>	Absent/ml	
<b>Salmonella</b>	Absent/ml	
<b>E. coli</b>	Absent/ml	

\*\*\*\*End of Test Report\*\*\*\*

**Remarks:** Party asked for above test only

Checked By





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#### IV. DISCUSSION

The analytical study of *Pathaadi Taila* confirmed its safety, stability, and effectiveness in the management of *Dushta Pratishyaya* (Chronic Rhinosinusitis) via *Nasya Karma*.

Organoleptic evaluation showed that the oil is yellowish-brown in colour, with a characteristic odour, unctuous appearance, and a bitter-pungent taste—consistent with the properties of its ingredients. The pH was within the acceptable range (slightly acidic to neutral) for safe nasal administration. Heavy metal analysis revealed that levels of lead, arsenic, cadmium, and mercury were below permissible limits, confirming the safety of the formulation. To ensure

identity and quality, HPTLC profiling was carried out, establishing the chemical fingerprint of active constituents from ingredients like *Haridra*, *Pippali*, and *Daruharidra*.

The combined effect of anti-inflammatory, mucolytic, and antimicrobial properties of the ingredients and the effective absorption through nasal mucosa makes *Pathaadi Taila* a safe and potent option for managing chronic sinus conditions.

#### V. CONCLUSION

*Pathaadi Taila* is a classical *Ayurvedic* oil formulation with consistent physicochemical properties, indicating its stability, purity, and suitability for therapeutic use.

Analytical parameters confirm that it is free from heavy metals, ensuring safety for prolonged application. The presence of ingredients like *Haridra*, *Daruharidra*, *Pippali*, and *Moorva* contributes to its strong antifungal and antibacterial action, making it effective in managing conditions like chronic rhinosinusitis and other local infections. With its well-balanced formulation, safety profile, and broad-spectrum antimicrobial action, *Pathaadi Taila* demonstrates its full potential as a holistic therapeutic agent in both preventive and curative approaches. This study highlights the need for further clinical evaluation and supports the integration of traditional *Ayurvedic* formulations into modern evidence-based practice.

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