



**PHARMACOGNOSTICAL AND PHYSICO-CHEMICAL EVALUATION OF
JEEVANTYADI LAUHA YOGA - AN AYURVEDIC POLYHERBAL FORMULATION**

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ABSTRACT

In Ayurveda, either Single or multiple herbs are used for the treatment. When combining the multiple herbs in a particular ratio, its active constituents act in synergistic manner and give a better therapeutic effect. In this study *Jeevantyadi lauha yoga*, an *Anubhoota yoga* is a combination of *Jeevanti*, *Triphala* (*Haritaki*, *Bibhitaki*, *Amalaki*), *Yastimadhu*, *Shatavari*, *Bhringaraja* and *Lauha bhasma* are used for evaluation. The drug having *Rasayana*, *Chakusya*, *Drishtishaktivardhaka*, Antioxidant, Immunomodulatory and Vasodilator property. For the first time the above mentioned herbal compound in the powder form was subjected to pharmacognostical and physico-chemical analysis. The microscopic evaluation of the powder showed the Prismatic crystal of *Jeevanti*, Oil globules of *Amalaki*, Rosette crystal of *Bibhitaki*, Scleroides of *Haritaki*, Accicular crystal of *Shatavari*, Prismatic crystals of *Bhringaraja*, Starch grains of *Yastimadhu* etc. Physico-chemical evaluation shows it has low moisture content and high water soluble extractive value, indicating better stability and active constituents are more soluble in water. High Performance Thin Layer Chromatography (HPTLC) showed a difference of results when the sample scanned at two wavelengths i.e. 254 nm and 366 nm having 08 and 05 spots respectively.

KEYWORDS: HPTLC, *Jeevantyadi lauha yoga*, Pharmacognosy, Physico-chemical analysis.

INTRODUCTION

In Ayurveda, herbals are known to regulate bodily functions, cleanse, nourish and also provides therapeutics to human body. In many conditions, active phytochemical constituents of individual plants are insufficient to achieve the desirable therapeutic effects. Hence to achieve greater therapeutic efficacy, the Ayurvedic literature highlighted the concept of polyherbalism. The active constituents in polyherbal combination act in synergistic manner and show higher efficacy against a disease. So by focusing on importance of polyherbalism and its clinical significance, *Jeevantyadi lauha yoga* an *Anubhoota yoga* from the *Shalakya Tantra* department of I.P.G.T & R.A, Jamnagar has been choosen. *Jeevantyadi lauha yoga* is combination of *Jeevanti*, *Triphala* (*Haritaki*, *Bibhitaki*, *Amalaki*), *Yastimadhu*, *Shatavari*, *Bhringaraja* and *Lauha bhasma* in powder form which is administered as a *Rasayana* therapy in patients of Retinitis pigmentosa (an inherited disorder) to delay degenerative changes of the retina leading to progressive visual loss. The combination of herbs chosen for this study has solid

backing of previous researches for their most important individual activities viz. Adaptogenic properties of *Haritaki*, *Amalaki*^[1]; antioxidants activity of *Amalaki*, *Yastimadhu*, *Bibhitaki*^[2]; Diuretic, antioxidant, adaptogenic, immunomodulatory activity of *Shatavari*^[3]; Antioxidant and immunomodulatory activity of *Bhringaraja*.^[4] Hence, present study deals with the pharmacognostical identification of ingredients of *Jeevantyadi lauha yoga* and its physico-chemical analysis. Pharmacognostical study consisting of both macroscopic and powder microscopy of raw drugs revealed the quality and genuineness of the constituents of *Jeevantyadi lauha yoga*.

MATERIALS AND METHODS

Collection and authentication of raw drugs

Ingredients of *Jeevantyadi lauha yoga* (Table1) were procured from the institutional pharmacy. Ingredients were identified and authenticated in Pharmacognosy laboratory, IPGT and RA, Gujarat Ayurved University, Jamnagar. Their characteristics were confirmed by

correlating their morphological and microscopical features with relevant literature.

Method of preparation of *Jeevantyadi lauha yoga*

Equal quantities of the obtained fruits, stems, roots/rhizomes, leaves, whole plant of herbal drugs enlisted from 1 to 7 (Table 1) were shade dried and made into fine powder separately with the help of mechanical grinder. The obtained fine powder and *Lauha bhasma* sieved through 85# and mixed together mechanically to get homogenous mixture. (Table-1).

Pharmacognostical evaluation of ingredients of *Jeevantyadi lauha yoga*

Organoleptic study

Jeevantyadi lauha yoga subjected for various sensory characters like color, taste, odour, etc. and the findings were carefully noted.^[5]

Microscopic Study

Finished product dissolved in small quantity of distilled water and studied separately with and without staining. The microphotographs were taken under Carl-zeiss Trinocular microscope attached with camera.^[6]

Physico-chemical analysis

Jeevantyadi lauha yoga was analyzed using various standard physico-chemical parameters such as Loss on drying, water soluble extract, alcohol soluble extract etc were assessed.^[7]

High Performance Thin Layer Chromatography (HPTLC)

HPTLC was performed as per the guideline provided by API. Methanolic extract of drug sample was used for the spotting. HPTLC was performed using Toluene+ Ethyl

acetate+ Formic acid (7:2:0.5) solvent system and observed under visible light. The colour and R_f values of resolved spots were noted.^[8]

RESULTS

Pharmacognostical evaluation: Organoleptic evaluation

Results of various parameters such as colour, odour, taste, touch, texture and sound of the finished products (powder) are shown in Table 2, Plate A.

Diagnostic microscopic characters of *Jeevantyadi lauha yoga* under the microscope observed are Epicarp cells of *Amalaki*, Oil globules of *Amalaki*, Silica deposition of *Amalaki*, Accicular crystal of *Shatavari*, Trichome of *Bibhitaki*, Pitted Scleroides of *Bibhitaki*, Rosette crystal of *Bibhitaki*, Scleroides of *Haritaki*, Oil globules of *Haritaki*, Pitted vessels of *Haritaki*, Lignified fibres of *Jeevanti*, Prismatic crystal of *Jeevanti*, Pitted stone cells of *Jeevanti*, Annular vessel of *Shatavari*, Scalariform vessel of *Shatavari*, Acicular crystal of *Shatavari*, Rhomboidal crystal of *Yastimadhu*, Starch grains of *Yastimadhu*, Scleroides of *Yastimadhu*, Starch grains of *Bhringaraja*, Prismatic crystals of *Bhringaraja*, warty trichome of *Bhringaraja*. Plate-B (1-21).

Physico-chemical analysis

Results of physicochemical analysis like loss on drying, water soluble extract, alcohol soluble extract etc are shown in Table 3.

High Performance Thin Layer Chromatography (HPTLC)

The colour and R_f values of resolved spots of HPTLC were noted. (Table-4) Plate-C.

Table:-1 Ingredient of *Jeevantyadi lauha yoga*

Sr.no.	Ingredients	Latin name	Part used	Qty
1.	<i>Jeevanti</i>	<i>Laptadenia reticulata</i> (Retz.) W&A	Root	1
2.	<i>Haritaki</i>	<i>Terminalia Chebula</i> Retz.	Fruit	1
3.	<i>Bibhitaki</i>	<i>Terminalia bellirica</i> Roxb.	Fruit	1
4.	<i>Amalaki</i>	<i>Embllica offlcinalis</i> Gaertn.	Fruit	1
5.	<i>Yastimadhu</i>	<i>Glycyrrhiza glabra</i> L.	Root	1
6.	<i>Shatavari</i>	<i>Asparagus racemosus</i> Willd.	Root tuber	1
7.	<i>Bhringaraja</i>	<i>Eclipta alba</i> (L.) Hassk	Whole plant	1
8.	<i>Lauha Bhasma</i>	Ferric oxide	----	1

Table:-2 Organoleptic Characters of *Jeevantyadi lauha yoga*

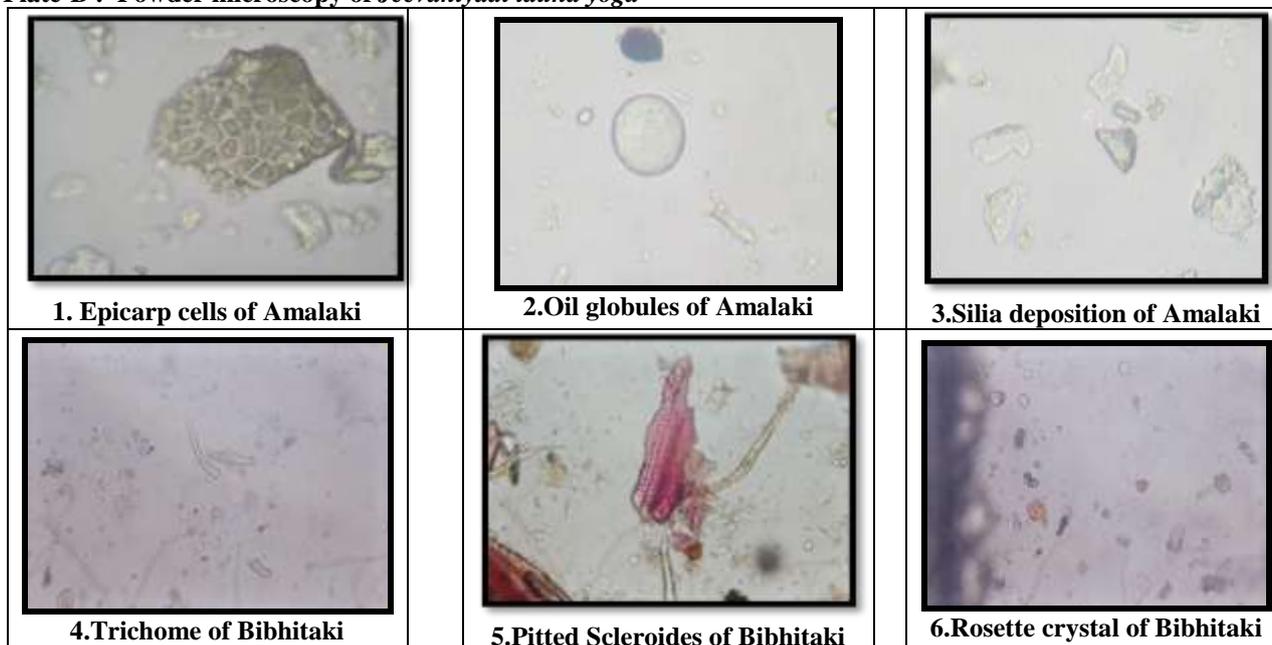
Sr.no	Various parameters	Results
1	Colour	Dark ash brown
2	Odour	Slightly Aromatic
3	Taste	Sour astringent
4	Touch	Fine coarse
5	Texture	Soft
6	Sound	Crispy

Table:-3 Physico-chemical Parameters of *Jeevantyadi lauha yoga*

Sr.No.	Analytical Parameters	Results
1	Loss on drying	2.12% w/w
2	Water soluble extract	33.7% w/w
3	Methanol soluble extract	26.7% w/w
4	pH	6.5
5	Particle size	
	Below 60 mesh	2.62%
	Between 60-85 mesh	16.15%
	Between 85-120 mesh	20.49%
	Above 120 mesh	60.74%

Table 4: HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY (HPTLC)

Sample	Solvent System	Visualize under long UV (254 nm)		Visualize under long UV (366 nm)	
		No. of spots	R _f Value	No. of spots	R _f Value
<i>Jeevantyadi lauha yoga</i>	Toluene: Ethyl acetate: Formic acid = 7:2:0.5	8 spots	22.30, 12.94, 11.85, 10.34, 11.01, 5.42, 20.36, 5.77	5 spots	32.40, 13.46, 15.54, 18.82, 19.78

Plate A: *Jeevantyadi lauha yoga* powderPlate-B : Powder microscopy of *Jeevantyadi lauha yoga*

		
<p>7. Scleroides of Haritaki</p>	<p>8. Oil globules of Haritaki</p>	<p>9. Pitted vessels of Haritaki</p>
		
<p>10. Lignified fibres of Jeevanti</p>	<p>11. Prismatic crystal of Jeevanti</p>	<p>12. Pitted stone cells of Jeevanti</p>
		
<p>13. Annular vessel of Shatavari</p>	<p>14. Scalariform vessel of Shatavari</p>	<p>15. Accicular crystal of Shatavari</p>
		
<p>16. Rhomboidal crystal of Yastimadhu</p>	<p>17. Starch grains of Yastimadhu</p>	<p>18. Scleroides of Yastimadhu</p>
		
<p>19. Prismatic crystals of Bhringaraja</p>	<p>20. Starch grains of Bhringaraja</p>	<p>21. Warty trichome of Bhringaraja</p>

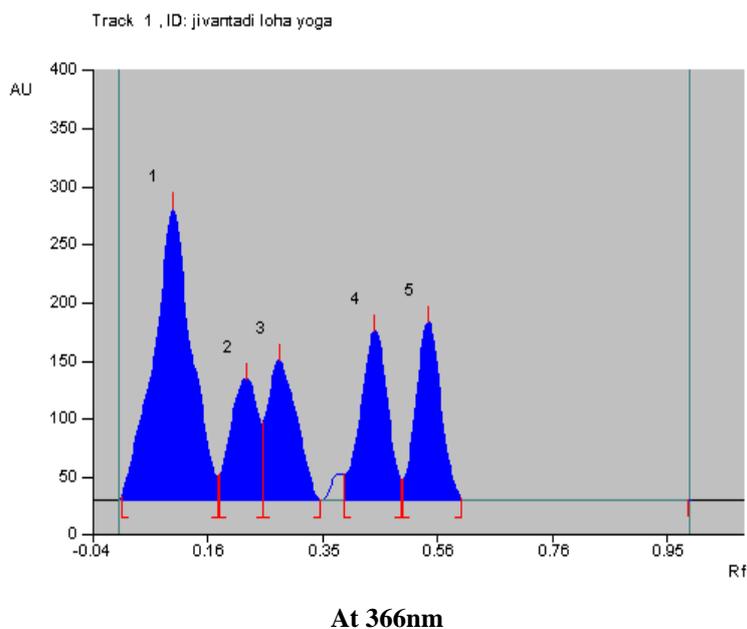
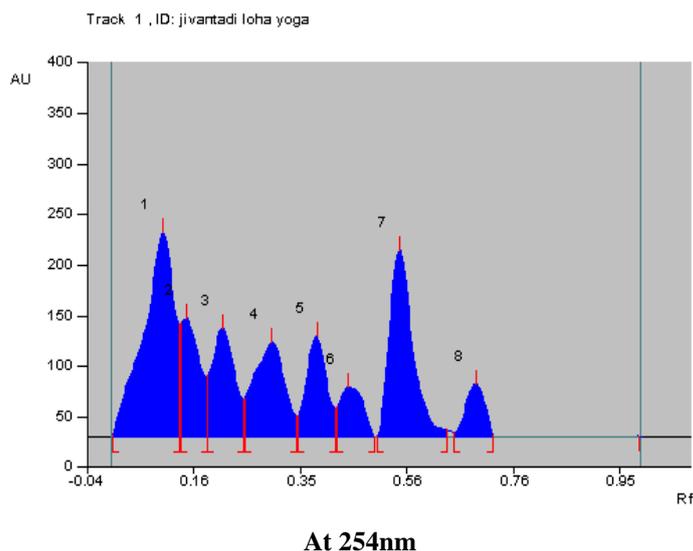


Plate-C: HPTLC Plate of methanolic extract of *Jeevantyadi lauha yoga*

DISCUSSION

Pharmacognostical study reveals authentication of individual raw drugs of *Jeevantyadi lauha yoga* was cross verified with standard reference API. The Starch grains, stone cells, oil globule, trichomes, fibres, prismatic crystals, rhomboidal crystals, tannin, simple pitted vessels are observed in ingredients. All the physico-chemical parameters i.e. Loss on drying, Water soluble extract, Methanol soluble extract and pH value were analyzed and found to be within the normal reference range. The physicochemical analysis showed Loss on drying (2.12% w/w), Water soluble extract (33.7% w/w), Methanol soluble extract (26.7% w/w), pH (6.5). HPTLC profile of the methanolic extract of the drug showed 8 spots at 254 nm and 5 spots at 366 nm, which shows the presence of 5 to 8 active principles present in the sample.

CONCLUSION

Pharmacognostical study findings confirm that all characters were found in ingredient drugs of *Jeevantyadi lauha yoga*. The physicochemical analysis are inferred that the formulation meets maximum qualitative standards and all the parameters discussed here may be used as identifying tools for the quality assessment of *Jeevantyadi Lauha yoga*.

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