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PHARMACOGNOSTICAL AND PHARMACEUTICAL ANALYSIS OF *LASHUNADI TAILA* - AN AYURVEDIC HERBAL FORMULATION FOR *VANDHYATVA* (FEMALE INFERTILITY) DUE TO ANOVULATORY FACTOR ASSOCIATED WITH OBESITY

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ABSTRACT

Background: Infertility is a major global health concern affecting nearly 10–15% of reproductive-age couples. According to Ayurveda, infertility (*Vandhyatva*) is primarily caused by vitiation of *Vata*, and classical texts emphasize the profound physical and psychosocial impact of childlessness. Acharya Kashyapa specifically recommends *Lashunadi Taila* for the management of *Vandhyatva* mentioned as *Veerya-praja-pradam*. This formulation comprises 36 drugs, including *Lashuna* (*Allium sativum* L.) as the prime ingredient, along with *Deepaniya, Vrishya, Jeevaniya Gana,* and *Dashamoola*, making it therapeutically significant in gynecological disorders. So, for initialization of standardization and assurance of the quality of herbal compounds, pharmacognostical and pharmaceutical analysis should be done. **Methods:** *Lashunadi Taila* was subjected to microscopic evaluation for pharmacognostical and physicochemical analysis such as acid value, Specific gravity, Saponification value and Iodine value. **Results:** Pharmacognostical study showed the presence of certain identifying characters of all the ingredients of *Lashunadi Taila* like *Lashuna, Dravyas* of *Deepaniya, Mahakashaya, Jeevaniya*

Mahakashaya, Vrishya Dravyas and *Dashamoola Dravyas*. As per the preliminary physico-chemical analysis, Acid value of the *Lashunadi Taila* was 12.04, Specific gravity value was 0.91, Saponification value was 386.46 and Iodine value was 649.13. **Conclusions:** Pharmacognostical and physico-chemical observations revealed the specific characteristics of all active constituents of *Lashunadi Taila* confirmed the purity and genuineness of the drug.

KEYWORDS: *Lashunadi Taila*, *Vandhyatva*, Pharmacognosy, Pharmaceutical analysis.

INTRODUCTION

Infertility is a global health issue that affects millions of couples and can have significant emotional, psychological, and social impacts. The World Health Organization (WHO) defines infertility as 'A disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.'[1] And patients aged 35 years or more completed active married life of six months with regular unprotected sexual intercourse.[2] It affects 10–15% of reproductive-age couples globally, with up to 48 million women affected worldwide.[3] As per the WHO data, around 17.5% of the adult population – roughly 1 in 6 worldwide – experience infertility.[4] In India, 3.9 to 16.8% of females suffer from primary infertility.[5] According to Ayurveda, infertility, or *Vandhyatva*, is one of 80 ailments brought on by the vitiation of *Vata*.[6] Infertile couples were seen as shadeless by Acharya Charaka as branchless, fruitless was tree that doesn't provide any light or brightness, similar to a lamp in a painting or portrait. After conception and childbirth, the goal of womanhood is fulfilled. For *Vandhya*, Acharya Kashyapa has recommended *Lashunadi Taila*.[7]

Lashunadi Taila contains total 36 drugs which are commonly used in gynecological disorders. Acharya Kashyapa has mentioned *Deepaniya, Vrishya, Jeevaniya Gana* and *Dashamoola* add it in for preparation. Prime ingredient of *Lashunadi Taila* is *Lashuna* (*Allium sativum L.*). Herbal medications must be safe, effective, free of adulteration, and have the proper dose and ingredients when taken internally. It can be difficult to identify herbal medications when they are dry or powdered. Consequently, suitable standards for the standardization of herbal medicines must be established. In the case of herbal traditional medicine, pharmacognocal research identify plants and establish standards for standardization. Generally speaking, physiochemical analysis can be used to assess the pharmacokinetics and pharmacodynamics of drugs. Physiochemical analytical studies can help standardize the drug and distinguish adulterants. Time is of the essence in the field of

Ayurveda in order to guarantee the high quality of the raw medications. The field of Ayurveda must strive for quality control of both raw and finished drugs using modern standards in order to legitimize Ayurvedic medicines and support their globalization. Thus, the goal of the current study was to develop *Lashunadi Taila*'s pharmacognostical and phytochemical profile and evaluate its authenticity by a range of pharmacognostical procedures.

MATERIALS AND METHOD

Collection, identification and authentication of raw drugs.

The raw materials were procured from the pharmacy of ITRA Jamnagar, authentic source and the raw drugs were identified and authenticated in the pharmacognosy laboratory of ITRA, Ministry of Ayush, Gov. of India, Jamnagar. The ingredients and part used of *Lashunadi Taila* are given in Table 1.

Table No. 1: Ingredients Of *Lashunadi Taila.*

Drug Name	Botanical name	Family	Part Used	Proportion
Lashuna	*Allium sativum* L.	Liliaceae	Rhizome	100 Pala
Tila Taila	*Sesamum indicum* Linn.	Pedaliaceae	Seed	1 *Adhaka*
Pippali	*Piper longum* Linn.	Piperaceae	Fruit	12 gm
Pippali Moola	*Piper longum* Linn.	Piperaceae	Root	12 gm
Chavya	*Piper chaba D.C.*	Piperaceae	Fruit	12 gm
Chitraka	*Plumbago zeylanica* Linn.	Plumbaginaceae	Root Bark	12 gm
Shringavera	*Zingiber officinalis* Roscoe.	Scitamineceae	Rhizome	12 gm
Amlavetasa	*Garcinia pedunculata* Roxb.	Cucurbitaceae	Root	12 gm
Maricha	*Piper nigrum* Linn.	Piperaceae	Fruit	12 gm
Ajamoda	*Apium graveolens* Linn.	Umbeliferaea	Fruit	12 gm
Bhallatakasthi	*Semicarpus anacardium* Linn.	Anacardaceae	Fruit	12 gm
Hinguniryasa	*Ferula narthex* Regel.	Apiaceae	Extract	12 gm
Jivaka-Rishabhaka= Vidari	*Pueraria tuberosa* (Roxb.ex.Wild) D.C.	Leguminosae	Tuber	24 gm
Meda-Mahamda= Shatavari	*Asparagus Racemosus* Wild.	Liliaceae	Root	24 gm
Kakoli-Ksheerakakoli-Aswagandha	*Withania somnifera* Dunal.	Solanaceae	Root	24 gm
Mudgaparni	*Phaseolus trilobus* Ait.	Leguminosae	Whole Plant	12 gm
Mashaparni	*Teramnus labialis* Sprenge.	Leguminosae	Whole Plant	12 gm

Jivanti	*Leptadenia reticulata* W&A	Asclepiadaceae	Stem	12 gm
Madhuka	*Glycyrrhiza glabra* Linn.	Leguminosae	Root	12 gm
Kapikachchhu	*Mucuna pruriens* Bek.	Leguminosae	Seed	12 gm
Atibala	*Abutilon indicum* Linn.	Malvaceae	Root	12 gm
Krishna Musali	*Curculigo orchioides* Gaertn.	Liliaceace	Root	12 gm
Sweta Musali	*Chlorophytum arunndinaceum* Baker.	Liliaceace	Root	12 gm
Ikshuraka	*Astercanthas longifolia* Linn.	Acantheceae	Whole Plant	12 gm
Karkatashringi	*Pistacia intergerrima* Stew.	Anacardiaceae	Insect Galls	12 gm
Amalaki	*Embelica officinalis* Linn.	Euphorbiaceae	Fruit	12 gm
Haritaki	*Terminalia chebula* Roxb.	Combratraceae	Fruit	12 gm
Bilva	*Aegle marmelous* Corr.	Rutaceae	Root/ Stem bark	12 gm
Gambhari	*Gmelina arborea* Linn.	Verbenaceae	Root/ Stem bark	12 gm
Patala	*Stereospermum suaveolens* DC.	Bignoniaceae	Root/ Stem bark	12 gm
Agnimantha	*Clerodendrum phlomidis* Linn.	Verbenaceae	Root/ Stem bark	12 gm
Shyonaka	*Oroxylum indicum* Vent.	Bignoniaceae	Root/ Stem bark	12 gm
Shalaparni	*Desmodium gangeticum* DC.	Solanaceae	Whole Plant	12 gm
Prishniparni	*Uraria picta* Desv.	Solanaceae	Whole Plant	12 gm
Brihati	*Solanum indicu*m Linn.	Solanaceae	Whole Plant	12 gm
Kantakari	*Solanum xanthocarpum* Sachrad & Wendl	Solanaceae	Whole Plant	12 gm
Gokshura	*Tribulus terrestris* Linn.	Zygophyllaceae	Fruit	12 gm

METHOD OF PREPARATION OF *LASHUNADI TAILA*

Firstly, sesame oil was taken in a vessel, then it was subjected for heating procedure. After moisture free stage of the vessel, *Sneha, Kalka* and *Drava* indicated in *Lashunadi Taila Paka Vidhi* were added in the specified quantity. Heat was given continuously till *Taila Paka Siddhi Lakshanas* were attained, then it was filtered through cotton cloth. After self-cooling, it was stored in air tight bottle.

PHARMACOGNOSTICAL STUDY

The pharmacognostical study was divided in to organoleptic study and microscopic study of the finished product.

Organoleptic study: The genuineness of the polyherbal formulation can be found with organoleptic characters of the given sample. Organoleptic parameters comprise of colour, odour, taste and touch of *Lashunadi Taila*, which was scientifically studied.

Microscopic study: Ingredients of *Lashunadi Taila* were taken in powder form and dissolved with water and microscopy of the sample was done without stain and after staining with phloroglucinol and HCl. Microphotographs of all ingredients of *Lashunadi Taila* were also taken under Corl-zeisstrinocular microscope.[8]

Physico-chemical analysis: With the help of various standard physico-chemical parameters, *Lashunadi Taila* was analysed. The common parameters mentioned for *Taila* in Ayurvedic Pharmacopeia of India and CCRAS guidelines are Acid value, Specific gravity, Saponification value and Iodine value**.**

OBSERVATION AND RESULTS

The initial purpose of the study was to confirm the authenticity of the drugs used in preparation of *Lashunadi Taila*. For this, all ingredients were subjected to organoleptic and microscopic evaluations to confirm the genuineness of all the raw drugs. Later, after the preparation of formulation, pharmacognostical evaluation was carried out. Organoleptic features like colour, odour and taste of *Lashunadi Taila* were recorded and are placed in Table 2.

Table No 2: Organoleptic Characters Of *Lashunadi Taila.*

Parameter	Result
Colour	Yellowish
Odour	Agreeable
Taste	Bitter & Slight Sweet
Touch	Sticky

Microscopic evaluation: Microscopic evaluation was conducted by dissolving the ingredients of *Lashunadi Taila* in the distilled water and was studied under microscope for the presence of characteristics of ingredients of *Lashunadi Taila*. The diagnostic characters of *Lashuna* are Crystalline material (Figure 1 A), and oil globule (Figure 1 B), brown content of

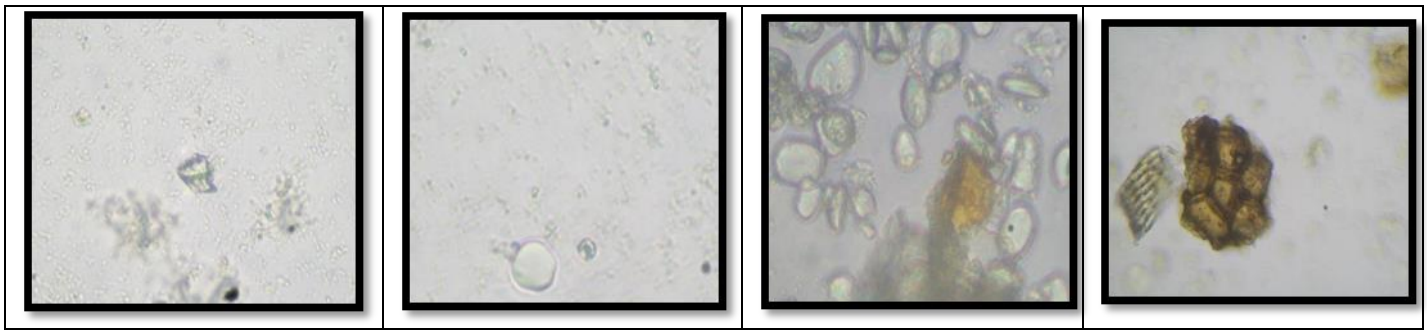
Pippali(Figure 1 C), Cork cells of *Chavya* (Figure 1 D), Stone cells of *Chitraka*(Figure 2 A), Lignified fibres of *Shringavera* (Figure 2 B), Rossette crystals of *Amlavetasa* (Figure 2 C), group of stone cells of *Maricha* (Figure 2 D), Black debris of *Maricha* (Figure 3 A), Prismatic crystal of *Vidari* (Figure 3 B), Acicular crystals of *Shatavari* (Figure 3 C), Cork in surface view of *Ashwagandha*(Figure 3 D), simple unicellular trichome of *Mashaparni* (Figure 4 A), Pitted vessels of *Jivanti*(Figure 4 B), Parenchyma cells with starch grains of *Kapikachchhu* (Figure 4 C), Prismatic crystals of *Atibala* (Figure 4 D), Acicular crystals of *Krishna Musali* (Figure 5 A), stone cells of *Karkatashringi* (Figure 5 B), silixca deposition of *Amalaki*(Figure 5 C), Epicarp cells of *Haritaki*(Figure 5 D), pitted stone cells of *Bilva*(Figure 6 A), Lignified cork of *Patala*(Figure 6 B), Cork cells of *Shyonaka* (Figure 6 C), Simple Trichome of *Shalaparni* (Figure 6 D), spiral vessels of *Prishniparni* (Figure 7 A), Stellate trichome of *Kantakari* (Figure 7 B), Fibres of *Gokshura* (Figure 7 C).

Physico-chemical parameters: Physico-chemical parameters like Acid value, Specific gravity, Saponification value and Iodine value were found within the normal range. Details are shown in Table 3.

Table No 3: Physico-Chemical Parameters Of*lashunadi Taila.*

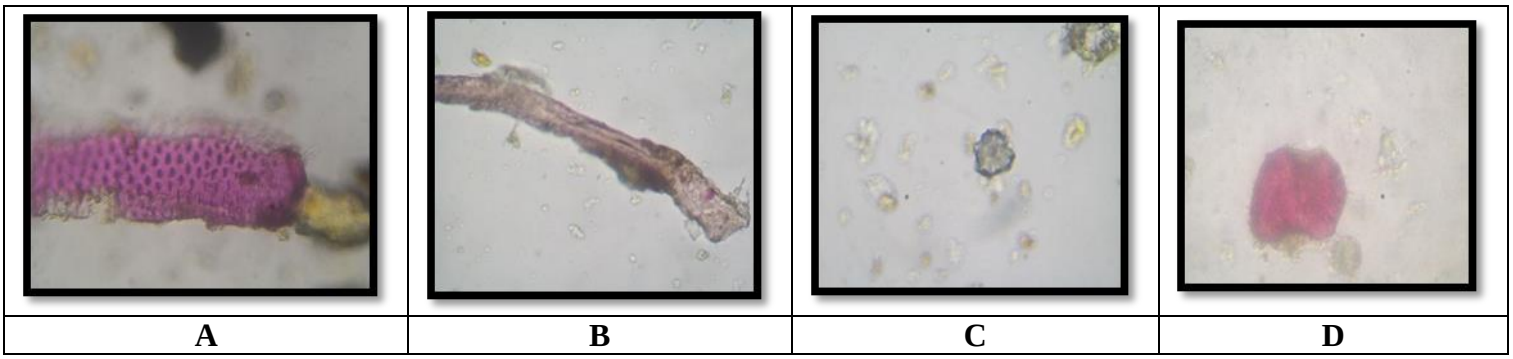
S.N.	Parameters	*Lashunadi Taila*
1	Acid value	12.04
2	Specific gravity	0.91
3	Saponification value	386.46
4	Iodine value	649.13

Figure 1



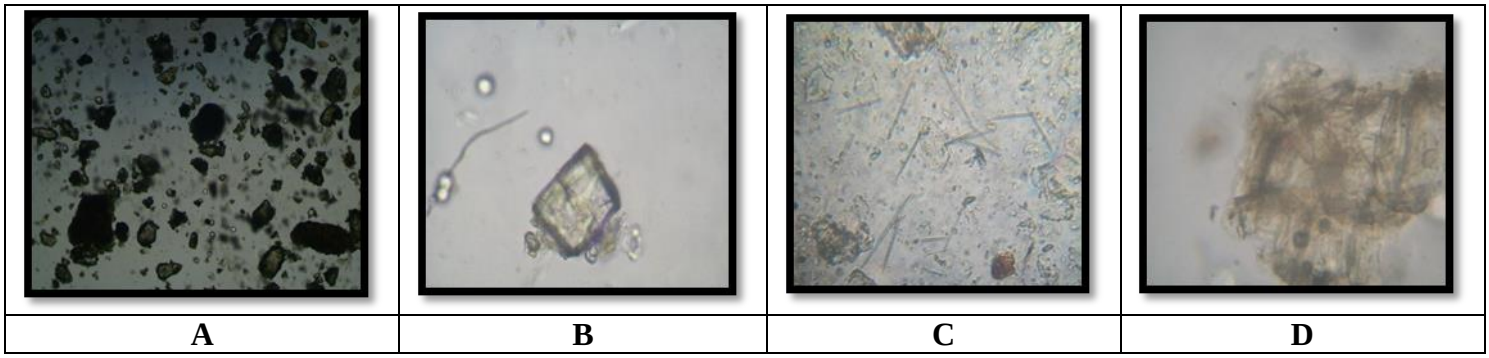
A **B** **C** **D**

Figure 2



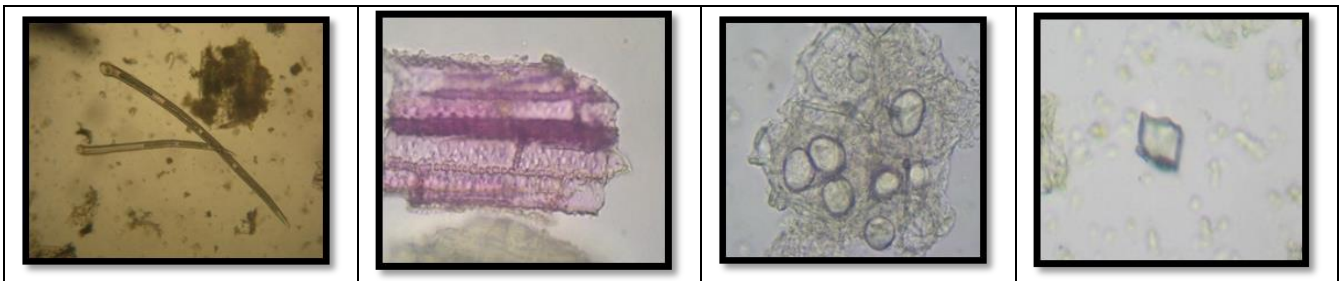
A	B	C	D

Figure 3



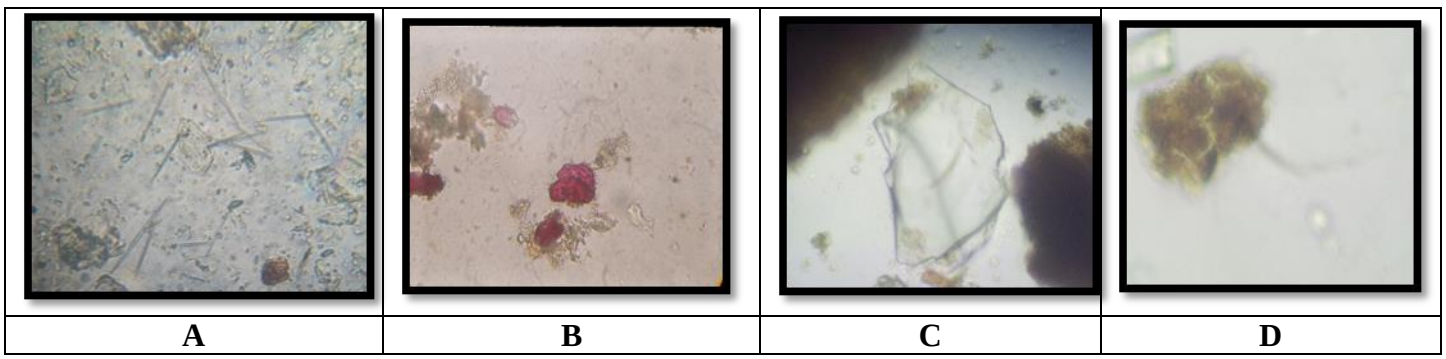
A	B	C	D

Figure 4



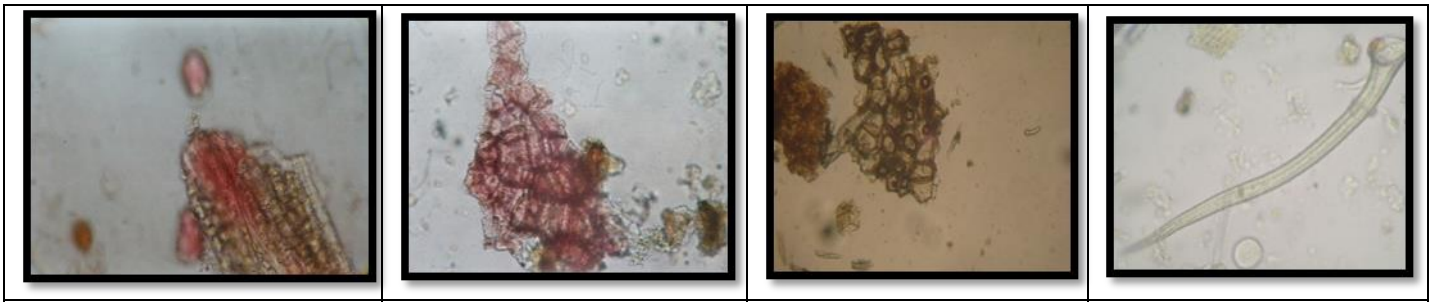
A	B	C	D

Figure 5



A	B	C	D

Figure 6



A	B	C	D

Figure 7

A	B	C

DISCUSSION

The pharmacognostical evaluation of *Lashunadi Taila* was undertaken to establish the authenticity, purity, and quality of the formulation. Organoleptic assessment revealed characteristic features such as yellowish colour, agreeable odour, bitter–slightly sweet taste, and sticky touch, which are consistent with classical descriptions and indicate proper preparation of the *Taila*. These sensory attributes serve as preliminary yet important indicators of genuineness and uniformity of the formulation.

Microscopic examination confirmed the presence of diagnostic characters of all constituent drugs, including crystalline materials, oil globules, stone cells, lignified fibres, trichomes, vessels, and various crystal forms. The observation of these specific microscopic features validates the correct identification of raw materials and supports the integrity of the polyherbal composition. Such findings reinforce the role of pharmacognostical studies in preventing adulteration and ensuring standardization of Ayurvedic formulations.

Physico-chemical parameters such as acid value, specific gravity, saponification value, and iodine value were found to be within the prescribed limits as per Ayurvedic Pharmacopeia of India and CCRAS guidelines. These results indicate acceptable stability, proper lipid composition, and suitability of the formulation for therapeutic use. Overall, the

pharmacognostical and physico-chemical findings confirm the quality and standardization of *Lashunadi Taila*, supporting its safe and effective application in the management of *Vandhyatva* due to anovulatory factor associated with obesity.

CONCLUSIONS

Pharmacognostical and physico-chemical observations revealed the specific characteristics of all active constituents of *Lashunadi Taila* confirmed the purity and genuineness of the drug.

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