Published online in http://ijam.co.in ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 15 (4), 2024; 1117-1121

Evaluation of anti-hypothyroid effects of Jalakumbhi Lavana with Piper longum L.: An integrative case study in Ayurvedic treatment

Case Report

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Abstract

Hypothyroidism, described by deficient thyroid chemical creation, is a common endocrine problem influencing millions around the world. Its side effects incorporate exhaustion, weight gain, and mental impedance, altogether influencing personal satisfaction. While customary Ayurvedic writing examines *Galganda*, much the same as hypothyroidism, direct notices of thyroid problems are restricted. In this unique situation, this study investigates the capability of *Jalakumbhi Lavana* joined with Pippali in overseeing hypothyroidism, drawing matches with current ways to deal with its treatment. Jalakumbhi, referred to naturally as *Pistia stratiotes*, has phytochemical constituents possibly valuable in thyroid capability adjustment. *Lavana Kalpana*, a plan including salts, including normal salt (*Saindhava Lavana*), helps with drug conveyance and retention. Furthermore, it goes about as a potentiate, upgrading helpful impacts. The cooperative energy between *Jalakumbhi Lavana* and *Pippali,* a notable Ayurvedic spice with mitigating and bio enhancing properties, offers a promising road for tending to hypothyroidism.

Keywords: Hypothyroidism, Galaganda, Thyroid Gland, Jalakumbhi Lavana, Pippali, Integrated Approach, Case study.

Introduction

Hypothyroidism is a typical neurotic state of thyroid chemical deficiency. A large number of clinical signs, including unmistakable myxoedema, end-organ outcomes, and multisystem disappointment, as well as asymptomatic or subclinical circumstances with ordinary Thyroxine and triiodothyronine levels and marginally raised serum Thyrotropin levels, are qualities of hypothyroidism(1). Notwithstanding progressions in clinical science, the commonness of hypothyroidism stays high, requiring compelling restorative mediations. Since past numerous years, Levothyroxine is viewed as the standard treatment for Hypothyroidism as per present day science. Thyroid circumstances are depicted in Ayurveda as per *doshas*(2). In light of whether hypothyroidism is welcomed on by a *Vata, Pitta, Kapha,* or urinary plot disease (which fundamentally influences females), it has been characterized into five gatherings(3). The "goitre" type is accepted to be the high level phase of *Kapha* prompted hypothyroidism. *Galaganda* as indicated by ayurveda is similar to goitre connected to thyroid conditions. Ayurveda, a comprehensive arrangement of medication, offers a rich store of plant and mineral-based details with likely helpful advantages. One such plan being scrutinized is *Jalakumbhi Lavana* joined with *Pippali*, eminent for its indicated antihypothyroid properties(4). *Jalakumbhi Lavana* got from the sea-going plant Pistia stratiotes Linn.Has a well-established history in Ayurvedic practice for its restorative properties. *Pippali (Piper longum*), is another notable spice with diverse remedial impacts. Together, it structure a synergistic mix accepted to tweak thyroid capability and mitigate side effects related with hypothyroidism(5). This examination means to clarify the readiness, normalization, and assessment of the anti-hypothyroid movement of *Jalakumbhi Lavana* with *Pippali* through an extensive contextual investigation(6). By fastidiously enumerating the definition cycle, guaranteeing its normalization for predictable strength, and thoroughly surveying its adequacy, this study tries to add to the developing group of proof supporting the incorporation of Ayurvedic cures into standard medical services for thyroid issues(7). This study investigates the helpful capability of *Jalakumbhi Lavana* with *Pippali*, adjusting conventional insight to contemporary clinical necessities. *Pistia stratiotes L.,* otherwise called *Jalakumbhi*, is an oceanic plant from the family *Araceae,* stoloniferous and drifting on lakes, streams, and stale water lakes and in lime-rich water throughout India.It is appropriated in the tropical and subtropical area of Asia, Africa, and America. Four assortments are recognized. The Indian assortment is known as var. cuneta. It is spread by seeds or all the more quickly by

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stolons. It frames a thick mat on the water surface and causes serious stopping up on streams. It is additionally liable for holding onto mosquito hatchlings, which convey the filarial parasites. It blossoms in hot season and natural products show up after the downpour. *P. stratiotes* is a drifting, stoloniferous spice found in lakes and streams nearly all through India Upto a level of 1000 m. Leaves are green in variety, unscented, and unpleasant in taste. The leaves are roughly 13cm long and 17cm wide and of fan-formed having equal venation, gruff peak, and whole edge.

An enormous number of restorative properties are credited to the plant, especially the leaves. The plant is viewed as germicide, anti-tubercular, and anti-dysenteric. In Gambia, the plant is utilized as an anaesthetic for eyewash. Juice of plant is utilized by Tribal in ear grievances. The debris of plant is applied to the ringworm of the scalp. Leaves are utilized in dermatitis, disease, ulcers, heaps, and syphilis. Juice of leaves bubbled in coconut oil is applied remotely in constant skin illnesses

Patient Information

Female patient 52-year-old encountering side effects of anorexia, dry skin, blockage, going bald, and stoutness for the beyond two years. Her side effects incorporate palpitations and obstruction. She has been taking Tab Thyroxine 50mcg day to day and has a clinical history of hypothyroidism going back a similar measure of time. She has no significant family clinical history, nor does she have a background marked by diabetes, pneumonic tuberculosis, bronchial asthma, epilepsy, hypertension, or some other serious clinical issues. Besides, her earlier clinical records contain no data in regards to any surgeries. In the assessment of the patient, their general condition was surveyed as fair, without any indications of fever noted. Their heartbeat rate was recorded at 70 pulsates each moment, and her circulatory strain estimated at 100/74 mmHg. Endless supply of the respiratory framework, air section reciprocally was viewed as clear. All standard examinations directed on the patient yielded results inside ordinary cut-off points.

Materials and Methods

The review included the assortment and normalization of Jalakumbhi Lavana and Pippali, following laid out Ayurvedic conventions. The arrangement strategy, measurement, and length were carefully archived. A contextual investigation approach was utilized to assess the viability of the treatment routine in a patient determined to have hypothyroidism. Assortment of plant material: Panchang of Pistia Stratiotes, Saindhava Lavana, and Pippali were gathered from valid sources. The gathered plant material was recognized at Agharkar Exploration Foundation and Maharashtra Relationship for the Development of Science, Pune. The example voucher number is Asclepia.2109/1. Jalakumbhi Lavana was ready according to the writing accessible in the traditional course book, During treatment, Tab Thyroxine diminish to 25mcg/day and following Ayurvedic medications were begun , First Development (following one month) - The side effects Palpitation, Anorexia, Stoppage, Going bald was decreased. Patient was feeling better Weight was decreased by 1kg. Treatment went on as same and portion of Tab Thyroxine was additionally decreased to 12.5mcg/day. Second Development (following multi month) - No any new protests. Patient was feeling better Weight was decreased by 2kg. TFT was Typical. Treatment went on as same and Tab Thyroxine was halted.

Ashtavidha Pariksha (Eightfold Examination)

The patient went through an extensive Ashtavidha Pariksha, or eightfold assessment, as a component of the underlying evaluation. Her heartbeat (Nadi) was recorded at 70 pulsates each moment, customary, and demonstrative of a Vata kaphaPradhana, recommending an overwhelming *Vata* and *Kapha dosha* irregularity. The assessment of her eyes and vision (Druk) uncovered typical discoveries, without any anomalies distinguished. Concerning matter (*Mala*), the patient revealed an impression of fragmented departure, a typical side effect related with her condition. Her general body construct (*Aakriti*) was delegated mesomorph (*Madhyam*), showing a medium form. The evaluation of pee (*Mutra*) was Samyaka, with ordinary recurrence and result of 7-8 times each day. The touch (*Sparsha*) assessment uncovered dries (*Ruksha*) and warm (*Ushna*) skin, predictable with hypothyroid side effects. Her voice (*Shabda*) was viewed as solid and typical, with practically no raspiness or irregularities. Finally, the assessment of her tongue *(Jivha*) showed a whitish layer (*Sama),* characteristic of potential ama or poisons in the body. All through the subsequent period, the patient's *Nadi* demonstrated a shift towards a more adjusted state, reflecting enhancements in her generally dosha harmony. At first giving a *Vata kapha Pradhana,* ensuing assessments showed a continuous standardization of heartbeat qualities as her side effects improved and her *dosha* balance was re-established.

Nidan Panchak or the Five-Element Symptomatic Strategy From an Ayurvedic viewpoint, the patient's hypothyroidism was painstakingly analysed and grasped utilizing the *Nidan Panchak*, or five-crease demonstrative strategy. The *Nidana* (Etiology) step of the strategy included deciding the hidden causes, for example, unfortunate food and way of life decisions that exacerbated the doshas of *Vata and Kapha*. Prodromal side effects, or Purvarupa, were noticed, including starting signs, for example, laziness, weight increment, and skin dryness(8). The completely evolved side effects, known as *Rupa* (Clinical Elements), included stoppage, recognizable weight reduction, and an extraordinarily dry skin. The examination likewise took a gander at *Upshaya-Anupshaya* (Exasperating and Easing Elements), assessing the impacts of various medicines and way of life changes on the side effects and taking note of that specific food changes and home grown details offered mitigation. To appreciate the course of the illness, *Samprapti* (Pathogenesis) was analysed eventually. This investigation showed how the

awkwardness of *Vata and Kapha* made hypothyroidism manifest, and how the joined utilization of *Jalakumbhi Lavana* and Flute player longum attempted to lighten the condition by re-establishingdosha balance. This intensive indicative worldview, which joined clinical perceptions with Ayurvedic standards, guaranteed a patient-focused way to deal with therapy.

Clinical Findings

The patient's clinical discoveries exhibited various side effects intriguing with hypothyroidism, which were approved by intensive examinations. The thyroid organ was apparently augmented during the thyroid assessment, which might show thyroid brokenness. Bradycardia and palpitations were found during the cardiovascular assessment, which are indications of hypothyroidism's impacts on the heart. Critical going bald and dry skin were noted during the dermatologic assessment, which was in accordance with the patient's accounted for objections. Shortcoming and exhaustion were seen during the neurological assessment; these side effects are normal of hypothyroid patients. Weight gain and facial puffiness were seen during the general assessment, with periorbital edema — or puffiness around the eyes — being explicitly referenced. The multisystem association normal for hypothyroidism was featured by these discoveries aggregately, featuring the need of a sweeping and integrative treatment approach for this situation concentrate on that joined *Jalakumbhi Lavana* with *Piper longum.*

The symptoms described in the image are graded using specific scoring systems for hair fall, dryness (Rookshata), constipation and obesity. Here's how the symptoms are graded in detail:

Hair Fall Grading System:(9)

- Grade 0 (Normal -): Hair fall is minimal with 1 to 5 hairs falling during combing or washing.
- Grade 1 (Mild +): Hair fall is less than 20 hairs when combing or washing.
- Grade 2 (Moderate ++): Hair fall is more pronounced, with more than 20 hairs falling during combing or washing.
- Grade 3 (Severe +++): Hair fall occurs even with minimal hand strength (less than 20 hairs fall simply when applying a gentle hand force).

Dryness (*Rookshata*) Grading System(9)

- Grade 0: (No Dryness-): The skin appears normal, without any signs of dryness.
- Grade 1 (Mild +): The skin is dry, accompanied by rough texture but no flaking or other significant changes.
- Grade 2 (Moderate ++): There is visible scaling on the dry skin, indicating a more pronounced level of dryness.
- Grade 3 (Severe +++): The dryness is extreme, and the skin is cracking, which indicates significant skin barrier damage.

Constipation Scoring System:(10)

- Score 0 (No Constipation -): Normal bowel movement frequency—1 to 2 times per day or once every two days.
- Score 1 (Mild +): Bowel movements occur only two times per week, indicating mild constipation.
- Score 2 (Moderate ++): Bowel movements occur once per week, which is a sign of moderate constipation.

Obesity Scoring System: (11)

- Grade 0 (Normal -): No significant fat accumulation. Normal weight, energy levels, and balanced metabolism.
- Grade 1 (Mild Obesity +): Mild fat accumulation, especially in the abdomen and thighs. Slight heaviness, reduced stamina, and early signs of sluggishness.
- Grade 2 (Moderate Obesity ++): Noticeable fat deposition in multiple areas like the abdomen and arms. Marked lethargy, fatigue, and reduced physical endurance.
- Grade 3 (Severe Obesity +++): Significant fat accumulation with restricted mobility. Severe fatigue, heaviness, and associated complications like joint pain or breathing issues.

Observation and Result

Date	Day	Symptoms	Laboratory Investigation	Treatment	Dose and Anupana
29/01/2024	1	Dry skin +++ Constipation + + Hair loss +++ Obesity +++	Thyroid Profile Total Serum		
30/01/2024	2	Dry skin +++ Constipation ++ Hair loss +++ Obesity +++	Thyroid Profile T3 – 0.85 ng/mL T4 – 7.13 ug/dL TSH - 7.71 ulU/mL	*Jalkumbhi* Lavana with *Piper longum*	3 gm empty stomach with lukewarm water
02/03/2024	3	Dry skin ++ Constipation + Hair loss ++ Obesity ++		*Jalkumbhi* Lavana with *Piper longum*	3 gm empty stomach with lukewarm water
12/04/2024	4	Dry skin Constipation Hair loss Obesity (all symptoms were reduced)	T3 – 112.19 ng/dL T4 – 8.1 ug/dL TSH – 2.57 ulU/mL	The same treatment was administered for 15 days.	3 gm empty stomach with lukewarm water

Discussion

Medications in combination form (Jalkumbhi, Saidhav Lavan and Pippali) act as antagonists to the primary pathological elements, Dushya (the body's essential structural components) and Dosha (the body's regulatory functional factors), thereby interrupting pathogenesis and alleviating the symptoms of the disease(12) . The primary principle of Ayurveda asserts that the most critical step in treating any illness is to interrupt its etiology. Hypothyroidism presents clinical signs associated with imbalances in the *Kapha* and *Vata doshas*.(13)

In addressing the pathogenesis of hypothyroidism, *Jalakumbhi* has been selected for its bitter (*Tikta*) and sweet (*Madhura*) tastes, as well as its light (*Laghu*) and dry (*Ruksha*) properties. *Jalakumbhi* is known for its *Tridosha Shamak* properties, which help balance the three *doshas* in the body. Due to its bitter taste and light and dry properties, Jalakumbhi facilitating the digestion of toxins (Ama) and calming the aggravated *Kapha*, thereby enhancing *Dhatvagni* and alleviating symptoms of *Ama*.(14)

Pippali has demonstrated efficacy in alleviating symptoms of hypothyroidism, particularly those related to constipation, cold skin, and periorbital puffiness. It possesses properties such as a pungent (*Katu*) taste, lightness (*Laghu*), sharpness (*Tikshna*), and unctuousness (*Snigdha*), along with moderate potency (*Anushnashita Veerya*) and a sweet post-digestive effect (*Madhur Vipaka*).(15)

The case study results indicate a positive therapeutic response to the combined use of *Jalakumbhi Lavana* and Pippali in managing hypothyroidism. The treatment was well tolerated, with no adverse effects reported during the study period. *Jalakumbhi* is regarded as a preferred medication for conditions such as *Granthi vikar* and *Galgand*, and in this case, *Jalakumbhi Lavana* was administered for two months.(16)

In a clinical evaluation conducted over several dates, symptoms such as dry skin, constipation, hair loss, and obesity were documented alongside laboratory assessments of thyroid function. The administration of *Jalakumbhi Lavana* with Piper longum at a dosage of 3 grams on an empty stomach with lukewarm water resulted in significant improvements in symptoms and normalization of thyroid function markers, including T3, T4, and TSH levels. The study highlights the therapeutic potential of Ayurvedic interventions in managing hypothyroidism. The pharmacological properties of this combination provide a viable alternative or adjunct to conventional thyroid hormone replacement therapy. The observed improvements in clinical parameters underscore the importance of personalized Ayurvedic treatments tailored to individual *doshas* and clinical presentations.(17)

*Pistia stratiotes L.*is believed to have thyroid-stimulating properties in Ayurveda, with some studies suggesting its role in regulating thyroid function. Piper longum is known for its bioavailability-enhancing properties and is frequently incorporated into Ayurvedic formulations to improve the absorption of various herbs.(18)

Jalakumbhi (Pistia stratiotes) aids in managing hypothyroidism through its flavonoids, steroids, and alkaloids, which have antioxidant and anti-inflammatory properties. These compounds reduce inflammation and oxidative stress in the thyroid gland, essential for hormone production. Additionally, Jalakumbhi's Tridoshagna properties help balance Kapha and Vata doshas, addressing the underlying imbalances often seen in hypothyroidism.(19)

Lavana Kalpana, through its process of particle size reduction, enhances the bioavailability of herbal components, making the formulation lighter and easier to digest. The inclusion of *Saidhav Lavan* is beneficial in balancing doshas and promoting optimal digestion, further supporting thyroid health and alleviating symptoms associated with hypothyroidism.(20)

The combination of *Jalakumbhi Lavana* and *Pippali* was chosen for its ability to balance the *doshas* and address the underlying causes of hypothyroidism. Further investigation into the results and any observed improvements in thyroid function would be beneficial. By integrating ancient wisdom with modern science, Ayurveda continues to make significant contributions to the comprehensive management of complex conditions like hypothyroidism. These medications work in tandem to counteract the primary pathological factors, namely the Dosha and Dushya, leading to the disruption of pathogenesis and the alleviation of disease symptoms. (21).

Conclusion

Jalakumbhi Lavana with *Piper longum* presents a promising road for the administration of hypothyroidism, utilizing the all-encompassing standards of Ayurveda. The review advocates for additional exploration and reconciliation of Ayurvedic rehearses into standard medical services, offering protected and compelling choices for thyroid issues.

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