ARTICLE

AN EXPLORATORY SINGLE-ARM STUDY ON THE EFFICACY OF PIPPALYADI AGADA AND VISHA TAILA IN THE MANAGEMENT OF DUSHIVISHA JANYA KITIBHA KUSHTA (PSORIASIS)

Dr Piyush Solanki[1*], Dr Ritu Kapoor[2]

[1]*PG Scholar PG Dept. Of Agadtantra evum vidhi vaidhyka, Post Graduate Institute of Ayurveda, DSRRAU Jodhpur Rajasthan,*
[2]*Professor and HOD PG Dept. Of Agadtantra evum vidhi vaidhyka, Post Graduate Institute of Ayurveda, DSRRAU Jodhpur Rajasthan*
Corresponding author: Dr Piyush Solanki

ABSTRACT

Background: Psoriasis is a chronic, immune-mediated inflammatory skin disorder affecting approximately 2-3% of the global population. Despite advances in modern therapeutics, treatment remains challenging with significant adverse effects and high recurrence rates. Ayurvedic literature correlates psoriasis with Kitibha Kushta, a condition arising from vitiated Vata-Kapha Dosha and accumulation of Dushivisha (latent toxins). This study evaluated the efficacy of Pippalyadi Agada (oral) and Visha Taila (topical) in managing Dushivisha Janya Kitibha Kushta. Methods: A prospective, interventional, single-arm clinical trial was conducted on 60 patients aged 30-50 years with clinically diagnosed psoriasis and history of Dushivisha. Participants received Pippalyadi Agada 1gm orally twice daily with honey and Visha Taila externally twice daily for 60 days. Assessments included Psoriasis Area and Severity Index (PASI) score, Erythrocyte Sedimentation Rate (ESR), and Liver Function Tests (LFT) at baseline and post-treatment. Data were analyzed using Wilcoxon signed-rank test and paired t-test. Results: Mean PASI score decreased significantly from 15.17±4.95 to 6.61±3.63 (56.44% improvement, $p<0.0001$). ESR reduced from 26.65±16.08 to 17.47±11.03 mm/hr (34.45% improvement, $p<0.0001$). SGPT improved by 23.37% ($p<0.0001$), SGOT by 21.87% ($p<0.0001$), and alkaline phosphatase by 4.26% ($p<0.0001$). Total bilirubin, serum protein, albumin, and globulin remained within normal limits, confirming safety. No adverse drug reactions were reported. Conclusion: Pippalyadi Agada with Visha Taila demonstrated significant efficacy and safety in managing Dushivisha Janya Kitibha Kushta (Psoriasis), providing a holistic therapeutic approach addressing both systemic toxicity and localized symptoms.

Keywords: Psoriasis, Kitibha Kushta, Dushivisha, Pippalyadi Agada, Visha Taila, Ayurveda, PASI score

Clinical Trial Registration: CTRI/2025/04/083933

How to cite this article: Solanki P, Kapoor R., An Exploratory Single-Arm Study on the Efficacy of Pippalyadi Agada and Visha Taila in the Management of Dushivisha Janya Kitibha Kushta (Psoriasis). Int J Drug Deliv Technol. 2026;16(90s): 1923-1929; DOI: 10.25258/ijddt.16.90s.192

Source of support: XX

Conflict of interest: XX

1. INTRODUCTION

Psoriasis is a chronic, immune-mediated, inflammatory and hyperproliferative skin disorder affecting approximately 2-3% of the global population, with prevalence ranging from 0.51% to 11.43% worldwide [1]. In India, prevalence varies between 0.44% and 2.8%, predominantly affecting young adults in their third and fourth decades [2,3]. The disease is characterized by well-defined erythematous plaques with silvery-white scales on extensor surfaces, scalp, and lumbosacral region, significantly impacting patients' quality of life and psychological well-being [4].

Modern therapeutic approaches include topical corticosteroids, vitamin D analogues, phototherapy, and systemic immunosuppressants. However, these treatments are associated with adverse effects, immunosuppression, high economic burden, and significant recurrence upon discontinuation [5]. These limitations necessitate exploration of alternative therapeutic strategies addressing both symptomatic relief and underlying etiopathogenesis.

Ayurvedic texts describe psoriasis as *Kitibha Kushta*, a *Kshudra* (minor) *Kushta* predominantly involving *Vata* and *Kapha Dosha*, with characteristic features of *Shyava Varna* (dark discoloration), *Kinakhara Sparsha* (rough, scar-like texture), and *Parushata* (dryness) [6]. Chronic and recurrent nature of *Kitibha Kushta* aligns with the concept of *Dushivisha* a latent, cumulative toxic state resulting from prolonged exposure to dietary, environmental, and occupational toxins [7].

Acharya Sushruta describes *Dushivisha* as a weakened or attenuated poison that remains dormant in the body, enveloped by *Kapha Dosha*, and manifests under favorable conditions such as incompatible diet (*Viruddha Ahara*), seasonal variations, and improper lifestyle [8]. When lodged in *Rakta Dhatu*, *Dushivisha* produces skin manifestations including *Kitibha*, *Mandala*, *Kotha*, and various *Kushta Vikara* [9]. Chronic exposure to environmental toxins, agricultural chemicals, occupational pollutants, and incompatible dietary practices parallels the Ayurvedic concept of *Dushivisha* accumulation [10].

Pippalyadi Agada, mentioned in *Yogratnakar* under *Dushivisha Chikitsa*, possesses *Vishaghna* (anti-toxic), *Deepana* (digestive stimulant), *Pachana* (metabolic enhancer), and *Kushthaghna* (anti-dermatosis) properties [11]. *Visha Taila*, described in *Bhaishajya Ratnavali*, is indicated for *Kitibha*, *Shvitra*, *Visphot*, *Kotha*, and *Visha-dushita Vrana*, with properties of wound purification (*Sarvavrana Vishodhanam*) [12].

This study was undertaken to evaluate the efficacy and safety of *Pippalyadi Agada* and *Visha Taila* in managing *Dushivisha Janya Kitibha Kushta* (Psoriasis), addressing both systemic detoxification and localized symptom relief.

Aim: To determine the efficacy of *Pippalyadi Agada* and *Visha Taila* in *Dushivisha Janya Kitibha Kushta* (Psoriasis).

Objectives

- To evaluate efficacy through PASI Score assessment over 60 days
- To study detailed etiopathogenesis of *Dushivisha Janya Kitibha Kushta*
- To identify *Dushivisha* as *Nidana* of *Kitibha Kushta*

2. MATERIALS AND METHODS

2.1 Study Design

A prospective, interventional, single-arm, exploratory clinical trial was conducted at Post Graduate Institute of Ayurveda, Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University, Jodhpur. The study was approved by the Institutional Ethics Committee (IEC No.: DSRRAU/PGIAS/IEC/23-24/792) and registered prospectively in the Clinical Trials Registry-India (CTRI/2025/04/083933). Written informed consent was obtained from all participants.

2.2 Study Participants

Inclusion Criteria

- Clinically diagnosed and confirmed cases of *Kitibha Kushta* (Psoriasis) based on signs and symptoms with history of *Dushivisha*
- Patients aged 30-50 years of either sex
- Willing to follow study procedures and provided written informed consent

Exclusion Criteria

- Diabetes mellitus, chronic asthma, systemic disorders, or congenital disorders
- Patients with *Kitibha Kushta* without history of *Dushivisha*
- Pregnant or lactating women
- Clinically unfit for therapy

2.3 Sample Size

Sixty (60) patients were enrolled following a sample size calculation based on expected reduction in PASI score with 80% power and 5% significance level, accounting for 10% dropout rate.

2.4 Study Interventions

Pippalyadi Agada: Prepared as *Ghana Vati* (500mg tablets) from ingredients including *Pippali* (*Piper longum*), *Dhanyaka* (*Coriandrum sativum*), *Jatamansi* (*Nardostachys jatamansi*), *Lodhra* (*Symplocos racemosa*), *Sukshma Ela* (*Elettaria cardamomum*), *Maricha* (*Piper nigrum*), *Tagara* (*Valeriana wallichii*), *Brihat Ela* (*Amomum subulatum*), *Suvarna Gairika* (Red ochre), and *Suvarchika* (Sodium carbonate), bound with honey (*Madhu*). The decoction (*Kwatha*) was concentrated to *Ghana* (solid extract) and compressed into tablets following standard pharmaceutical procedures.

Dosage: 1gm orally twice daily with honey as *Anupana* for 60 days.

Visha Taila: Prepared from 14 herbal ingredients including *Karanja* (*Pongamia pinnata*), *Haridra* (*Curcuma longa*), *Daruharidra* (*Berberis aristata*), *Arka* (*Calotropis gigantea*), *Tagara* (*Valeriana wallichii*), *Karvira* (*Nerium indicum*), *Vacha* (*Acorus calamus*), *Kushtha* (*Saussurea lappa*), *Aparajita* (*Clitoria ternatea*), *Rakta Chandana* (*Pterocarpus santalinus*), *Jati* (*Jasminum grandiflorum*), *Saptaparna* (*Alstonia scholaris*), *Manjishtha* (*Rubia cordifolia*), and *Vatsanabha* (*Aconitum ferox*), processed in *Murchita Tila Taila* (sesame oil) with *Gomutra* (cow's urine) following classical *Sneha Kalpana* principles.

Application: Externally twice daily for 60 days.

2.5 Assessment Criteria

Primary Outcome

- **Psoriasis Area and Severity Index (PASI) Score:** A quantitative rating tool measuring severity based on erythema, induration, scaling, and percentage of body surface area affected. Scores range from 0-72; scores 5-10 indicate moderate disease, >10 severe disease.

Secondary Outcomes

- Clinical photography assessment
- Erythrocyte Sedimentation Rate (ESR)
- Liver Function Tests (SGPT, SGOT, Total Bilirubin, Alkaline Phosphatase, Total Protein, Albumin, Globulin)

2.6 Data Collection

A validated structured questionnaire was developed to assess history and manifestations of *Dushivisha*, including *Poorvarupa* (prodromal symptoms), *Roopa* (clinical features), and aggravating factors. Participants were evaluated at baseline, 15th day, 30th day, 45th day, and 60th day (post-treatment).

2.7 Statistical Analysis

Data were expressed as Mean ± Standard Deviation (SD). Pre- and post-treatment comparisons were analyzed using Wilcoxon signed-rank test (non-parametric) and paired t-test. Statistical significance was set at $p<0.05$. Data analysis was performed using appropriate statistical software.

2.8 Safety Monitoring

Adverse events were monitored throughout the study. Laboratory investigations were conducted at baseline and post-treatment to assess safety parameters.

3. RESULTS

3.1 Patient Disposition

Sixty-two patients were enrolled; 60 patients (96.77%) completed the study, and 2 patients (3.23%) withdrew (one lost to follow-up, one personal reasons). All 60 patients who completed the study were included in the final analysis.

3.2 Demographic and Baseline Characteristics

Demographic Characteristics of Study Participants (N=60)

Parameter	Category	Frequency (n)	Percentage (%)
Age (Years)	30-35	40	66.67
	36-40	3	5.00
	41-45	3	5.00
	46-50	14	23.33
Gender	Male	51	85.00
	Female	9	15.00
Occupation	Working	29	48.33
	Student	18	30.00
	Farmer	10	16.67
	Housewife	2	3.33
	Labour	1	1.67
Diet	Vegetarian	45	75.00
	Mixed	15	25.00
Habitat	Urban	33	55.00
	Rural	27	45.00
Duration of Illness	<1 year	3	5.00
	1-5 years	37	61.67
	6-10 years	14	23.33
	>10 years	6	10.00
Seasonal Aggravation	Winter	36	60.00
	Summer	9	15.00
	Monsoon	7	11.67
	None	8	13.33

The majority of patients were in the 30-35 years age group (66.67%), male (85%), and working professionals (48.33%). Most had disease duration of 1-5 years (61.67%) with gradual onset (70%). Winter was the most common season for exacerbation (60%).

3.3 Clinical Presentations

Sites of Involvement (N=60)

Site	Frequency (n)	Percentage (%)
Limbs	43	71.67
Lumbosacral Region	41	68.33
Scalp	37	61.67
Chest/Back	30	50.00
Flexures	17	28.33
Palmar-Plantar	17	28.33

Lesions most commonly affected limbs (71.67%), lumbosacral region (68.33%), and scalp (61.67%).

3.4 Ayurvedic Constitutional Assessment

Ayurvedic Parameters (N=60)

Parameter	Category	Frequency (n)	Percentage (%)
Sharirika Prakriti	Vata-Kapha	26	43.33
	Vata-Pitta	22	36.67
	Pitta-Kapha	12	20.00
Manasika Prakriti	Rajasika	45	75.00
	Tamasika	15	25.00
Agni	Vishama	18	30.00
	Manda	16	26.67
	Sama	18	30.00
	Tikshna	8	13.33
Koshtha	Madhyama	35	58.33
	Kroora	17	28.33
	Mridu	8	13.33
Psychological Status	Stress	30	50.00
	Tension	22	36.67
	Normal	8	13.33

Parameter	Category	Frequency (n)	Percentage (%)
Bowel Habits	Regular	25	41.67
	Constipation	21	35.00
	Irregular/Constipation	8	13.33
	Irregular	6	10.00

Vata-Kapha Prakriti was predominant (43.33%), followed by *Vata-Pitta* (36.67%). *Rajasika Manasika Prakriti* (75%) and *Avara Sattva* (46.67%) were most common. Psychological disturbances were observed in 86.67% of patients (stress 50%, tension 36.67%). Constipation was present in 35% of patients.

3.5 Primary Outcome: PASI Score

Effect of Pippalyadi Agada and Visha Taila on PASI Score (N=60)

Parameter	BT (Mean ± SD)	AT (Mean ± SD)	Mean Difference	% Relief	SD	SE	Significance
PASI Score	15.17 ± 4.95	6.61 ± 3.63	8.56	56.44%	3.31	0.43	p<0.0001

Wilcoxon signed-rank test

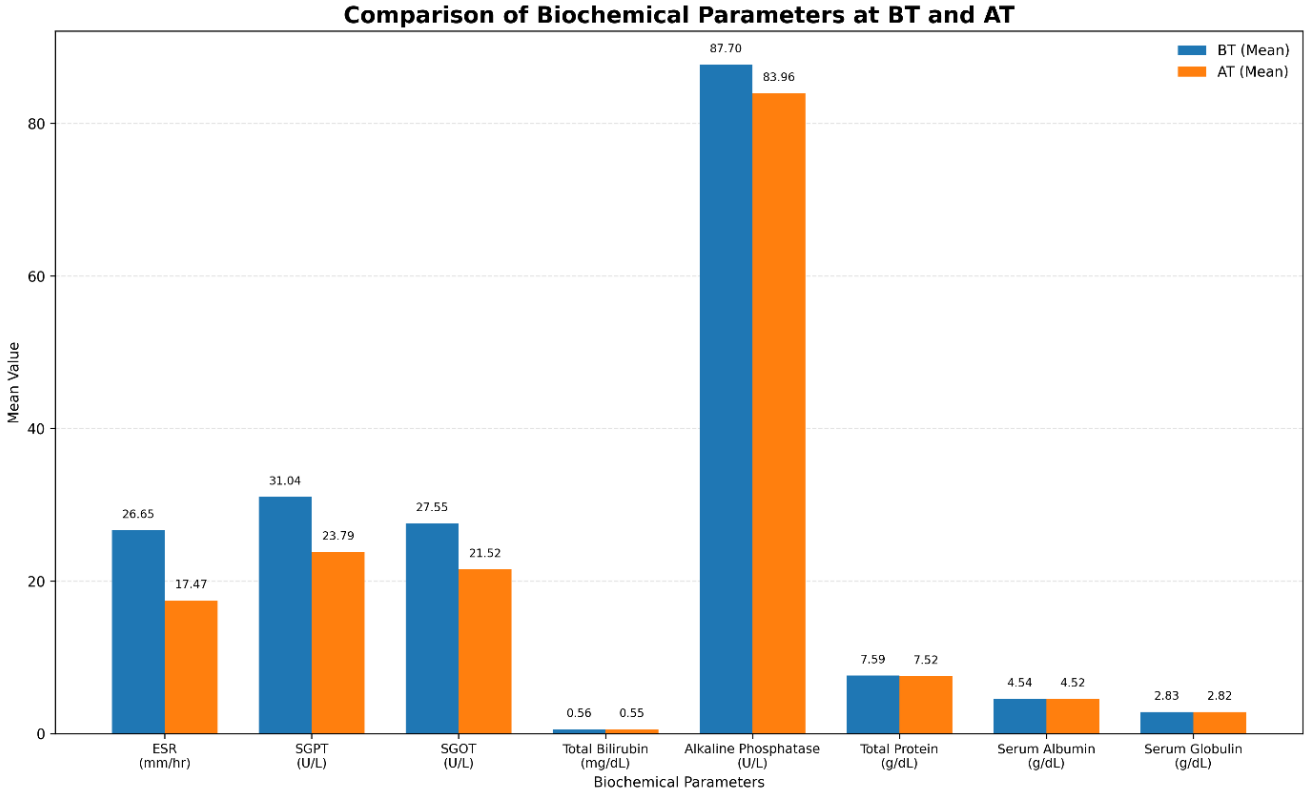
PASI score showed a highly significant reduction from 15.17±4.95 (baseline) to 6.61±3.63 (post-treatment), with a mean reduction of 8.56 points (56.44% improvement, p<0.0001).

3.6 Secondary Outcomes

Effect on Objective Parameters (N=60)

Parameter	BT (Mean ± SD)	AT (Mean ± SD)	Mean Diff	% Improvement	SD	SE	p-value
ESR (mm/hr)	26.65 ± 16.08	17.47 ± 11.03	9.18	34.45%	5.76	0.75	<0.0001
SGPT (U/L)	31.04 ± 18.82	23.79 ± 14.42	7.30	23.37%	4.40	0.57	<0.0001
SGOT (U/L)	27.55 ± 9.92	21.52 ± 7.75	6.02	21.87%	2.17	0.28	<0.0001
Total Bilirubin (mg/dL)	0.56 ± 0.48	0.55 ± 0.47	0.006	0.98%	0.007	0.0009	<0.0001
Alkaline Phosphatase (U/L)	87.70 ± 28.14	83.96 ± 26.52	3.74	4.26%	1.74	0.22	<0.0001
Total Protein (g/dL)	7.59 ± 0.64	7.52 ± 0.61	0.07	0.92%	0.09	0.01	0.0002
Serum Albumin (g/dL)	4.54 ± 0.56	4.52 ± 0.54	0.01	0.29%	0.03	0.004	0.0047
Serum Globulin (g/dL)	2.83 ± 0.48	2.82 ± 0.47	0.01	0.35%	0.03	0.004	0.023

Paired t-test

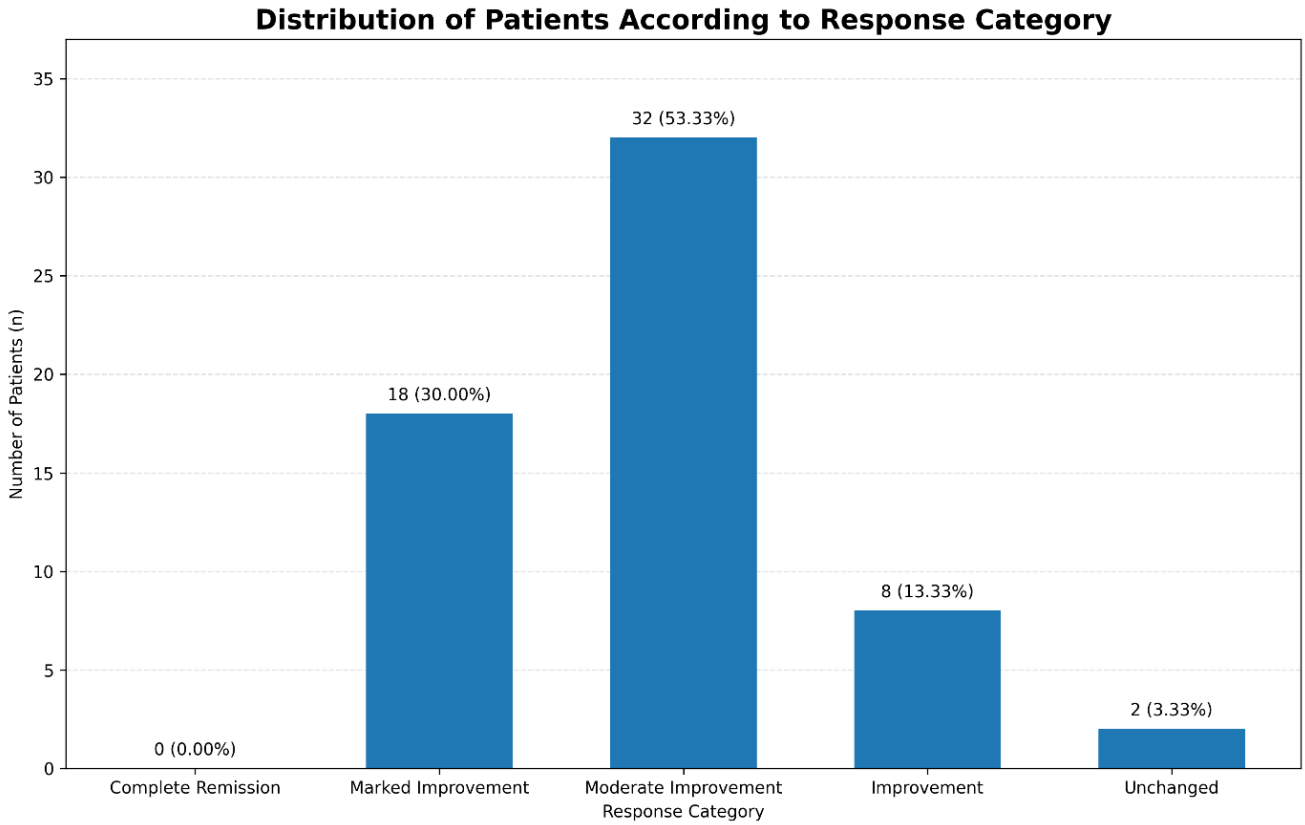


ESR showed significant improvement (34.45%, p<0.0001). Liver function parameters improved significantly (SGPT: 23.37%, SGOT: 21.87%, Alkaline Phosphatase: 4.26%, all p<0.0001). Total bilirubin, total protein, albumin, and globulin remained within normal limits, confirming safety.

3.7 Overall Therapeutic Response

Overall Therapeutic Outcome

Category	Response	Criteria	n	%
Complete Remission	100% relief	Complete clearance	0	0%
Marked Improvement	>75% relief	Significant improvement	18	30%
Moderate Improvement	50-75% relief	Good improvement	32	53.33%
Improvement	25-50% relief	Partial improvement	8	13.33%
Unchanged	<25% relief	No/minimal improvement	2	3.33%



Majority of patients showed moderate to marked improvement (83.33%). Eight patients (13.33%) showed partial improvement, and 2 patients (3.33%) showed no significant change.

3.8 Safety Assessment

No adverse drug reactions (ADRs) were reported during the study period. Liver function parameters remained within normal physiological limits, confirming hepatoprotective and safe profile of the intervention.

4. DISCUSSION

4.1 Conceptual Correlation: Kitibha Kushta and Psoriasis

The present study established a strong clinical correlation between *Kitibha Kushta* and psoriasis. *Kitibha Kushta*, characterized by *Shyava Varna* (dark discoloration), *Kinakhara Sparsha* (rough texture), and *Parushata* (dryness), closely parallels psoriasis manifestations including erythematous plaques, silvery scales, and skin thickening [6,13]. The predominance of *Vata-Kapha Prakriti* (43.33%) in the study population supports the classical Ayurvedic understanding of *Kitibha Kushta* as a *Vata-Kapha* predominant condition [14].

The concept of *Dushivisha* as a latent, cumulative toxic state was validated by clinical observations. The majority of patients had gradual onset (70%) and chronic duration (61.67% with 1-5 years), indicating slow toxin accumulation. Psychological disturbances (86.67%), constipation (35%), and impaired *Agni* (56.67%) all factors described as *Dushivisha* aggravators were highly prevalent, supporting the role of *Dushivisha* in pathogenesis [15].

4.2 Mechanism of Action of Pippalyadi Agada

Pippalyadi Agada, with its predominant *Katu*, *Tikta*, and *Kashaya Rasa*; *Laghu*, *Ruksha*, *Tikshna Guna*; *Ushna Veerya*; and *Katu Vipaka*, acts through multiple mechanisms:

Digestive Correction: The formulation's *Deepana* and *Pachana* properties address *Agnimandya* (impairment of digestive fire), the fundamental pathology in *Ama* and *Dushivisha* formation [16]. *Katu* and *Tikta Rasa*, along with *Ushna Veerya*, stimulate *Jatharagni* and *Dhatwagni*, preventing *Ama* formation.

Systemic Detoxification: *Vishaghna* properties neutralize *Dushivisha*, while *Lekhana* and *Kledahara* actions remove accumulated toxins. *Raktaprasadana* and *Kushthaghna* properties purify blood and counteract dermatological manifestations [17].

Srotoshodhana: The *Tikshna* and *Ruksha Guna* clear obstructed microchannels (*Srotas*), facilitating proper nutrient transport and waste elimination, thereby restoring skin metabolism [18].

The presence of ingredients with established anti-inflammatory, antioxidant, hepatoprotective, and immunomodulatory activities including *Pippali* (*Piper longum*), *Maricha* (*Piper nigrum*), *Haridra* (*Curcuma longa*), and *Jatamansi* (*Nardostachys jatamansi*) provides pharmacological basis for its therapeutic effects [19-22].

4.3 Mechanism of Action of Visha Taila

Visha Taila addresses the localized pathology of *Kitibha Kushta* through:

Moisturization and Barrier Restoration: The *Snigdha* (unctuous) nature of *Tila Taila* (sesame oil) directly counteracts *Vata*-induced *Rukshata* (dryness) and *Parushata* (roughness), restoring skin barrier function [23].

Local Detoxification: *Kushthaghna*, *Vishaghna*, and *Kandughna* properties reduce itching, scaling, and inflammation. Ingredients like *Haridra*, *Daruharidra*, and *Manjishtha* exhibit anti-inflammatory, antimicrobial, and wound-healing activities [24,25].

Improved Local Circulation: *Gomutra* (cow's urine) acts as a *Yogavahi* (bioenhancer), enhancing penetration of active principles into skin microchannels, facilitating local *Dosha* pacification and improved *Twak* metabolism [26].

4.4 Therapeutic Efficacy

The significant reduction in PASI score (56.44%, $p<0.0001$) demonstrates the combined effectiveness of systemic detoxification and local symptom management. This improvement exceeds or matches many conventional treatments in reducing clinical severity while avoiding adverse effects [27].

The 34.45% reduction in ESR ($p<0.0001$) indicates favorable influence on systemic inflammatory status. Improvement in liver function parameters (SGPT: 23.37%, SGOT: 21.87%, $p<0.0001$) suggests enhanced hepatic metabolic activity, supporting the *Deepana-Pachana* and hepatoprotective effects of *Pippalyadi Agada* [28].

Stability of total bilirubin, protein, albumin, and globulin within normal limits confirms hepatic safety, addressing concerns associated with long-term conventional treatments [29].

4.5 Role of Dushivisha in Pathogenesis

The study validates *Dushivisha's* role in psoriasis pathogenesis through observed associations:

Demographic Patterns: Highest prevalence in 30-35 years (working age) and urban residents (55%) suggests occupational and environmental exposure to toxins, paralleling *Dushivisha* from *Sthavara*, *Jangama*, and *Kritrima Visha* [30].

Dietary Factors: Predominance of vegetarian diet (75%) doesn't preclude incompatible food combinations (*Viruddha Ahara*), which produce *Dushivisha*-like effects through *Ama* formation [31].

Psychological Factors: High prevalence of stress (50%) and tension (36.67%) supports the Ayurvedic understanding that psychological factors (*Rajasika* and *Tamasika Gunas*) contribute to *Doshik* imbalance and *Dushivisha* aggravation [32].

Seasonal Aggravation: Winter predominance (60%) aligns with *Vata-Kapha* exacerbation, validating the role of environmental factors in activating latent *Dushivisha* [33].

4.6 Safety and Tolerability

Absence of adverse reactions during the 60-day study confirms the safety of both *Pippalyadi Agada* and *Visha Taila*. The inclusion of *Vatsanabha* (*Aconitum ferox*) in *Visha Taila*, processed through proper pharmaceutical procedures with *Gomutra* and *Saindhava Lavana*, demonstrates the importance of classical purification (*Shodhana*) in ensuring safety while maintaining therapeutic efficacy [34].

5. CONCLUSION

This exploratory single-arm study provides substantial evidence that *Pippalyadi Agada* (oral) and *Visha Taila* (topical) are effective and safe in managing *Dushivisha Janya Kitibha Kushta* (Psoriasis). Key conclusions include:

- **Significant Clinical Improvement:** 56.44% reduction in PASI score ($p<0.0001$), with 83.33% of patients showing moderate to marked improvement.
- **Systemic Benefits:** Significant reduction in inflammatory marker (ESR: 34.45%) and improvement in liver function parameters (SGPT: 23.37%, SGOT: 21.87%), indicating systemic anti-inflammatory and hepatoprotective effects.
- **Safety Confirmation:** No adverse reactions and maintenance of normal biochemical parameters confirm excellent safety and tolerability.
- **Validation of Ayurvedic Concepts:** Clinical observations validate the role of *Dushivisha*, *Ama*, *Agnimandya*, and *Srotorodha* in psoriasis pathogenesis, supporting classical Ayurvedic understanding.
- **Holistic Approach:** The dual approach of systemic detoxification and local symptom relief addresses both root causes and clinical manifestations, offering an effective alternative to conventional treatments with their associated adverse effects.
- **Therapeutic Principle:** Neutralization of *Dushivisha*, restoration of *Agni*, purification of *Rakta*, and pacification of *Vata-Kapha* constitute the fundamental therapeutic principles validated by this study.

Limitations and Recommendations

- Exploratory single-arm design without control group
- Relatively small sample size (n=60)
- Short duration (60 days) without long-term follow-up
- Need for larger randomized controlled trials
- Assessment of immunological and inflammatory biomarkers recommended
- Longer follow-up studies to assess recurrence rates

The null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted: ***Pippalyadi Agada* and *Visha Taila* are effective in the management of *Dushivisha Janya Kitibha Kushta* (Psoriasis)**.

REFERENCES

- Parisi R, Iskandar IYK, Kontopantelis E, et al. Global Psoriasis Atlas: National, regional, and worldwide epidemiology of psoriasis systematic analysis and modelling study. Br J Dermatol. 2020;182(2):354-365.
- Dogra S, Yadav S. Psoriasis in India: Prevalence and pattern. Indian J Dermatol Venereol Leprol. 2010;76(6):595-601.
- Kumar S, Nayak CS, Padhi T, et al. Epidemiological pattern of psoriasis, vitiligo and atopic dermatitis in India: Systematic review and meta-analysis. Indian Dermatol Online J. 2021;12(4):526-534.
- Burns DA, Breathnach SM, Cox NH, et al. Rook's Textbook of Dermatology. 8th ed. Vol 1. Blackwell Publishing Ltd; 2010. Chapter 20.1, p. 871.
- Thomas J, editor. Psoriasis: A Closer Look. 1st ed. Jaypee Brothers Medical Publishers; 2014. p. 2.
- Charaka Samhita. Vidyotini Hindi commentary by Shastri K, Chaturvedi G. Part 2. Varanasi: Chaukhambha Bharati Academy; 2018. Chikitsa Sthana 7/13.
- Sushruta Samhita. Ayurveda Tattva Sandipika Hindi commentary by Shastri A. Part 1. Varanasi: Chaukhambha Sanskrit Sansthan; 2018. Kalpa Sthana 2/25-26.
- Sushruta Samhita. Nibandhasangraha Commentary of Dalhanacharya. Varanasi: Chaukhambha Surbharati Prakashan; 2022. Kalpa Sthana 2/33-35.
- Charaka Samhita. Vidyotini Hindi commentary by Shastri K, Chaturvedi G. Part 2. Varanasi: Chaukhambha Bharati Academy; 2018. Chikitsa Sthana, p. 630.
- Liu Y, Zhang Z, Han D, et al. Association between environmental chemicals co-exposure and peripheral blood immune-inflammatory indicators. Front Public Health. 2022;10:980987.
- Yoga Ratnakara. Vidyotini Hindi commentary by Shastri L. Varanasi: Chaukhambha Prakashan; 2017. Uttarardha, p. 470.

- Bhaishajya Ratnavali. Shri Ramana Prabhakara commentary by Rao GP. 1st ed. Vol 2. Varanasi: Chaukhambha Orientalia. p. 335-336.
- Ashtanga Hridaya. Nidana Sthana. Chapter 14, verses 5-6. Varanasi: Chaukhambha Surbharati Prakashan.
- Sushruta Samhita. Nidana Sthana. Chapter 5, verse 7. Varanasi: Chaukhambha Sanskrit Sansthan; 2018.
- Vagbhata. Ashtanga Sangraha. Nidana Sthana. Chapter 14, verses 25-27. Varanasi: Chaukhambha Sanskrit Series Office; 2022.
- Kharat D, Gangasagre D, Mirajkar D. Screening of Anti-Toxic (Vishaghna) Property of Pippalyadi Agada - A Review. Eur J Biomed Pharm Sci. 2018;5(6):858-864.
- Charaka Samhita. Chikitsa Sthana. Chapter 7, verses 46-47. Varanasi: Chaukhambha Bharati Academy; 2018.
- Bhavamishra. Bhavaprakasha. Madhyama Khanda. Chapter 54. Varanasi: Chaukhambha Sanskrit Bhawan; 2022.
- Sharma PC, Yelne MB, Dennis TJ, et al. Database on Medicinal Plants Used in Ayurveda. Vol 3. New Delhi: CCRAS; 2001. p. 475.
- Prasad S, Gupta SC, Tyagi AK, Aggarwal BB. Curcumin: Biological, Pharmaceutical, Nutraceutical, and Analytical Aspects. Molecules. 2014;19(12):20091-20112.
- Jamal G, Parveen R, Khan MA, et al. A Review on Valeriana wallichii: Chemical Composition and Pharmacological Research. Curr Tradit Med. 2023;9(4):340-356.
- Al Muqarrabun LM, Ahmat N, Ruzaina SA, Ismail NH, Sahidin I. Medicinal uses, phytochemistry and pharmacology of Pongamia pinnata (L.) Pierre: a review. J Ethnopharmacol. 2013;150(2):395-420.
- Dossa K, Diouf D, Wang L, et al. A comprehensive review on Sesamum indicum L.: Botanical, ethnopharmacological, phytochemical, and pharmacological aspects. J Ethnopharmacol. 2021;281:114503.
- Acharya N, Acharya S, Shah U, Shah R, Hingorani L. A comprehensive analysis on Symplocos racemosa Roxb.: Traditional uses, botany, phytochemistry and pharmacological activities. J Ethnopharmacol. 2016;181:236-251.
- Andola HC, Gaira KS, Rawal RS, Rawat MSM, Bhatt ID. Habitat-dependent variations in berberine content of Berberis aristata DC. from the Himalaya. Chem Biodivers. 2010;7(2):415-420.
- Randhawa GK, Sharma R. Chemotherapeutic potential of cow urine: A review. J Intercult Ethnopharmacol. 2015;4:180-186.
- Feather A, Randall D, Waterhouse M. Kumar & Clark's Clinical Medicine. 10th ed. 2017.
- Loscalzo J, Fauci AS, Kasper DL, et al. Harrison's Principles of Internal Medicine. 18th ed. Vol 1. 2012.
- Kumar V, Abbas AK, Fausto N. Robbins and Cotran Pathologic Basis of Disease. 7th ed. 2005. Chapter 25, p. 1257.
- Sushruta Samhita. Kalpa Sthana. Chapter 2, verse 25. Varanasi: Chaukhambha Sanskrit Sansthan; 2018.
- Charaka Samhita. Sutra Sthana. Chapter 26, verses 86-103. Varanasi: Chaukhambha Bharati Academy; 2018.
- Rousset L, Halioua B. Stress and psoriasis. Int J Dermatol. 2018;57(10):1165-1172.
- Ashtanga Hridaya. Nidana Sthana. Chapter 14. Varanasi: Chaukhambha Surbharati Prakashan; 2022.
- Shastri K. Rasa Tarangini. 11th ed. Varanasi: Motilal Banarsidass Publishers; 1971. Taranga 24/68.