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A Comparative Analytical and Clinical Study of *Methika* (*Trigonella foenum-graecum L.*) and *Kasuri Methika* (*Trigonella corniculata*) in the Management of *Prameha* (Type 2 Diabetes Mellitus)

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Abstract: ***Background: Prameha in Ayurveda involves derangement of Kapha, Meda, Kleda and Agni. This study compared Methika (Trigonella foenum-graecum L.) and Kasuri Methika (Trigonella corniculata) in Type 2 diabetes mellitus.***
Methods: Sixty patients were studied in two groups of 30 each. Methika Choorna or Kasuri Methika Choorna was administered at 3 g twice daily for 60 days, with follow-up to day 90. Subjective parameter and objective parameter FBS, PPBS, HbA1c, FUS and PPUS were assessed.
Results: Both groups showed significant improvement ($p < 0.001$). FBS, PPBS and HbA1c decreased from 153.66 ± 21.56, 246.34 ± 33.45 and 7.98 ± 1.18 to 128.38 ± 15.67 mg/dL, 201.41 ± 24.56 mg/dL and 6.85 ± 0.92%, respectively, with Methika. With Kasuri Methika, corresponding values decreased from 158.79 ± 23.34, 252.71 ± 35.67 and 8.12 ± 1.24 to 130.46 ± 18.92 mg/dL, 207.96 ± 27.45 mg/dL and 7.02 ± 0.98%. Overall improvement was 51.73% and 47.63%, respectively, with no significant between-group difference ($p = 0.385$).
Conclusion: Both drugs significantly improved clinical and biochemical parameters of Prameha. Methika, showed slightly greater improvement, but neither drug demonstrated significant superiority.
Keywords: Methika; Trigonella foenum-graecum; Kasuri Methika; Trigonella corniculata; Prameha; Type 2 diabetes mellitus; Dravyaguna; TLC; Ayurvedic medicine.

I. INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by persistent elevation of blood glucose and is increasingly recognized as a major public-health challenge. The study underlying this article places Type 2 diabetes within the broader Ayurvedic framework of Prameha and emphasizes that long-term dietary excess, sedentary behaviour, obesity and metabolic disturbance contribute to disease development. Classical Ayurvedic literature provides detailed descriptions of Prameha, including its Nidana, Dosha-Dushya involvement, pathogenesis, clinical manifestations and management. The study specifically notes that Apathyanimittaja Prameha has important clinical similarities with Type 2 diabetes mellitus because both are closely related to inappropriate diet and lifestyle. Ayurveda approaches chronic disease through a broader therapeutic framework rather than relying only on suppression of a biochemical endpoint. In the study, Prameha is understood in relation to Kapha, Meda and Kleda, together with impaired Agni and altered metabolic processes. The clinical population also reflected several lifestyle and dietary characteristics described in the study as relevant to Prameha: a predominance of Madhura-rasa dietary intake, carbohydrate-rich diets, irregular sleep in a substantial proportion of participants, and varying levels of physical activity.

Methika (Trigonella foenum-graecum L.) was selected because of its established place in Ayurvedic materia medica and its reported metabolic actions. The study describes *Methika* as possessing Katu-Tikta Rasa, Laghu-Snigdha Guna, Ushna Veerya and Katu Vipaka in its Ayurvedic review, with Deepana, Pachana, Medohara and Pramehaghna relevance. Classical references to *Methika* are reported in later Ayurvedic lexicons and therapeutic texts, including Dhanvantari Nighantu, Madhava Dravyaguna, Bhavaprakasha Nighantu, Raj Nighantu and Bhaishajya Ratnavali.

Kasuri Methika (Trigonella corniculata) was selected as the comparator because it is closely related botanically and is used traditionally as a culinary and medicinal plant. The study highlights that, unlike *Methika*, explicit references to *Kasuri Methika* are sparse or absent in many of the reviewed classical texts. This difference in documented textual history provided a useful basis for comparative analytical and clinical investigation.

II. AIM AND OBJECTIVES

A. Aim

To comparatively evaluate the analytical characteristics and clinical efficacy of *Methika* (Trigonella foenum-graecum L.) and *Kasuri Methika* (Trigonella corniculata) in the management of Prameha corresponding to Type 2 diabetes mellitus.

B. Objectives

- To assess the safety and efficacy of *Methika* and *Kasuri Methika* in the management of Prameha/Type 2 diabetes mellitus.
- To compare changes in selected subjective Ayurvedic symptoms and objective biochemical parameters before and after intervention.
- To review the available Ayurvedic and modern literature concerning *Methika*, *Kasuri Methika*, Prameha and diabetes mellitus.
- To establish the pharmacognostical identity of the selected seeds by macroscopic and microscopic examination.
- To evaluate preliminary phytochemical characteristics and chromatographic profiles of the two seed drugs.
- To prepare standardized Choorna and assess its clinical use under a defined dosage and treatment schedule.

C. Ayurvedic and Contemporary Framework

The study frames Prameha as a disease in which Kapha, Meda and Kleda are important pathological components, particularly in Sthoola Pramehi. The study population predominantly represented the Sthoola phenotype: 53.33% had Sthoola Sharira, while 45.00% had Madhyama Sharira and 1.67% had Krisha Sharira. This clinical distribution is relevant because the selected drugs were considered suitable for metabolic disorders involving excess Kapha and Meda.

The clinical symptom set deliberately combined classical and contemporary observations. The principal subjective parameters were Prabhuta Mutrata (polyuria), Pipasadhikya (polydipsia), Kshudhadhikya (polyphagia), Kara-Pada Tala Daha/Supti (burning or numbness), Swedadhikya (excess perspiration), Daurbalya (weakness), Pindikodveshtana (cramps), Tandra (drowsiness), Mutramadhuryata (glycosuria) and Avila Mutrata (turbid urine). Objective outcomes were FBS, PPBS, HbA1c, FUS and PPUS.

D. Conceptual Basis of Drug Selection

Within the Ayurvedic interpretation recorded in the study, the pungent and bitter taste, metabolic actions and Kapha-Meda reducing potential of *Methika* support its use in Prameha. The study also describes Deepana and Pachana actions as relevant to correcting metabolic disturbance. *Kasuri Methika* was investigated on the same clinical premise, with the comparative design allowing the study to determine whether the two seed drugs produce comparable outcomes rather than assuming equivalence from botanical similarity alone. The analytical component was included because correct botanical identity, purity and reproducibility are essential when comparing herbal drugs. The stud therefore integrated macroscopic and microscopic examination, physicochemical evaluation, preliminary phytochemical screening and TLC profiling with pharmaceutical preparation and clinical assessment.

III. METHODS

A. Study Design and Setting

This was a prospective, open-label, two-arm interventional clinical study supported by pharmacognostical, phytochemical and pharmaceutical investigations. The clinical component was conducted at the Postgraduate Institute of Ayurveda, Dr. Sarvepalli Radhakrishnan Rajasthan Ayurveda University, Jodhpur. The study records ethical approval from the Institutional Ethics Committee of the institution (DSRRAU/PGIA/IEC/23-24/798; dated 03 January 2025) and registration with the Clinical Trials Registry of India (CTRI/2025/04/083948; registered 02 April 2025).

The study protocol specified a 60-day treatment period and a 30-day post-treatment follow-up, with assessments at baseline, day 30, day 60 and day 90. The intervention was designed as a comparative evaluation of *Methika* Choorna and *Kasuri Methika* Choorna. The study reports 64 patients screened/registered and 60 patients completing the trial, with 30 completed participants in each treatment group.

B. Participants

Eligible participants were patients aged 30–70 years with clinical features of Prameha and biochemical criteria consistent with Type 2 diabetes mellitus. The stated inclusion criteria included FBS >126 mg/dL and <200 mg/dL and 2-hour PPBS >200 mg/dL and <350 mg/dL, together with willingness to participate and written consent. Exclusion criteria included age outside the specified range, pregnancy/lactation, Type 1 diabetes, insulin-dependent Type 2 diabetes due to secondary failure, major diabetic complications such as ketoacidosis, neuropathy, nephropathy, retinopathy or diabetic wounds, and severe systemic disease, chronic infection or active malignancy.

Withdrawal criteria included serious clinical deterioration or adverse effects requiring urgent treatment, non-compliance with study instructions/Pathya-Apathya, and leaving against medical advice. The study records show four withdrawals, two from each group.

C. Sample Collection and Authentication

Methika seeds were collected in December 2025 from Nayapura, Jodhpur, while Trigonella corniculata seeds were collected in December 2025 from Chora Rasta, Jaipur. Botanical identity was authenticated with the support of the supervisors, available floristic/database resources and the Pharmacognosy lab of the Department of Dravyaguna, PGIA, DSRRAU, Jodhpur. The study records sample identification under the relevant institutional sample documentation.

For pharmacognostical examination, organoleptic, macroscopic and microscopic characters were assessed. The study reports *Methika* seeds as small, hard, angular/rhomboidal, yellow-brown to golden-yellow/olive-green, with a strong characteristic odour and bitter-earthy taste. The *Kasuri Methika* material was also evaluated for its characteristic morphology, odour, taste and texture.

D. Pharmacognostical and Phytochemical Study

The analytical component was designed to support authentication and standardization of both drugs. The study included physical parameters such as foreign matter and loss on drying/moisture content; physicochemical parameters including total ash and acid- and water-soluble fractions; pH and inorganic/electrolyte assessment; extraction using different solvents; qualitative chemical tests; and thin-layer chromatography.

Preliminary qualitative phytochemical screening was performed on both samples. The study reports positive reactions for carbohydrates, reducing sugars, alkaloids, saponins, glycosides, tannins, amino acids and proteins in the tested extracts. These results indicate the presence of multiple classes of constituents but do not by themselves establish quantitative concentrations or identify individual molecules.

Phytochemical test	**Trigonella foenum-graecum**	**Trigonella corniculata**
Carbohydrates (Molisch/Benedict)	+	+
Reducing sugars (Benedict)	+	+
Alkaloids (Wagner)	+	+
Saponins (Foam test)	+	+
Glycosides (Keller–Killiani)	+	+
Tannins (FeCl3/Vanillin)	+	+
Amino acids (Ninhydrin)	+	+
Protein (Millon)	+	+

E. Thin-Layer Chromatography

For *Methika*, freshly prepared ethanol extract of the seed was applied to activated silica gel plates. Methanol:chloroform (7:3 v/v) was used as the mobile phase and spots were visualized in an iodine chamber. The reported Rf values were 0.21, 0.36, 0.52, 0.69 and 0.86, corresponding to spot distances of 2.1, 3.6, 5.2, 6.9 and 8.6 cm when the solvent front was 10.0 cm.

For *Kasuri Methika*, the study reports a silica gel TLC procedure using a toluene:ethyl acetate (5:5 v/v) mobile phase and iodine visualization. The reported Rf values were 0.16, 0.29, 0.46, 0.56, 0.71 and 0.84, with a 10.0-cm solvent front and corresponding spot distances of 1.6, 2.9, 4.2, 5.6, 7.1 and 8.4 cm. The distinct chromatographic patterns provide a useful analytical differentiator between the two samples under the stated conditions.

F. Pharmaceutical Preparation

The seed material was cleaned, powdered and sifted to the required fineness. The finished Choorna was packed in an airtight container. The study states that *Methika* and *Kasuri Methika* Beeja Choorna were prepared at Nagarjuna Rasayanashala, DSRRAU, Jodhpur, under standard procedures, with Batch No. 02/2026.

G. Intervention

Component	*Methika* Group	*Kasuri Methika* Group
Drug	*Methika Beeja Choorna*	*Kasuri Methika Beeja Choorna*
Botanical source	Trigonella foenum-graecum L.	Trigonella corniculata
Dose	3 g twice daily	3 g twice daily
Route	Oral	Oral
Anupana	Sukhoshna Jala (lukewarm water)	Sukhoshna Jala (lukewarm water)
Aushadha Sevana Kala	Before meals	Before meals
Treatment duration	60 days	60 days
Follow-up	30 days	30 days

The intervention therefore provided the two drugs under matched dosage, route, timing and duration conditions, allowing comparative assessment. The study describes the study as open-label and prospective. The treatment was accompanied by clinical monitoring and laboratory reassessment.

H. Outcome Measures

Subjective parameters were graded from the patient's clinical presentation using the structured case record form. The objective parameters were laboratory measurements of FBS, PPBS, HbA1c, FUS and PPUS. Assessments were scheduled at baseline, day 30, day 60 and day 90. HbA1c was specifically repeated at the 90th day according to the stated assessment schedule.

I. Assessment of Overall Improvement

Relief	Interpretation in study
0%	No relief; non-satisfactory
1–25%	Mild improvement; satisfactory
26–50%	Moderate improvement; good
51–75%	Significant improvement; very good
76–100%	Excellent improvement; excellent

J. Statistical Analysis

The study reports analysis in terms of mean, standard deviation, standard error and p-value. Paired t-tests were used for within-group assessment of parametric objective data, while comparative tests were used to evaluate between-group differences and baseline comparability. The significance level was set at $p < 0.05$. The statistical software recorded in the study was SPSS/Stata.

The analytical approach distinguishes statistical significance within each group from comparative superiority between groups. This distinction is important: a significant pre–post change in both groups does not automatically mean that one drug is significantly better than the other. The present study specifically reported no statistically significant difference in overall comparative improvement.

IV. RESULTS

A. Participant Flow

A total of 64 patients were screened and registered after applying the eligibility criteria. Thirty-two participants were registered in each group. Sixty participants completed the clinical study, giving a completion proportion of 93.75% of registered participants. Four participants, two in each group, withdrew by leaving against medical advice.

The study reports no withdrawals for non-compliance or poor follow-up in the withdrawal analysis table, although the broader patient-status narrative describes the four withdrawals in relation to follow-up. No major adverse event was reported.

Patient status	*Methika*	*Kasuri Methika*	Total
Registered	32	32	64
Completed	30	30	60
LAMA/withdrawn	2	2	4
Completion among registered	93.75%	93.75%	93.75%

B. Baseline Comparability

The baseline clinical and biochemical data were comparable between the two groups, with no statistically significant difference in the reported subjective scores or objective measures. Total baseline symptom scores were 17.16 ± 5.47 in the *Methika* group and 17.11 ± 5.72 in the *Kasuri Methika* group (p = 0.972).

Objective parameter	*Methika* Mean ± SD	*Kasuri Methika* Mean ± SD	p-value
FBS (mg/dL)	153.66 ± 21.56	158.79 ± 23.34	0.383
PPBS (mg/dL)	246.34 ± 33.45	252.71 ± 35.67	0.480
HbA1c (%)	7.98 ± 1.18	8.12 ± 1.24	0.653
FUS (%)	0.51 ± 0.31	0.54 ± 0.34	0.723
PPUS (%)	0.91 ± 0.48	0.95 ± 0.51	0.756

The absence of significant baseline differences supports the internal comparability of the two treatment groups for the outcomes reported in the study.

C. Demographic Profile

Among the 60 completers, 33 (55%) were female and 27 (45%) were male. The largest age category was 41–50 years (40%), followed by 30–40 years (33.33%), 61–70 years (16.67%) and 51–60 years (10%). All participants were reported as Hindu. Most were married (91.67%). The socioeconomic distribution was predominantly lower-middle (45%), followed by upper-middle (38.33%) and poor (16.67%).

D. Disease Chronicity and Family History

Half of the participants (50.00%) had a reported disease chronicity of 2–3 years. A further 38.33% had a chronicity of 4–5 years, while 11.67% had a duration of less than one year. Family history of diabetes was present in 66.67% of the study population and absent in 33.33%.

E. Diet, Work and Lifestyle

The dietary profile showed that 60% of participants followed a vegetarian diet and 40% a mixed diet. Madhura Rasa was the dominant dietary rasa in 46.67% of participants, followed by Tikta Rasa (18.33%), Kashaya Rasa (11.67%), Katu Rasa (10.00%), Lavana Rasa (8.33%) and Amla Rasa (5.00%). Regarding the broad nature of diet, 56.67% were categorized as carbohydrate-dominant, 26.67% protein-dominant and 16.67% fat-dominant.

Clinical/lifestyle variable	n	%
Vegetarian diet	36	60.00
Mixed diet	24	40.00
Madhura-dominant Ahara Rasa	28	46.67
Carbohydrate-dominant diet	34	56.67
Moderate nature of work	26	43.33
Sedentary nature of work	21	35.00
Regular exercise	37	61.67
Irregular exercise	23	38.33

The study records moderate work in 43.33%, sedentary work in 35.00% and heavy work in 21.67%. Regular exercise was reported in 61.67% and irregular exercise in 38.33%. The study discussion interprets these lifestyle variables through the Ayurvedic concepts of Avyayama, Alasya, Swapnasukha and Asyasukha and also relates them to contemporary metabolic risk factors.

F. Body Constitution and Psychological Profile

Sthoola Sharira was observed in 53.33% of the participants, Madhyama Sharira in 45.00% and Krisha Sharira in 1.67%. Sharirika Prakriti was predominantly Kapha-Vata (58.33%), followed by Kapha-Pitta (21.67%) and Vata-Pitta (3.33%) in the reported distribution. Mansika Prakriti was Rajasika in 53.33%, Tamasika in 38.33% and Satvika in 8.33%.

Emotional-status recording showed depression in 35.00%, anxiety in 28.33%, a jolly emotional status in 26.67% and normal emotional status in 10.00%. The study interprets these observations as part of the broader psychosomatic and lifestyle context of Prameha, while the present article treats them as descriptive characteristics rather than causal findings.

G. Presenting Clinical Features

Prabhuta Mutrata and Avila Mutrata were each recorded in 100% of participants. Pipasadhikya occurred in 98.33%, while Tandra and Swedadhikya each occurred in 80.00%. Mutramadhuryata was reported in 75.00%, Pindikodveshtana and Daurbalya in 71.67% each, Kshudhadhikya in 70.00%, and Kara-Pada Tala Daha/Supti in 65.00%. These findings demonstrate that the clinical sample contained a broad range of classical Prameha manifestations.

H. Within-Group Symptom Improvement

Both interventions produced statistically significant reductions in the overall subjective symptom burden. The study reports an overall symptom-score improvement of 51.73% in the *Methika* group and 47.63% in the *Kasuri Methika* group. The individual symptom results also generally favoured substantial improvement in both groups.

Symptom	*Methika* % relief	*Kasuri Methika* % relief	Between-group significance
Prabhuta Mutrata / Polyuria	53.45	48.15	NS
Avila Mutrata / Turbidity	39.52	36.11	NS
Pipasadhikya / Polydipsia	65.45	62.50	NS
Kshudhadhikya / Polyphagia	62.22	57.50	NS
Kara-Pada Daha/Supti	60.61	53.57	NS
Swedadhikya / Perspiration	54.17	51.28	NS
Daurbalya / Weakness	54.17	50.00	NS
Pindikodveshtana / Cramps	49.18	47.62	NS
Tandra / Drowsiness	53.33	48.57	NS
Mutramadhuryata / Glycosuria	44.90	41.18	NS
Total symptom score	51.73	47.63	$p = 0.385$; NS

The strongest reported subjective improvement in the *Methika* group was for Pipasadhikya (65.45%), followed by Kshudhadhikya (62.22%) and Kara-Pada Daha/Supti (60.61%). In the *Kasuri Methika* group, the largest improvements were reported for Pipasadhikya (62.50%), Kshudhadhikya (57.50%) and Kara-Pada Daha/Supti (53.57%). The between-group comparison did not demonstrate statistically significant superiority for either drug.

I. Statistical Findings for Selected Symptoms

Within the *Methika* group, the reduction in Prabhuta Mutrata from 1.81 ± 0.93 to 0.84 ± 0.68 corresponded to 53.45% relief ($p < 0.001$). Pipasadhikya decreased from 1.72 ± 0.77 to 0.59 ± 0.56, corresponding to 65.45% relief ($p < 0.001$). Polyphagia decreased from 1.41 ± 1.04 to 0.53 ± 0.56, corresponding to 62.22% relief ($p < 0.001$).

In the *Kasuri Methika* group, Prabhuta Mutrata decreased from 1.71 ± 0.85 to 0.89 ± 0.74, corresponding to 48.15% relief ($p < 0.001$). Avila Mutrata decreased from 3.86 ± 2.19 to 2.46 ± 1.98, corresponding to 36.11% relief ($p < 0.001$). Pipasadhikya decreased from 1.71 ± 0.76 to 0.64 ± 0.56, corresponding to 62.50% relief ($p < 0.001$).

J. Clinical Interpretation

The consistent direction of change across the symptom set indicates that both drugs were associated with improvement in the subjective Prameha profile. However, the comparative statistics are the appropriate basis for determining wheather one intervention outperformed the other. The study reports no statistically significant between-group difference in total symptom relief.

K. Methika Group

Parameter	Baseline Mean ± SD	Day 90 Mean ± SD	Relief	p-value
FBS (mg/dL)	153.66 ± 21.56	128.38 ± 15.67	16.45%	<0.001
PPBS (mg/dL)	246.34 ± 33.45	201.41 ± 24.56	18.24%	<0.001
HbA1c (%)	7.98 ± 1.18	6.85 ± 0.92	14.16%	<0.001
FUS (%)	0.51 ± 0.31	0.28 ± 0.21	45.10%	<0.001
PPUS (%)	0.91 ± 0.48	0.51 ± 0.34	43.96%	<0.001

The *Methika* group demonstrated highly significant reductions across all reported objective outcomes. The largest percentage changes were observed for FUS (45.10%) and PPUS (43.96%), while FBS, PPBS and HbA1c decreased by 16.45%, 18.24% and 14.16%, respectively.

L. Kasuri Methika Group

Parameter	Baseline Mean ± SD	Day 90 Mean ± SD	Relief	p-value
FBS (mg/dL)	158.79 ± 23.34	130.46 ± 18.92	17.84%	<0.001
PPBS (mg/dL)	252.71 ± 35.67	207.96 ± 27.45	17.71%	<0.001
HbA1c (%)	8.12 ± 1.24	7.02 ± 0.98	13.55%	<0.001
FUS (%)	0.54 ± 0.34	0.31 ± 0.24	42.59%	<0.001
PPUS (%)	0.95 ± 0.51	0.56 ± 0.38	41.05%	<0.001

Kasuri Methika also produced highly significant reductions in all five reported objective parameters. The largest percentage changes were observed in FUS (42.59%) and PPUS (41.05%). FBS decreased by 17.84%, PPBS by 17.71% and HbA1c by 13.55%.

M. Between-Group Comparison of Objective Outcomes

Parameter	*Methika* relief	*Kasuri* relief	Difference	p-value
FBS	16.45%	17.84%	-1.39%	0.650
PPBS	18.24%	17.71%	0.53%	0.844
HbA1c	14.16%	13.55%	0.61%	0.816
FUS	45.10%	42.59%	2.51%	0.674
PPUS	43.96%	41.05%	2.91%	0.627

None of the between-group comparisons for FBS, PPBS, HbA1c, FUS or PPUS reached statistical significance. Thus, while the magnitude of individual percentage changes varied slightly, the study does not provide statistical evidence that either drug is superior for the measured biochemical outcomes.

N. Overall Grading of Improvement

Grade	*Methika* n (%)	*Kasuri Methika* n (%)
No relief (0%)	0 (0%)	0 (0%)
Mild (1–25%)	7 (23.33%)	5 (16.67%)
Moderate (26–50%)	10 (33.33%)	12 (40.00%)
Significant (51–75%)	13 (43.33%)	13 (43.33%)
Excellent (76–100%)	0 (0%)	0 (0%)
LAMA/withdrawn	2 (6.67%)	2 (6.67%)

Among completed participants, the largest category in both groups was significant improvement (51–75%), comprising 43.33% in each group. Moderate improvement was observed in 33.33% of the *Methika* group and 40.00% of the *Kasuri Methika* group. Mild improvement was observed in 23.33% and 16.67%, respectively. No completed participant was classified as having no relief or excellent improvement according to the stated grading system.

O. Comparative Effectiveness

The inferential summary in the study reports 51.73% overall improvement for *Methika* and 47.63% for *Kasuri Methika*. The absolute difference was 4.10 percentage points, with $p = 0.385$, indicating that the observed difference was not statistically significant. The alternative hypostudy that both drugs are effective was accepted in the study, while the null hypostudy was rejected for both groups.

P. Safety and Withdrawal

No major side effects or untoward events were observed during the treatment period according to the study summary. Both drugs were described as well tolerated at the studied dose and duration. Four participants withdrew, two from each group, and the reported withdrawal analysis lists leaving against medical advice as the reason. The equal distribution of withdrawals reduces concern that differential attrition alone explains the comparative outcome, although the small sample limits interpretation.

Q. Analytical Findings in Relation to Identity

The pharmacognostical study documented characteristic seed features and the phytochemical screening showed a similar broad pattern of positive qualitative tests for both drugs. TLC, however, demonstrated distinguishable chromatographic fingerprints. *Methika* showed five reported Rf values (0.21, 0.36, 0.52, 0.69 and 0.86), whereas *Kasuri Methika* showed six reported values (0.16, 0.29, 0.46, 0.56, 0.71 and 0.84) under the respective solvent systems. These findings support the need for analytical identification when the two drugs are compared or substituted.

V. DISCUSSION

A. Interpretation of the Conceptual Findings

The present study integrates an Ayurvedic conceptual framework with pharmacognostical, phytochemical and clinical methods. This is consistent with the study's stated approach that standardization of Ayurvedic drugs should consider botanical identity, geographical source, organoleptic characteristics, morphology, anatomy, physical and chemical properties and relevant classical references. The analytical component is therefore not separate from the clinical component; it establishes the identity and reproducibility of the materials subsequently administered to participants. *Methika* has a comparatively extensive textual history in the study. The study reports no clear reference in the earliest Vedic and several major Samhita sources, while later Nighantu and therapeutic literature contains increasingly explicit descriptions. Dhanvantari Nighantu is presented as an important early source describing *Methika* with synonyms and attributes. Later works including Madhava Dravyaguna, Bhavaprakasha Nighantu, Raj Nighantu and Bhaishajya Ratnavali record the drug and its therapeutic applications. The study particularly notes references to *Methika* in formulations indicated for Prameha in Bhaishajya Ratnavali. *Kasuri Methika* occupies a different position in the reviewed literature. The study repeatedly notes absence of explicit mention in many classical texts, while recognizing its later traditional and dietary importance. This makes the comparative analytical component especially relevant because botanical relationship or common naming alone should not be treated as proof of pharmacological equivalence.

B. Ayurvedic Interpretation of Clinical Response

The study interprets the clinical improvement through the Ayurvedic actions attributed to the drugs, especially Deepana, Pachana, Kaphahara and Medohara effects. Prameha in the study population was predominantly represented by Sthoola Sharira, and the observed dietary profile included a high proportion of Madhura-dominant and carbohydrate-dominant intake. From the Ayurvedic perspective used in the study, such patterns are compatible with Kapha-Meda-Kleda aggravation and impaired metabolic processing. The reduction in Prabhuta Mutrata is clinically important because polyuria was present in all participants at baseline. Both drugs significantly reduced the symptom score. The study explains this through the reduction of metabolic disturbance and, in contemporary terms, improved glycaemic control that may reduce osmotic diuresis. The study itself does not establish a specific molecular mechanism; therefore, these interpretations should be considered explanatory correlations rather than mechanistic proof.
Similarly, reductions in Pipasadhikya and Kshudhadhikya were among the largest subjective improvements. These findings are consistent with the broad improvement in glycaemic parameters, although the study design cannot establish which biological pathway produced the clinical response. The strength of the observation lies in the concordance between patient-reported symptoms and laboratory measures.

C. Interpretation of Biochemical Findings

The biochemical results provide the strongest quantitative evidence in the study. Both groups demonstrated highly significant reductions in FBS, PPBS, HbA1c, FUS and PPUS. In *Methika*-treated participants, FBS fell by 25.28 mg/dL, PPBS by 44.93 mg/dL and HbA1c by 1.13 percentage points. In *Kasuri Methika*-treated participants, FBS fell by 28.33 mg/dL, PPBS by 44.75 mg/dL and HbA1c by 1.10 percentage points. The urine sugar measures also showed marked percentage reductions.The comparative analysis is equally important. *Kasuri Methika* showed a numerically greater FBS percentage reduction than *Methika* (17.84% versus 16.45%), whereas *Methika* showed slightly greater percentage reductions in PPBS, HbA1c, FUS and PPUS. None of these differences was statistically significant. The results therefore support a conclusion of comparable efficacy rather than superiority of one drug.

D. Relationship to Symptom Outcomes

The parallel improvement in subjective and objective parameters strengthens the overall interpretation of therapeutic benefit. The total symptom score improved by 51.73% in the *Methika* group and 47.63% in the *Kasuri Methika* group, while biochemical measures improved significantly within both groups. The difference in total symptom relief was only 4.10 percentage points and was statistically non-significant ($p = 0.385$). The study discussion relates these outcomes to the classical concept of Samprapti Vighatana. *Methika* is interpreted as acting on excessive Kapha, Meda and Kleda while supporting Agni and metabolic processing. The modern phytochemical discussion identifies constituents such as 4-hydroxyisoleucine, trigonelline, diosgenin, galactomannan, flavonoids and saponins. These constituents are presented in the study as potentially contributing to antihyperglycaemic, antioxidant, anti-inflammatory and lipid-lowering effects. However, because the clinical study did not isolate or quantify these compounds, the article should not infer a direct causal relationship between a specific constituent and the observed patient-level outcomes.

E. Analytical Standardization

The positive qualitative phytochemical results for both species indicate broad chemical similarity at the level of tested constituent classes. At the same time, the TLC profiles were not identical. *Methika* produced five reported spots and *Kasuri Methika* six under their respective solvent systems. Because different mobile phases were used, the Rf profiles should be interpreted as sample fingerprints under specified analytical conditions rather than as a direct one-to-one quantitative comparison of constituent abundance. The analytical results are therefore valuable primarily for authentication, quality control and future standardization. For a stronger comparative phytochemical conclusion, future studies should employ a common validated chromatographic system, quantitative marker analysis and preferably chromatographic or spectrometric profiling capable of identifying characteristic compounds.

F. Safety

The absence of major adverse events and the equal withdrawal pattern support the short-term tolerability of both Choorna preparations in the studied population. Nevertheless, the study was not powered primarily as a safety trial, the sample was limited to 60 completers, and the treatment duration was two months. Consequently, the safety findings are supportive but should not be interpreted as establishing long-term safety.

VI. CONCLUSION, LIMITATIONS AND FUTURE DIRECTIONS

A. *Conclusion*

The present comparative analytical and clinical study evaluated *Methika* (Trigonella foenum-graecum L.) and *Kasuri Methika* (Trigonella corniculata) in patients with Type 2 diabetes mellitus interpreted within the Ayurvedic framework of Prameha. The study combined pharmacognostical identification, preliminary phytochemical screening, TLC profiling, standardized Choorna preparation and prospective clinical evaluation. Both drugs demonstrated significant improvement in the selected subjective symptoms of Prameha. Polyuria, turbidity of urine, excessive thirst, excessive hunger, burning/numbness, perspiration, weakness, cramps, drowsiness and glycosuria all showed improvement within the treatment groups. The objective measures FBS, PPBS, HbA1c, FUS and PPUS also decreased significantly in both groups, with $p < 0.001$ for the reported within-group comparisons.

Methika produced 51.73% overall improvement and *Kasuri Methika* 47.63%. Although *Methika* showed a numerically higher overall response, the 4.10-percentage-point difference was not statistically significant ($p = 0.385$). The objective-parameter comparisons likewise showed no significant difference between groups. Therefore, the principal clinical conclusion is that both interventions were effective in the studied setting, while the evidence does not demonstrate comparative superiority of *Methika* over *Kasuri Methika*.

The analytical findings further demonstrate that the two seed drugs can be differentiated through their pharmacognostical characteristics and TLC fingerprints. Both showed positive qualitative reactions for several phytochemical classes, but their chromatographic profiles differed under the stated solvent systems. This supports the importance of authentication and standardization when these botanically related drugs are used for therapeutic research.

B. *Limitations*

- The clinical sample was limited to 60 completed participants, reducing statistical power and generalizability.
- The study focused on a predominantly Sthoola/obese Type 2 diabetes phenotype; applicability to Krisha Pramehi was not established.
- Treatment lasted 60 days, so long-term control and prevention of diabetic complications could not be assessed.
- The design was open-label and did not include a placebo or conventional standard-treatment comparator.
- The analytical phytochemical work was preliminary; qualitative positive tests do not establish quantitative constituent concentrations.
- TLC solvent systems differed between the two drugs, limiting direct quantitative comparison of chromatographic profiles.
- Batch-to-batch variation in herbal raw material and active constituents remains a potential challenge for reproducibility.

C. *Future Research*

- Conduct larger, multicentric randomized controlled trials comparing both drugs with an established Ayurvedic formulation and/or standard oral hypoglycaemic therapy.
- Evaluate different dosage forms such as Choorna and Ghanavati and determine relative bioavailability and clinical potency.
- Use validated quantitative chromatographic methods and marker compounds for batch standardization.
- Undertake mechanistic studies examining insulin sensitivity, glucose metabolism, antioxidant pathways and pancreatic β-cell effects.
- Assess long-term efficacy, safety and effects on diabetic complications and quality of life.

D. *Practical Implication*

Within the limits of the study data, both *Methika* and *Kasuri Methika* Choorna appear to be promising short-term herbal interventions for selected patients with Type 2 diabetes mellitus/Prameha. Their similar clinical performance suggests that *Kasuri Methika* merits further pharmacological and clinical investigation rather than being assumed to be therapeutically inferior because of its limited classical textual documentation.

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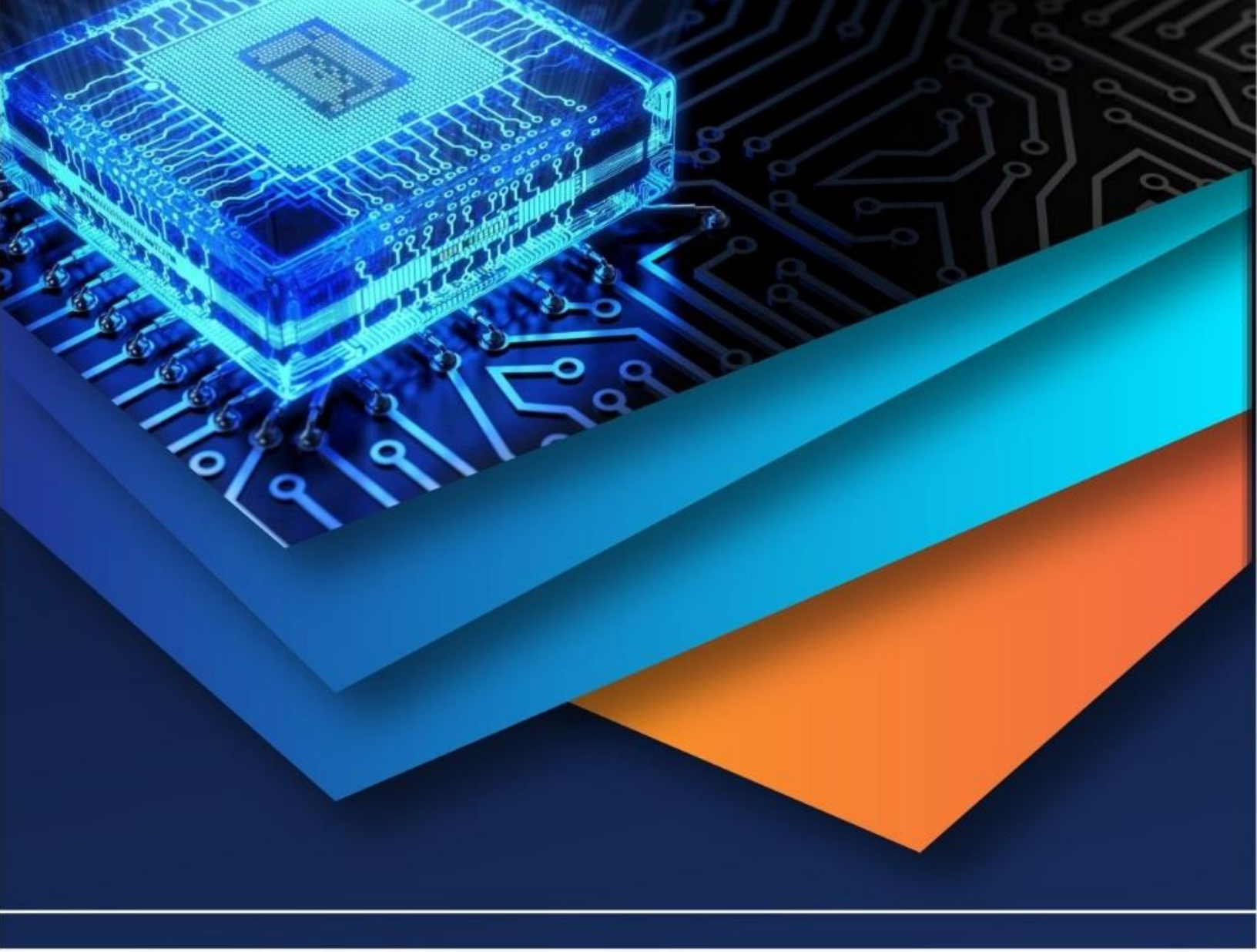

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