Research Article

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A CLINICAL STUDY TO EVALUATE THE EFFICACY OF MISREYA ARKA IN THE MANAGEMENT OF UDAVARTINI YONI VYAPAD WITH SPECIAL REFERENCE TO PRIMARY DYSMENORRHEA

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ABSTRACT

Introduction: Primary Dysmenorrhea, known as Udavartini Yoni Vyapad in Ayurveda, is an increasingly prevalent gynaecological condition that significantly impacts women's health and quality of life. Ayurveda intervention with Misreya Arka (fennel seed hydro-distillate) offers a holistic and safe option by addressing the condition's root pathology, which is the vitiation of Apana Vayu. Materials And Methods: A randomized, open-label, controlled clinical study was conducted on 30 patients diagnosed with Udavartini Yoni Vyapad. Patients were equally divided into two groups: Group A (Trial) received Misreya Arka and Group B (Control) received Chaturbeeja Arka. Assessments were performed pre- and post-intervention using subjective parameters and validated scoring systems like the WaLIDD score, Wong-Baker Pain Scale and VMS Scale. Statistical analysis was done using non-parametric tests (Wilcoxon signed-rank and Mann-Whitney U test). Result: Misreya Arka demonstrated statistically superior efficacy compared to Chaturbeeja Arka in relieving pain and resolving associated systemic symptoms. Group A had a higher percentage of significant results (81.25%) compared to Group B (68.75%). Discussion and Conclusion: Misreya Arka is statistically proved as a highly effective and safe Ayurveda treatment for managing Udavartini Yoni Vyapad (Primary Dysmenorrhea). The treatment provided statistically significant pain relief and led to the clinical resolution of core symptoms, suggesting it can be considered a promising and reliable alternative to conventional analgesics.

Keywords: Udavartini Yoni Vyapad, Primary Dysmenorrhea, Misreya Arka, Foeniculum vulgare, Arka Kalpana, Ayurveda.

INTRODUCTION

The initiation of menstruation marks a significant physiological change in every female during adolescence. Though natural, it may become burdensome when it disrupts daily life. Dysmenorrhea, meaning "Painful Monthly Bleeding"[1] can be correlated to Udavartini Yoni Vyapad in Ayurveda. Among Twenty Yoni Vyapad, Udavartini is primarily caused by Vegadharana[2], leading to vitiation of Vata, especially Apana Vayu, which regulates Rajah Pravrutti. Vitiated Apana Vayu causes Rajaso Gamanadurdhwam, resulting in Krichrarthava, Baddha Raja, and Samanthath Varthanam Vayo[3]. The condition resembles Primary Dysmenorrhea painful menses without underlying pathology affecting 50–90% of women globally and 54–70.3% in India[4]. Rationale: Primary Dysmenorrhea causes recurrent absenteeism and socioeconomic impact. Conventional therapies (NSAIDs, hormones) provide only palliative relief with adverse effects, creating demand for a safe, effective alternative through Ayurveda. Misreya Arka, with Vatanulomana, antispasmodic, and analgesic properties, offers a holistic solution. Knowledge Gap: Modern treatments address symptoms, not menstrual biomechanics as Ayurveda. Research focuses mainly on polyherbal drugs, with limited trials on standardized single-herb preparations like Misreya Arka. Traditional Kashaya and Churna forms face compliance issues; Arka Kalpana offers a more palatable, bioavailable alternative needing clinical validation. Hence, this randomized controlled trial on Misreya Arka aims to provide high-level evidence for an effective, mechanism-based, patient-friendly Ayurveda therapy for Primary Dysmenorrhea.

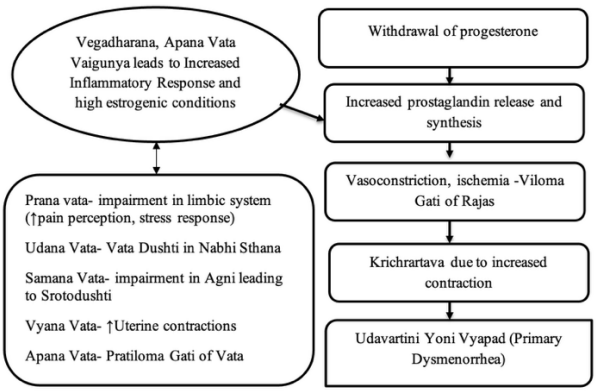


Figure 1: Pathogenesis of Udavartini Yoni Vyapad (Primary Dysmenorrhea) [5]

Aim: To Study and Clinically evaluate the efficacy of Misreya Arka in the management of Udavartini Yoni Vyapad w.s.r to Primary Dysmenorrhea.

Objectives

Primary Objectives: To clinically evaluate the efficacy of Misreya Arka in the management of Udavartini Yoni Vyapad w.s.r to Primary Dysmenorrhea on the basis of WaLIDD score, Wong baker pain Scale and Numerical rating scale in the clinical setting of the institution. To clinically re-evaluate the efficacy of Chaturbeeja Arka in the management of Udavartini Yoni Vyapad

w.s.r to Primary Dysmenorrhea. To compare the efficacy of Misreya Arka with Chaturbeeja Arka in the management of Udavartini Yoni Vyapad w.s.r to Primary Dysmenorrhea.
Secondary Objectives: Literary review of Udavartini Yoni Vyapad, Primary Dysmenorrhea, Arka Kalpana and drug such as Misreya and Chaturbeeja – Methika, Chandrasura, Kalajaji, Yavanika were done. Phytochemical Analysis was done.

MATERIALS AND METHODS

Thirty subjects meeting the diagnostic criteria, irrespective of religion, caste, race, or socio-economic status, were selected from the OPD and IPD of the Department of PG Studies in Prasuti Tantra and Stree Roga, Sri Sri College of Ayurvedic Science and Research Hospital, Bengaluru, and randomly allocated by lottery method into two equal groups: Group A (Trial, n=15) received Misreya Arka and Group B (Control, n=15) received Chaturbeeja Arka. The raw drugs were procured from an authentic source (Amrut Kesari store), authenticated by the Department of Dravya Guna, and both trial and control medicines were prepared in the pharmacy of Rasa shastra and Bhaishajya Kalpana, Sri Sri College of Ayurvedic Science and Research, Bengaluru. Written informed consent and a structured case proforma were used, ethical clearance was obtained from the Institutional Ethics Committee (Protocol No: SSIEC/267/2023, dated 16/10/2023), and the trial was prospectively registered with CTRI (CTRI/2024/07/071561).

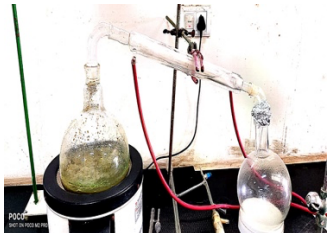
Inclusion Criteria: Subjects between the age group of 18-35 years irrespective of Marital Status. Subjects with classical symptoms of Udavartini Yoni Vyapad. Subjects with clinical signs and symptoms of Primary Dysmenorrhea. Painful Menstruation for at least 2 consecutive cycles. Subjects with regular Menstrual cycle. Subjects willing to sign the consent form.

Exclusion Criteria: Subjects with the known case of Secondary Dysmenorrhea with Pelvic Pathology. Subjects exhibiting symptoms throughout the phase of Menstrual Cycle. Subjects with known case of Intra Uterine Contraceptive Device induced painful bleeding. Subjects on Hormonal therapy, Smoking, Narcotic drugs and Alcohol usage. Subjects with known case of Congenital Anomalies, Chronic Systemic Illness and Malignancy. Subjects with known case of Pre-Menstrual Dysphoric Disorder. Subjects with Hb < 10g/dl.

Diagnostic Criteria: Criteria mentioned in ICD- 10 [N94.6] (International Statistical Classification of Disease and related health problems) was adopted. Based on Classical symptoms of Udavartini Yoni Vyapad and Primary Dysmenorrhea.

Laboratory Investigations: USG Abdomen and Pelvis**,** Hb%

Method of Preparation of Arka



Photograph 1: Distillation of Misreya Arka

Photograph 2: Distillation of Chaturbeeja Arka

Photograph 3: Storage of Arka in Air tight sealed container

The drugs were cleaned and coarsely powdered, required quantity of water is added to the drugs to soak overnight. Following morning it was poured into the Arka Yantra and the remaining water was added 1:7 ratio and boiled. The vapor was condensed and collected in a receiver. 60% of the Arka was be procured and stored in Amber bottle. [6]

Intervention

Table 1: Intervention

	Group A	Group B
Medication	Misreya Arka	Chaturbeeja Arka
Duration of Drug administration	7 days before Menstruation till 3rd day of cycle	7 days before Menstruation till 3rd day of cycle
Treatment duration	2 consecutive cycles	2 consecutive cycles
Study duration	3 cycles	3 cycles
Dosage	24ml twice daily before food.	24ml twice daily before food.
Route of Administration	Oral	Oral
Anupana	Equal quantity of Jala	Equal quantity of Jala

Assessment Criteria: Assessment was done based on Clinical Symptoms of Udavartini Yoni Vyapad and Primary Dysmenorrhea. Based on WaLIDD Score. Based on Wong baker pain rating scale and Numerical rating scale. Based on Verbal Multidimensional Scoring.

Subjective Parameters: Krichrartava (Pain during Menstruation), Artava Sa Vimukthe Tu Tatkshanam Labhathe Sukham (Pain relieved once the Artava is expelled or after passage of a big clot), Phenilatvam (Frothy Menstrual Blood), Vedana (Pain in various regions -Abdomen, Lower back, thighs), Yoni Peedana (Menstrual cramps), Kapha Samsrutha Artavam (Mucoid discharge of blood), Baddha Artava (Passage of Clots).

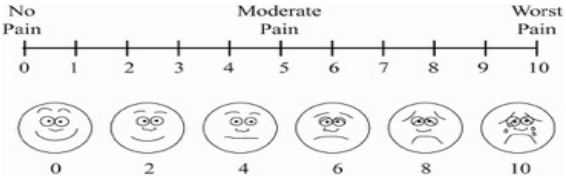


Figure 2: Wong Baker Scale [7]

Table 2: Assessment based on WaLIDD Score [8]

Grading	Working Ability	Intensity	Days of Pain	Location
0	None	Does not hurt	0	None
1	Almost never	Hurts a little bit	1-2 days	1 site
2	Almost always	Hurts a little more – hurts even more	3-4 days	2-3 site
3	Always	Hurts a whole lot – hurts worst	≥ 5	3-4 site

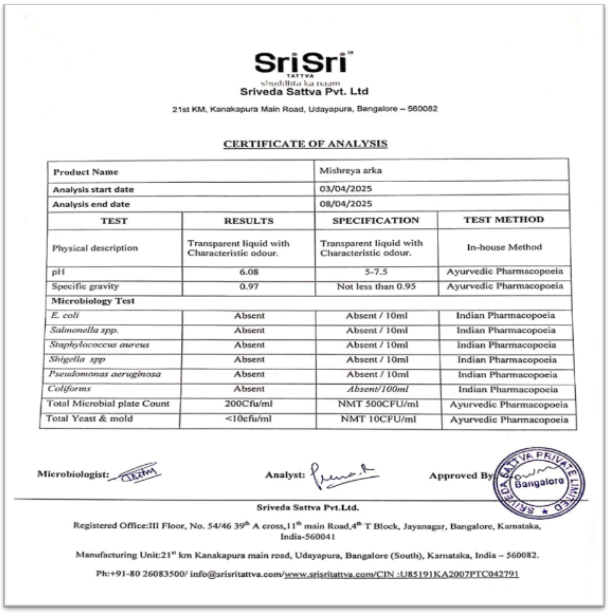
Table 2: Verbal Multidimensional Scoring [9]

Grading	Back Ache	Vomiting	Headache	Diarrhea	Constipation	Fatigue
0	No backache	No Vomiting	No headache	No diarrhea	No constipation	No fatigue
1	Present, no analgesic required.	Occasionally	Headache during each menstruation	Occasionally	Frequency of stools once a day, but hard stools.	Fatigue by doing extra work in addition to normal work
2	Analgesics Required	1-2 Times A Day	Frequent headache 2-3 times per menstruation, daily activity not affected.	2-3 times / day	Alternate days and difficulty in defecation	Fatigue by normal work
3	Daily activity affected; analgesics required but poor effect	More than 3 times a day	Persistent headache, daily activity affected	More than 3 times per day.	Cannot pass the stool without the help of purgation even after 3-4 days.	Severe fatigue even without work

Phytochemical Analysis

Table 3: Phytochemical Analysis

Constituents	Tests	Misreya Arka	Chaturbeeja Arka
Protein	Millon's Test	-	-
Triterpenoids And Steroids	Salkowski Test	+	-
Flavonoids	Concentrated H_2SO_4 Test	+	+
Alkaloids	Mayer's Test	+	+
Carbohydrate	Molisch's Test	-	-
Phenols	Ferric Chloride Test	+	+
Saponins	Foam Test	-	-
Tannin's	Gelatin Test	+	-
Fixed Oil	Stain Test	-	-



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CERTIFICATE OF ANALYSIS

Product Name		Mishreya arka	
Analysis start date		03/04/2025	
Analysis end date		08/04/2025	
TEST	RESULTS	SPECIFICATION	TEST METHOD
Physical description	Transparent liquid with Characteristic odour.	Transparent liquid with Characteristic odour.	In-house Method
pH	6.08	5-7.5	Ayurvedic Pharmacopoeia
Specific gravity	0.97	Not less than 0.95	Ayurvedic Pharmacopoeia
Microbiology Test			
E. coli	Absent	Absent / 10ml	Indian Pharmacopoeia
Salmonella spp.	Absent	Absent / 10ml	Indian Pharmacopoeia
Staphylococcus aureus	Absent	Absent / 10ml	Indian Pharmacopoeia
Shigella spp	Absent	Absent / 10ml	Indian Pharmacopoeia
Pseudomonas aeruginosa	Absent	Absent / 10ml	Indian Pharmacopoeia
Coliforms	Absent	*Absent/100ml*	Indian Pharmacopoeia
Total Microbial plate Count	200Cfu/ml	NMT 500CFU/ml	Ayurvedic Pharmacopoeia
Total Yeast & mold	<10cfu/ml	NMT 10CFU/ml	Ayurvedic Pharmacopoeia

Microbiologist: Analyst: Approved By:

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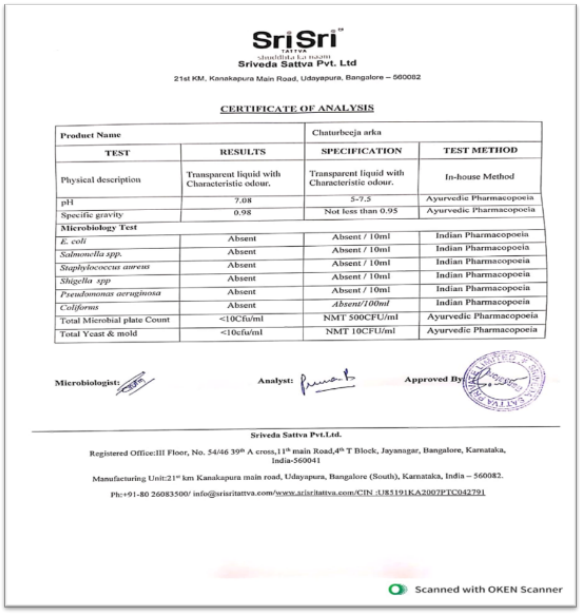
Photograph 4: Certificate of Analysis - Misreya Arka



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CERTIFICATE OF ANALYSIS

Product Name		Chaturbeeja arka	
TEST	RESULTS	SPECIFICATION	TEST METHOD
Physical description	Transparent liquid with Characteristic odour.	Transparent liquid with Characteristic odour.	In-house Method
pH	7.08	5-7.5	Ayurvedic Pharmacopoeia
Specific gravity	0.98	Not less than 0.95	Ayurvedic Pharmacopoeia
Microbiology Test			
E. coli	Absent	Absent / 10ml	Indian Pharmacopoeia
Salmonella spp.	Absent	Absent / 10ml	Indian Pharmacopoeia
Staphylococcus aureus	Absent	Absent / 10ml	Indian Pharmacopoeia
Shigella spp	Absent	Absent / 10ml	Indian Pharmacopoeia
Pseudomonas aeruginosa	Absent	Absent / 10ml	Indian Pharmacopoeia
Coliforms	Absent	*Absent/100ml*	Indian Pharmacopoeia
Total Microbial plate Count	<10Cfu/ml	NMT 500CFU/ml	Ayurvedic Pharmacopoeia
Total Yeast & mold	<10cfu/ml	NMT 10CFU/ml	Ayurvedic Pharmacopoeia

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Photograph 5: Certificate of Analysis - Chaturbeeja Arka

OBSERVATION

A total number of 30 subjects fulfilling the inclusion criteria were registered for the study.

Table 4: Screening of Subjects

Total number of subjects screened	42
Number of subjects registered for the study	35
Number of subjects (Dropouts)	5
Number of Subjects completed the study	30
Number of Subjects included for the study	30

Table 5: Observation based on Descriptive Analysis

Observation	Inference
Age	Among 30 subjects, 2 subjects (7%) belonged to the 18–20 years group, 3 subjects (10%) belonged to the 21–23 years group, 7 subjects (23%) belonged to the 24–26 years group, 10 subjects (33%) belonged to the 27–29 years group, 4 subjects (13%) belonged to the 30–32 years group, and 5 subjects (17%) belonged to the 33–35 years group.
Pradhana Vedana	Among 30 subjects, 5 subjects (17%) had pain before cycle, 11 subjects (37%) had pain during cycle, and 14 subjects (47%) had pain both before and during cycle
Anubandha Vedana	Among 30 subjects, 6 subjects (20%) had pain with PMS, 1 subject (3%) had pain with GI-related symptoms, and 23 subjects (77%) had pain with both PMS and GI-related symptoms
Menstrual Cycle	Among 30 subjects, 29 subjects (97%) had regular menstrual cycles, and 1 subject (3%) had irregular cycles

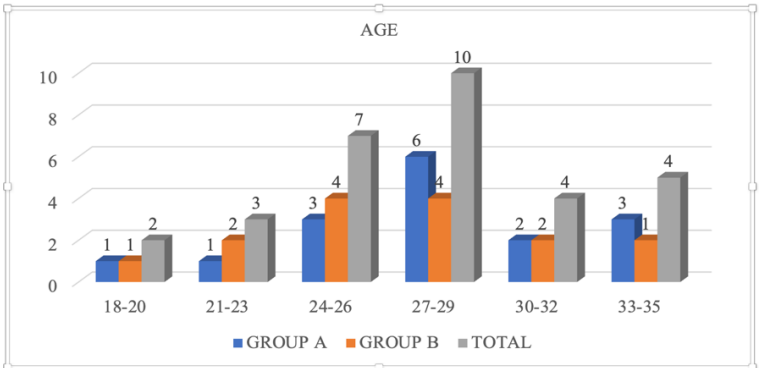

Figure 3: Distribution of Age

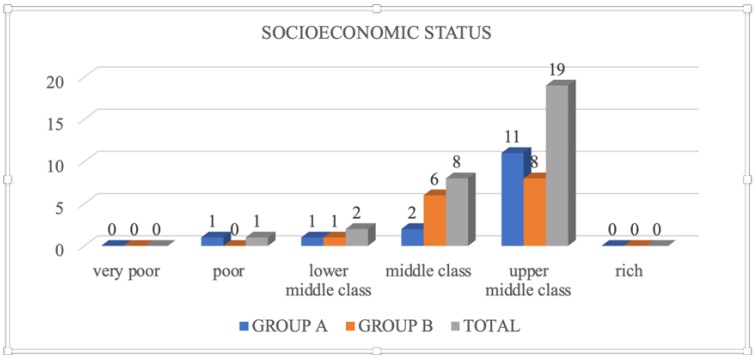

Figure 4: Distribution of Social Status

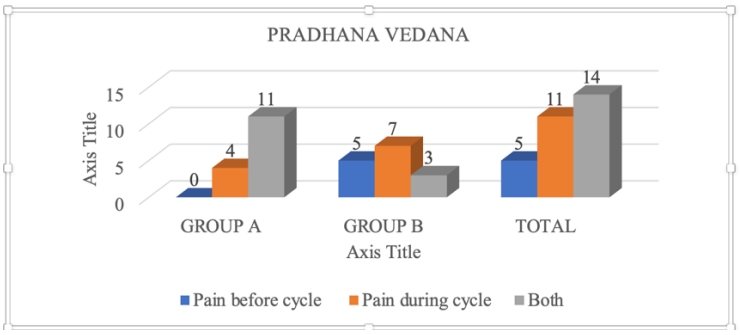

Figure 5: Distribution of Pradhana Vedana

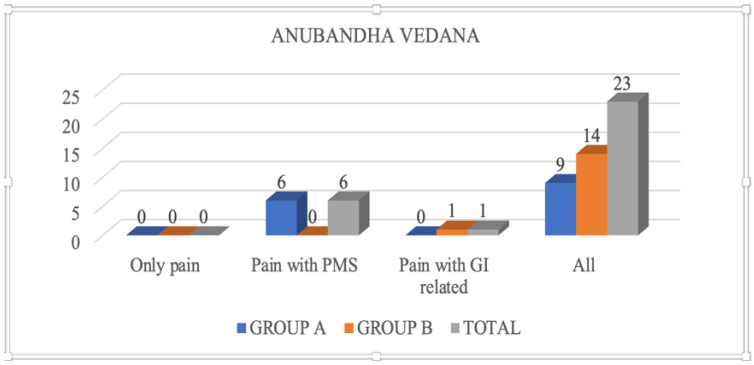

Figure 6: Distribution of Anubandha Vedana

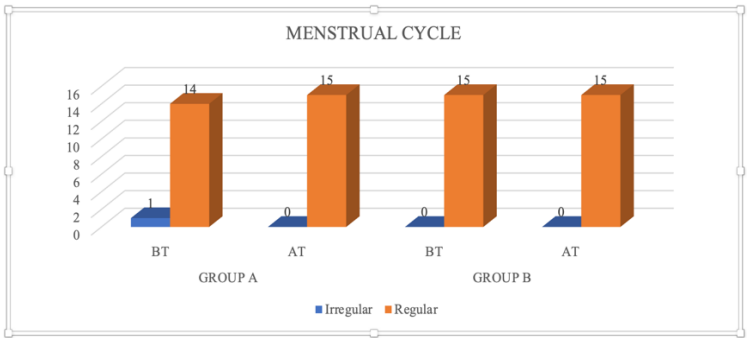

Figure 7: Distribution of Menstrual cycle
BT: Before Treatment, AT: After Treatment

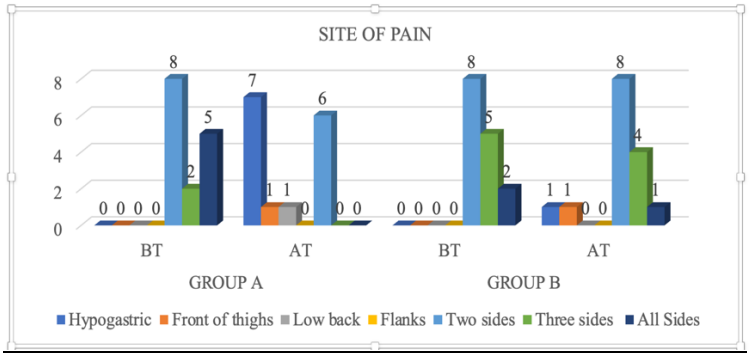

Figure 8: Distribution of Site of pain
BT: Before Treatment, AT: After Treatment

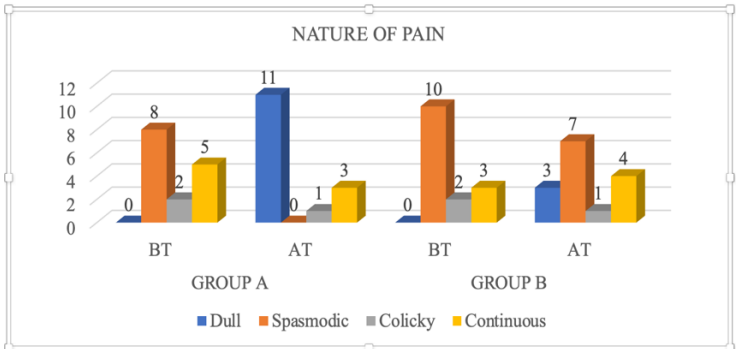

Figure 9: Distribution of Nature of pain
BT: Before Treatment, AT: After Treatment

Assessment: The observations, results as well as statistical analysis of the present study are elaborated. The data regarding the subjects were collected based on grading given to both Subjective and Objective parameters specified in assessment criteria.

Table 6: Assessment

Pre assessment	0^{th} day
1^{st} assessment	After 1^{st} cycle
2^{nd} assessment	After 2^{nd} cycle
Follow up	After 3^{rd} cycle

The results have been divided into: Comparing the parameters within the groups and comparing the parameters between the groups.

Statistical Analysis: To carry out statistical analysis, data was recorded on 0^{th} day and after completion of treatment after 2^{nd} cycle and follow up after 3^{rd} cycle. IBM SPSS 26 was used for analysis. For subjective data Wilcoxon signed rank sum test and Mann Whitney test for non-parametric subjective parameters Tabulations and graphs were used to represent the data obtained. The corresponding p value was noted and obtained results were interpreted as non-significant: >0.05, Significant : <0.05, Highly significant : <0.001.

Table 7: Analysis within the Group

Parameters	BT-AT1	AT1-AT2	AT2-FU	BT-AT2	AT1-FU	BT-FU
Group A Misreya Arka Total Grading	HS 0.000	NS 0.157	S 0.025	HS 0.000	S 0.008	HS 0.000
Group B Chaturbeeja Arka Total Grading	HS 0.000	NS 1.000	NS 1.000	HS 0.000	NS 1.000	HS 0.000

BT: Before Treatment, AT: After Treatment, FU: Follow Up

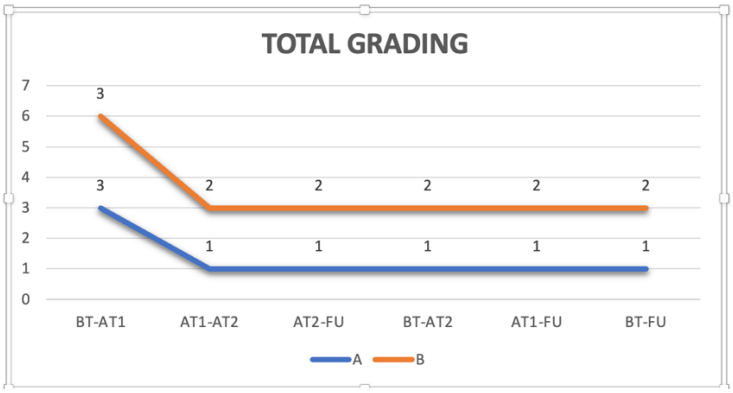

Figure 10: Total Grading - Assessment on Different Points of Time , Median, 25^{th} and 75^{th} Percentile

Table 8: Analysis between the Group

Parameters	Mann-Whitney Test – Between the Group	Inference
Krichrartava	P - 0.775 (BT) P - 0.029 (AT1) P - 0.029 (AT2) P - 0.029 (FU)	The reduction in Krichrartava was significantly greater in Group A compared to Group B at all post-treatment assessments
Artave Sa Vimukte Tu Tatshanam Labathe Sukam	P - 0.029 (BT) P - 0.000 (AT1) P - 0.000 (AT2) P - 0.001 (FU)	Group A showed a statistically more significant improvement than Group B across all time points.
Phenila	P - 0.775 (BT) P - 1.000 (AT1) P - 1.000 (AT2) P - 1.000 (FU)	There was no statistically significant difference in the improvement of Phenila between Group A (Misreya Arka) and Group B (Chaturbeeja Arka)
Vedana	P - 1.000 (BT) P - 1.000 (AT1) P - 0.539 (AT2) P - 0.775 (FU)	No significant difference in the reduction of Vedana was observed between the two groups at any time point.
Yoni Peedana	P - 0.126 (BT) P - 0.775 (AT1) P - 1.000 (AT2) P - 0.539 (FU)	No significant difference in the improvement of Yoni Peedana was found between the two groups.
Kapha Samsrutha Artavam	P - 1.000 (BT) P - 1.000 (AT1) P - 1.000 (AT2) P - 1.000 (FU)	There was no statistically significant difference in the clinical status for this parameter between the groups.

Baddha Artava	P - 0.126 (BT) P - 0.775 (AT1) P - 0.775 (AT2) P - 0.539 (FU)	No statistically significant difference in the reduction of Baddha Artava was observed between Group A (Misreya Arka) and Group B(Chaturbeeja Arka).
Backache	P - 0.000 (BT) P - 0.775 (AT1) P - 0.389 (AT2) P - 0.001 (FU)	The improvement in Backache for Group A (Misreya Arka) was significantly greater than Group B(Chaturbeeja Arka) at baseline and at the final follow-up
Vomiting	P - 0.653 (BT) P - 0.001 (AT1) P - 0.011 (AT2) P - 0.004 (FU)	Group A (Misreya Arka) showed a significantly greater reduction in Vomiting from the first post-treatment assessment (AT1) onwards compared to Group B (Chaturbeeja Arka).
Headache	P - 0.486 (BT) P - 0.008 (AT1) P - 0.000 (AT2) P - 0.000 (FU)	The reduction in Headache was significantly more pronounced in Group A (Misreya Arka) at all assessments after the baseline (AT1, AT2, FU).
Diarrhea	P - 0.567 (BT) P - 0.029 (AT1) P - 0.126 (AT2) P - 0.029 (FU)	Group A (Misreya Arka) showed a more significant improvement in Diarrhoea at the AT1 and FU time points compared to Group B (Chaturbeeja Arka).
Constipation	P - 1.000 (BT) P - 0.775 (AT1) P - 0.775 (AT2) P - 0.775 (FU)	There was no statistically significant difference in the improvement of Constipation between the groups.
Fatigue	P - 0.000 (BT) P - 0.412 (AT1) P - 0.250 (AT2) P - 0.126 (FU)	A significant difference between the groups for Fatigue was only observed at baseline, with no significant difference during or after treatment .
Wong Baker Scale	P - 0.367 (BT) P - 0.041 (AT1) P - 0.148 (AT2) P - 0.000 (FU)	Group A (Misreya Arka) demonstrated a significantly greater improvement at AT1 and FU compared to Group B(Chaturbeeja Arka) on the Wong Baker Scale.
Walidd	P - 0.870 (BT) P - 0.004 (AT1) P - 0.029 (AT2) P - 0.001 (FU)	The improvement in WaLIDD scores was significantly greater in Group A at all post-treatment assessments (AT1, AT2, FU).
Total Grading	P - 0.539 (BT) P - 0.011 (AT1) P - 0.001 (AT2) P - 0.000 (FU)	The overall improvement, as measured by Total Grading, was significantly greater in Group A (Misreya Arka) at all-time points.

BT: Before Treatment, AT: After Treatment, FU: Follow Up

Table 9: Overall Assessment

	Group A (Misreya Arka)	**Group B (Chaturbeeja Arka)**
Highly Significant / Significant (HS/S)	81.25%	68.75%
Non-Significant (NS)	18.75%	31.25%

Table 11: Samprapti Vighatana of Udavartini Yoni Vyapad

Nidana	**Samprapti**	**Misreya Arka- Samprapti Vighatana (Action to Break Pathogenesis)**
Suppression of natural urges (Vegavarodha)	Causes vitiation and reverse flow of Apana Vata leading to obstruction and painful menstruation.	Misreya- Vatanulomana property restores normal downward flow of Apana Vata, clearing obstruction and reversing reverse flow of Vata.
Improper diet (excess Katu, Tikta, Kashaya Rasa)	Leads to dryness, increased Vata, and Kapha disturbance, causing Srotorodha and aggravated Vata.	Misreya- Snigdha Guna nourishes dry tissues, Katu Rasa clears Srotas, removing blockages to restore smooth menstrual flow.
Sedentary lifestyle and low physical activity	Causes stagnation and further aggravation of Vata, disturbing Apana Vata function and menstrual flow.	Misreya Arka enhances Laghu Guna aiding absorption, reducing Vata stagnation and normalizing Apana Vata movement.
Stress, anxiety, and mental factors (Chinta, Shoka)	Mental stress exacerbates Vata Prakopa (aggravation) contributing to erratic uterine contractions and pain.	Misreya- Sheeta Virya and anxiolytic effects calm aggravated Vata and nervous system, alleviating pain and discomfort.
Kapha-related factors causing frothy discharge	Kapha vitiation causes thick, frothy menstrual discharge and obstruction of Artava Vaha Srotas.	Misreya- Katu Rasa and Shodhana properties reduce Kapha, dissolve thick discharge, and restore normal menstruation characteristics.
Vata-Kapha imbalance causing uterine spasms and pain	Vata causes spasm and pain, Kapha causes heaviness and obstruction leading to Kashtartava symptoms.	Antispasmodic phytochemicals in Misreya Arka (Anethole, Fenchone) relax uterine muscles and alleviate cramps, reducing pain and improving flow.

RESULTS AND DISCUSSION

In this study, Misreya Arka was administered to the Trial Group (Group A), whereas Chaturbeeja Arka was given to the Control Group (Group B). When comparing the results between the Groups, statistical analysis revealed that the Trial Group (Group A) achieved highly significant improvements over the Control Group (Group B) in key assessment criteria. Specifically, the WaLIDD score, Wong-Baker Pain Scale showed a statistically superior effect in the Misreya Arka Group, particularly at the follow-up stage.Thus, this study concludes that while both treatments provided relief, the efficacy of Misreya Arka was significantly superior to Chaturbeeja Arka in managing the parameters of Primary Dysmenorrhea. Consequently, the alternate hypothesis is accepted, confirming the pronounced efficacy of Misreya Arka in the management of Primary Dysmenorrhea.

Rationale of Selecting the Topic: Primary Dysmenorrhea, characterized by menstrual pain without pelvic pathology, is among the most widespread gynaecological concerns globally. Primary dysmenorrhea affecting 45–90% of women globally[10] and up to 87.8% of Indian adolescents causes substantial school/work absenteeism[11], quality-of-life impairment, and socio-economic losses exceeding 600 million work hours annually, while conventional NSAIDs and hormonal therapies offer only palliative relief marred by gastrointestinal/renal side effects, NSAID resistance in 18%, fertility concerns, and high recurrence rates upon discontinuation. In Ayurveda, Primary Dysmenorrhea is considered as Udavartini Yoni Vyapad, often attributed to vitiated Apana Vayu and its characteristics of Viloma Gati of Artava (upward flow), manifesting as Krichrartava (pain during menstruation). The classical Ayurveda approach advocates Vatanulomana, best achieved with Vata Shamaka Dravya's. Misreya (Foeniculum vulgare) Arka was rationally selected based on its classical Ayurveda profile of Sheeta Virya, Deepana-Pachana, and potent Vatanulomana effects, substantiated by robust preclinical and clinical evidence demonstrating anethole and fenchone-rich volatile oils' capacity for uterine smooth muscle relaxation, prostaglandin inhibition, analgesia, and mild phytoestrogenic modulation delivered effectively through Arka Kalpana's pharmacokinetic advantages of rapid absorption, high bioavailability, palatability, and stability.

Drug: Misreya (Foeniculum vulgare), commonly known as fennel seeds, is a well-described herb in classical Ayurveda texts such as Charaka Samhita, Sushruta Samhita, and Ashtanga Hridaya, especially for disorders of digestion and the female reproductive system. Its selection for Udavartini Yoni Vyapad is based on direct alignment between its Guna–Karma and the disease pathology, which is primarily driven by vitiated Apana Vata. Misreya has Madhura and Katu Rasa, Laghu and Snigdha Guna, Madhura Vipaka, and Sheeta Virya, making it particularly suitable for this condition. Its key actions include Vatanulomana, correcting the reverse (upward) movement of Apana Vata and clearing obstruction in the Artava-Vaha Srotas to facilitate smooth menstrual flow; Shulahara and antispasmodic effects, whereby Katu Rasa and Snigdha Guna relieve uterine spasm and cramping pain; and Vata-Pitta Shamaka action, where Sheeta Virya and Madhura Rasa pacify associated Pitta aggravation and inflammation during menstruation[12].

Drug formulation: Misreya Arka preparation enhances therapeutic efficacy through Arka Kalpana (hydro-distillation), extracting volatile active principles into a potent, rapidly absorbed water-based medicine. Its Laghu, Vyavayi, and Vikasi Guna ensure swift Vatanulomana and analgesic action for acute pain relief in Udavartini Yoni Vyapad. The Sookshma nature targets Apana Vata at Garbhashaya, regulating flow and relieving Yoni Shula, while enhanced bioavailability of compounds like anethole improves efficacy, dose efficiency, and patient compliance due to palatability.

Probable mode of action of Misreya Arka in Udavartini Yoni Vyapad: The efficacy of Misreya Arka in treating Udavartini Yoni Vyapad (Primary Dysmenorrhea) stems from its ability to intervene directly in the disease's pathogenesis (Samprapti). Its action can be understood at multiple physiological and pathological levels as defined in Ayurveda.

Action at the level of Dosha: Udavartini Yoni Vyapad results from vitiated Apana Vayu upward movement (Pratiloma Gati). Misreya Arka corrects this through Vatanulomana (due to Laghu, Snigdha, Ushna properties), redirecting Apana Vata downward for unobstructed Artava expulsion; Vata Shamana (reducing spasms via Snigdha, Madhura qualities) and Pitta Shamana (via Sheeta Virya) to alleviate inflammation.

Action at the level of Dhatu: The vitiated Vata affects the Rasa and Rakta Dhatus, which are fundamental to the formation and flow of Artava.

Action on Rasa and Rakta Dhatu: The obstructed flow of Vata causes stagnation in the Artava Vaha Srotas , affecting the Rakta Dhatu. Misreya Arka, with its Srotoshodhaka property derived from its Katu Rasa, helps to clear this obstruction. This ensures that Artava, which is an Upadhatu of Rasa Dhatu, flows out freely and without pain.

Action On Artava: The Madhura Vipaka of Misreya has a Rasayana effect on the reproductive tissues. By strengthening reproductive system, it helps to prevent the recurrence of Dosha imbalance in subsequent cycles, promoting long-term reproductive health.

Overall effect of trial and control drugs: Efficacy of Misreya Arka (Group A): The intervention group achieved rapid, progressive, sustained resolution across all parameters. By study end, severe pain, vomiting, fatigue, diarrhoea, constipation, headache, Phenila, and Baddha Artava showed marked improvement, with Wong-Baker Pain Scale and WaLIDD scores shifting from moderate/severe to mild/very mild categories, restoring normal function and quality of life. Efficacy of Chaturbeeja Arka (Group B): The control group showed statistically significant but clinically partial relief. Moderate-to-severe pain and persistent systemic symptoms (fatigue, headache, GI distress) continued in a significant proportion of patients at study conclusion, with no complete cures achieved across key metrics, indicating limited therapeutic potential in the selected study group.

Special observations in the study: Complete resolution of mild PMS symptoms was observed in 12 patients after two treatment cycles, with no recurrence reported. Four patients with moderate Dyspareunia experienced a reduction in symptom severity to a mild level. In two patients who presented with a reduced menstrual duration of two days, treatment led to an increase in duration to four days with an improved menstrual flow. 22 patients reported improved digestion, along with a significant reduction in bloating and abdominal heaviness. Improved regulation of bowel habits was noted in six patients.

CONCLUSION

Primary Objective was achieved: The results from this randomized, open-label controlled trial demonstrate that Misreya Arka in Udavartini Yoni Vyapad significantly alleviates the Clinical symptoms of Udavartini Yoni Vyapad. Secondary Objective was achieved: Analytical and Phytochemical analysis of the drug was done and found that Triterpenoids, Steroids, Flavonoids, Alkaloids, Phenols and Tannins were present in Misreya Arka. Literary review of Udavartini Yoni Vyapad, Primary Dysmenorrhea, Arka Kalpana and drug such as Misreya and Chaturbeeja – Methika, Chandrasura, Kalajaji, Yavanika was done. The intervention group showed a marked improvement in clinical symptoms compared to the control group, suggesting that Misreya arka is effective in reducing the severity of Primary Dysmenorrhea. Additionally, the treatment was well-tolerated, with no significant adverse effects reported, underscoring its safety and potential as an alternative or complementary therapy in the management of Udavartini Yoni Vyapad (Primary Dysmenorrhea). Hence, Null hypothesis(H0) is rejected and Alternate hypothesis(H1) is accepted. Misreya Arka is more effective than Chaturbeeja Arka in the management of Udavartini Yoni Vyapad w.s.r to Primary Dysmenorrhea.

Further scope of studies: This study can be conducted on the larger population to understand the result in better aspect. The formulation can be evaluated in various other Yonivyapad having predominance of Vata Dosha and also for low backache. The formulation can be evaluated for its effect in other painful conditions like Secondary Dysmenorrhea caused by Endometriosis, Adenomyosis, Uterine fibroid, PCOS etc. This study drug can be assessed for pain relief after administering for the entire cycle instead of 10 days as in this study.

Limitations of the study: Short duration of study and smaller sample size, hence further clinical trial can be done in larger samples to understand in-depth. Preparation of medicine was difficult as large-scale manufacturing is needed. Challenges were encountered during the cleaning and maintenance of the distillation apparatus.

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