Research Article

Effect of Eranda (Ricinus Communis L.) Taila (Oil) in The Management of Purishaja Udavarta (Chronic Constipation): A Prospective, Open-Label, Single-Arm Pilot Study

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Abstract

Background: In today's era the prevalence of the diseases and symptoms related to digestive system are increased due to unhealthy eating practice and sedentary life style. The physiological and morphological disturbance of digestive system exhibits impact on health, productivity, mental health and gut-brain axis. There is laboratory limitation in concern with diagnostic tools of the functional gastrointestinal disorders. The Purishaja Udavarta (chronic constipation) is the diseases conditions concerned with Purishavaha srotas (Large intestine and Rectum). The Vyadhi- viniscya (diagnostic conditions) of Purishaja Udavarta (chronic constipation) is based on Lakshanas (Cardinal symptoms). The treatment of Purishaja Udavarta with Eranda (Ricinus communis L.) beeja taila (seed oil) mentioned in the Ayurveda. Patient Assessment of Constipation-Symptoms (PAC-SYM) questionnaire is frequently used in clinical trials of constipation.

In current study, Lakshanas (Cardinal symptoms) of Purishaja udavarta and PAC-SYM questionnaire used for the assessment effect of Eranda taila in management of the Purishaja udavarta.

Materials and Methods: A Prospective, Open-Label, Single-Arm Pilot Study Thirty patients with cardinal symptoms of Purishaja udavarta were enrolled. Patients received oral administration of 2.5 ml of castor oil with 50 ml lukewarm water before food at night for 21 days. Outcomes were six cardinal symptoms and 12-item PAC-SYM questionnaire.

Results: Thirty patients completed the trial. The composite PAC-SYM score showed a statistically significant reduction from 17.70 ± 7.54 to 4.93 ± 2.15 (mean difference: 12.77; 95% CI): [10.42,15.11] , <0.001, r=1.10) with an item reduction of 1.06 exceeding the MCID threshold (≥ 0.50). Purisha sanga improved by a 90.0% reduction from 4.00 ± 0.00 to 0.40 ± 0.50 (p <0.001, r=1.10), with full resolution in 86.7% of cases. Subscale reductions were significant across Stool (77.2%), Abdominal (67.1%), and Rectal (66.9%) domains (p <0.001). The total Ayurvedic symptom score dropped from 11.07 ± 3.16 to 2.80 ± 1.83 (74.7% reduction p < 0.001).

Conclusion: The findings of the study demonstrated the effect of Eranda taila in managing Purishaja udavarta on the basis of relief in the lakshanas of Purishaja udavarta and reduction in score of the PAC-SYM.

KEYWORDS: Chronic constipation, Eranda taila, Purishaja udavarta, PAC-SYM questionnaire.

Introduction

The diagnosis of functional gastrointestinal disorders (FGID) is complex to diagnosis. In Asian and Indian community surveys, constipation prevalence rates generally fall between 8% and 16.8% [1]. Constipation also concerned with IBS-C i.e. irritable bowel syndrome with Constipation is the subtype of irritable bowel syndrome. [2] Most of the FGID are assessed on the basis of the patient's symptom's, inspection and interrogation for the diagnosis, treatment, relief from the symptoms, relapse of the diseases. The Purishaja udavarta is the one among the thirteen types of udavarta [3]. The functional gastrointestinal disorders are prevalent in adults. [4] Two-thirds patients of FGID experienced mental disturbance including anxiety and depression [5]. Functional gastrointestinal disorders (FGIDS) are chronic, heterogeneous disorders of the gastrointestinal tract defined by a combination of gastrointestinal (GI) symptoms that are not described by structural abnormalities [6]. The PAC-SYM questionnaire is used for the for the assessment of the chronic constipation [7]. The intestinal homeostasis depends on the on complex interactions between the microbiota, the intestinal epithelium and the host immune system. Various regulatory mechanisms contributed to maintain intestinal homeostasis, and an interruption in these pathways may flare up into the chronic inflammatory pathology found in inflammatory bowel disease. [8]

Koshta or Madyam sharir (trunk of the body) is one of the Shadanga (Six parts of the body) and Koshthangas (internal organs) are elaborated in Bruhatrayi's (Great of triad of fundamental ayurvedic classical texts in classical texts Charaka Samhita, Sushruta Samhita and Ashtanga Hridaya). [9] [10] [11] [12] According to Charakacharya, Mahasrotas (gastro-intestinal tract) is one of the Moolasthana of Pranavaha srotas. [13]

After literature review it is found that clinical observations are necessary for the purpose of study. It became necessary to select such a Vyadhi (clinical conditions) which is closely associated with the gastrointestinal tract functions and having potential to produce Sarvadaihic lakshanani (general symptoms) also. After literature review of Udavarta Vyadhi it is observed that Udavarta Vyadhi can be selected for the clinical observations for the purpose of the study.

Udavarta Vyadhi (upward or reverse movement of Vatadosha) defined as Nanatmaja Vatavyadhi in Sutrasthana of Charaksamhita. [14]

Udavarta Vyadhi described in Chikitsasathana of Charaksamhita [15] and Uttartantra of Susrutasamhita. [16]. The key etiological factors for the diseases of the gastrointestinal tract particularly regarding the Udavarta Vyadhi mentioned in Bruhatrayi's are intake of astringent, bitter, pungent and dry food (Diet), indulgence in exercise without taking appropriate food, stress, night awakenings and suppression of involuntary defecation reflex. These etiological factors lead to vitiation of Apana vayu in the Pakvashaya (large intestine). The principal symptoms of Udavarta are Sanga (obstruction) of Vita, Maruta and Mutra (first obstruction to faces then flatus and urine lastly). [15]

Other Lakshanani are constant pain at the region of the Basti (urinary bladder), Hrdaya (heart), Kukshi (epigastric region) and Udar(abdomen), very terrible pain at Prushta and Parshva (back of the trunk). Aadhmana (bloating), Hrillasa (nausea), Vikartika (Cutting type of pain in the anal region), Toda (prinking pain), Avipaka (indigestion), Bastishotha (cystitis), Varcho Apravrutti (faecal impaction), the Vayu which not expelled through the Guda (rectum) comes towards throat region, so Shushka mala (dry stool) expelled out with straining, Sarvadaihik (body) skin becomes rough, dry and cold. [15]

Selection of Purishaja Udavarta vyadhi

Charaka explained 6 types of Udavarta in Sutrasthana [17]. and Sushruta explained 13 types of Udavarta [18]. Due to Nidansevan (etiologic factors) Apanavayu gets vitiated in the Pakvashaya (large intestine) and obstructs the Adhogami Srotasa (downwards channels) as result of which the movement of Vita, Maruta (flatus) and Mutra (urine) gets gradually obstructs. Untreated or improperly treated Udavarta vyadhi become a causative factor for other diseases e.g. Hradaroga (heart diseases) Grahaniroga (malabsorption disorder) [15]. Purisha (faeces) is considered as a waste product formed after digestion of food. Retention of faeces is a required phenomenon of metabolic activities, but if body fails in timely excretions of faeces regularly due to any factor, then retention of faeces occurs and gets accumulated and becomes a causative factor for i.e. called as Purishaja Udavarta. If the diagnosis of Udavarta is done appropriately in initial stage then further complications will not be occurred.

The cardinal symptoms of the Purishaja Udavarta and the three domains with their subscales of PAC-SYM questionnaire used for assessment of constipation have same approach towards diagnosis, assessment of disease activity and treatment purposes. It is possible to access effect of the Eranda Taila in the management of the Purishaja Udavarta and on the Pakvashaya with reference to the score of the PAC-SYM questionnaire. Therefore, the study was designed for the assessment of the Purishaja udavarta with the help of PAC-SYM questionnaire.

Methods

Research Design

An open label clinical trial was conducted at BVDU, Bharati Ayurved Hospital, Pune. where the thirty (30) patients of either sex were selected for the study. Patients were given treatment for 21 days. Institutional Ethics Committee (IEC) approval was obtained and written consent was taken from the patients prior to the initiation of the clinical study.

Ethics Committee Approval Number: BVDUCOA/EC/-103(4)/2022-23

CTRI Registration Number: CTRI/2022/12/048079

Registration Date: 13 December 2022

Setting and Participants

Patients were screened for the study from outdoor patient department of Kayachikitsa, Bharati Vidyapeeth Deemed to be University, Bharati Ayurved Hospital, Pune. Participants were carefully enrolled in study on the basis of diagnostic, inclusion, exclusion and eligibility criteria.

The study adhered to ethical guidelines, with written informed consent from all participants. The study protocol was approved by the institutional ethics committee and registered with the clinical trial registry India. Data collection was conducted between February 2024 and June 2024. Patients were instructed to obey to the treatment protocol and promptly report any adverse events to the research team.

A total 34 subjects were screened, after screening 32 were enrolled as per approved inclusion and exclusion criteria in the study after providing written informed consent. During intervention period,2 participants discontinued the study (Dropped out: 1 participant (lost to follow up), 1 participant (relocate due to job transfer), data from the 30 participants were included in final statistical analysis.

The total time duration of the study was of 21 days. During the screening visit, the primary response against the PAC-SYM of all the subjects were recorded as per the questionaries. The same set of questions were used to assess the post therapy on the second visit which was 22nd day.

Following are the diagnostic, eligibility, inclusion & exclusion criteria were used.

Diagnostic Criteria

Patients having the cardinal symptoms of Purishaja Udavarta mentioned in Table No.2 and fulfilling the Patient Assessment of Constipation-Symptoms (PAC-SYM) questionnaire were recruited and its symptoms are mentioned in Table No.3.

Presence of Purisha sanga (retention of feces) one among six cardinal symptoms of Purishaja Udavarta was mandatory for all subjects at baseline. Presence of three out of the remaining five cardinal symptoms was required at baseline for the enrolled the participants in the study. PAC SYM questionnaire as per guidelines of assessment.

Diagnostic criteria fulfilled chronicity as per chronic constipation i.e. active symptoms for **≥** 3 months, prior to study enrollment.

Eligibility Criteria

ICD CODE -11 Condition: Chronic constipation: ICD-11 DD 91.1. [19]

NAME CODE: Udavartaḥ EB-11 [20]

Inclusion Criteria

- Patients of either sex between 40 to 60 years of age
- Fulfilling the diagnostic criteria, having cardinal symptoms of Purishaja Udavarta
- Fulfilling the Patient Assessment of Constipation-Symptoms (PAC-SYM) questionnaire
- Willing to sign the consent for study participation

Exclusion Criteria

- Avirecya (not suitable for purgation therapy)
- Asnehya (not suitable for internal oleation)
- Constipation secondary to drugs, to endocrine, metabolic, or neurologic disorders, to surgery, or to organic disorders of the large intestine or megacolon
- History of use of non-steroidal anti-inflammatory drugs, laxatives in last 7 days prior to intervention.
- Opioid -induced constipation
- Pregnant & lactating women

Selection of the drug/medicines

Vitiation of Apanavayu is mainly observed in the case of Udavarta, and then Pratiloma gati (Upward and backward) of Vata happens. For the goal of the treatment is to bring Anulomana of Apanavayu, so it is necessary that drug which has the key property of Anulomana should be selected. Though, Anulomana is main action needed. If the drug having Deepana, Pachana properties are better for the treatment. The Erand taila (Castor oil) is described as indicated Aushadhi for Udavarta in Charaka Samhita. Therefore, in this study Erand taila [21 22] was selected. The contents of this drug have the properties which are needed for the management of Purishaja udavarta. Considering the Samprapti (pathogenesis) of Purishaja udavarta the Aushadhi like Eranda taila is useful for Sampratibhanga i.e. Chikitsa (treatment)

The percentage absorption of castor oil decreases with increasing oral dose [23]. This property of Eranda taila is suggestive of its local action or any other mode of action. Though the action is local and the effect is systemic according to Ayurved and leads to systemic effects according to the dose.

Methodology

Eranda Taila with Kosnajal (Lukewarm water) in 30 patients of Purishaja Udavarta

Intervention

Eranda taila (Castor oil) of the seeds of Rakta Eranda **(**Ricinus communis L.) extracted by cold pressed method from Bramha Ayurveda GMP-certified pharmacy, Pune and procured from Dhanwantari Aushadhalaya Pune. Physicochemical analysis of Eranda taila done at In House Quality Control Laboratory.

Drug, dosage and duration mentioned at Table 1.

Table: 1 Details of intervention outline

Dose of Eranda Taila	Dose of Anupana (Adjuvant) Kosnajal	Root of drug administration	Time of Administration	Duration	Assessment
2.5 ml	50 ml	Oral	Bhuktaadau Kala (before food) at night	21 Days	0-day: Before treatment 22-day: After treatment

Dietary and Lifestyle regimen

Ahara (Diet and Fluids): Madhura, Amla, Lavana, Snigdha (unctuous), Laghu (easily digestible) ahara and adequate fibre, lukewarm water was advice during and after treatment. Apathya Ahara (unwholesome): Etiological factors considered as Apathya, which should be avoided during and after treatment.

Vihara (Lifestyle)**:** Avoidance of Vega-dharana (suppression of natural urges, especially defecation), sedentary routine, Ratri-jagarana (night vigil).

The study timeline is elaborated in Figure 1

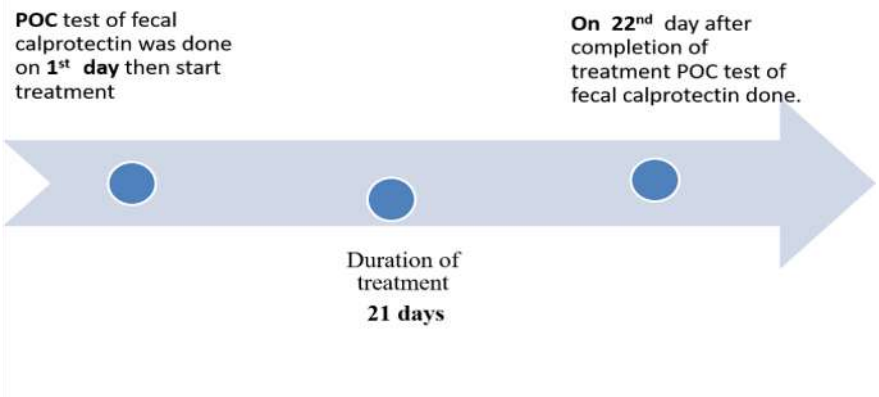


Figure: 1 Schematic representation of the study timeline.

Assessment Criteria

Clinical assessment and outcome scoring were conducted at two structured cross-sectional timepoints: Baseline (Day 0, pre-intervention) and upon completion of the active 21-day administration protocol on Day 22 (post-intervention). Interim weekly visits were limited to protocol compliance monitoring and adverse event recording; formal clinical efficacy evaluations were restricted to Days 0 and 22.

Six cardinal symptoms of Purishaja Udavarta Vyadhi) were assessed by using a severity of each cardinal symptom was evaluated using a validated, standardized 5-point ordinal scale (Grade 0 to 4). [24].

Assessment of Cardinal Symptoms of Purishaja Udavarta is placed in Table 2.

Table: 2 Assessment of cardinal symptoms of Purishaja Udavarta

Sr No	Cardinal Symptoms	Gradation
1	Purisha sanga (Retention of faeces)	(Frequency ,straining and stool form) 0. Daily, regular, soft formed stool 1. Daily with painful straining with hard, scanty stool 2. Delayed or irregular, painful straining with rough, dry stool 3. Alternate day, painful straining with rough, dry stool 4. 1 time/2-3 days or more; painful straining with rough, dry stool
2	Atopa (Gurgling sound of the intestines) borborygmus	0. No abnormal sounds 1. Occasionally sounds perceived by patient 2. Frequent gurgling sound audible to patient 3. Loud, causes abdominal discomfort 4. Constant, loud gurgling accompanied by distention impairing daily activities
3	Udar Shoola (Colicky pain in the abdomen)	0. No Colicky pain 1. Occasionally for more than half an hour 2. Occurs daily for half hour to 1 hr 3. Occurs daily, more than two area for 1 hr or more and relives after digestion of food 4. Patient may not sleep at night because of pain
4	Parikartika (Cutting type of pain in anal canal)	0. No Cutting pain after defecation 1. Sharp cutting pain during defecation, resolves within 15-30 minutes after defecation 2. Cutting pain during defecation persisting for 30 minutes to 2 hours after defecation 3. Severe, sharp Cutting pain lasting 2 to 4 hours after defecation 4. Continuous Cutting pain persisting greater than 4 hours after defecation
5	Urdhavavata (Eructation/ Belching)	0. Normal belching 1. occasionally 2. 2-3 times per week after taking food up to 1 hr 3. Daily after taking food up to 2-3 hrs 4. Daily after taking food up to 6 hrs or more
6	Adhmana (Abdominal distention/ bloating)	0. No bloating 1. Daily after intake of food up to 1 hr with mild distension of abdomen 2. Moderate distension of abdomen up to 1-3 hours after intake of food 3. Severe distension of abdomen up to 6 hrs after intake of food 4. Very Severe distension of abdomen up to more than 6 hrs after intake of food.

Changes in the score of subscales of Patient Assessment of Constipation-Symptoms (PAC-SYM) questionnaire before and after treatment. Developed through psychometric evaluation of adults with chronic constipation. The PAC-SYM questionnaire is internally consistent, reproducible under stable conditions, valid, and responsive to change and provides a comprehensive means to assess the effectiveness of treatment for constipation. At the

baseline and at weeks 3 data about 12 constipation-related symptoms were obtained and scored on three subscales: stool, abdominal, or rectal symptoms. For the overall scale and for each subscale, scores range from 0 (symptoms: absent) 1(symptoms: mild), 2 (symptoms: moderate),3 (symptoms: severe) to 4 (symptoms: very severe). Domain mean scores were calculated by summing individual item ratings and dividing by the number of completed items in each subscale: Patient Assessment of Constipation-Symptoms (PAC-SYM) questionnaire is placed at Table 3. Baseline (Day 0): Patients rate their symptoms reflecting on the 14 days immediately preceding the start of the trial. Post-Intervention: the assessment on Day 22 evaluates the final 14 days of active treatment (Days 8 to 21), capturing steady-state therapeutic response.

Table: 3 Patient Assessment of Constipation—Symptoms (PAC-SYM) questionnaire

Symptom No.	How severe have each of these symptoms?
1	Discomfort in your abdomen
2	Pain in your abdomen
3	Bloating in your abdomen
4	Stomach cramps
5	Painful bowel movements
6	Rectal burning during or after a bowel movement
7	Rectal bleeding or tearing during or after a bowel movement
8	Incomplete bowel movement, like you didn't "finish"
9	Bowel movements that were too hard
10	Bowel movements that were too small
11	Straining or squeezing to try to pass bowel movements
12	Feeling like you had to pass a bowel movement but you couldn't (false alarm)

Abdominal Symptoms Subscale (Q1–Q4): Mean of 4 items (score range: 0-4)
Rectal Symptoms Subscale (Q5–Q7): Mean of 3 items (score range: 0–4)
Stool Symptoms Subscale (Q8–Q12): Mean of 5 items (score range: 0–4)
Composite PAC-SYM Score: Overall mean across all 12 items (score range: 0–4)
A mean item reduction of ≥ 0.50 points was pre-specified as the threshold for achieving a Minimal Clinically Important Difference (MCID)

Primary outcome measures: 1. The primary efficacy endpoint was the mean reduction in the total composite Patient Assessment of Constipation-Symptoms (PAC-SYM) score from baseline (Day 0) to post-intervention completion. A reduction of points on the mean item score was pre-defined as the threshold for achieving a Minimal Clinically Important Difference (MCID).
2.Resolution of Purisha Sanga (Retention of feces)
The primary classical therapeutic endpoint was the reduction in the clinical severity score of Purisha Sanga (graded on an ordinal scale of 0 to 4), which served as the mandatory cardinal criterion for Purishaja Udavarta.
Secondary outcome measures:1. Mean changes from baseline to post-intervention across the three individual PAC-SYM symptom subscales.
2. Changes in individual severity scores (graded 0 to 4) for the remaining five cardinal symptoms.
Sample Size
As this was an exploratory pilot interventional trial designed to evaluate efficacy, symptom resolution and in accordance with established statistical recommendations for pilot and feasibility studies (Browne, 1995; Lancaster et al., 2004; Sim and Lewis, 2012), a sample size of N=30 was determined to be appropriate. This cohort size satisfies the Central Limit Theorem assumptions, provides adequate precision for estimating standard deviations and non-parametric effect sizes (r= Z**√**N**)** for the primary outcome measure (PAC-SYM), and establishes foundational variance metrics necessary to power future definitive, multi- center randomized controlled trials.

Statistical Analysis

R 4.3.2 software and Microsoft Excel are used for the statistical analysis of the study.

Significance level: 5%

Normality test: Paired differences (pre-intervention minus post-intervention) was formally tested using the Shapiro-Wilk test. Because the paired differences across individual cardinal symptoms of Purishaja Udavarta and PAC-SYM subscale scores violated the assumption of normality ($p<0.05$ on Shapiro-Wilk) and ordinal rating scales, non-parametric statistics were utilized. Within-group comparisons between baseline (Pre) and after completion of therapy (Post) were conducted using the Wilcoxon Signed-Rank Test was conducted across all 30 patients.

Demographic data

In the present study, maximum number of patients were in, age group of 40-49 years (60%), males (60%), Hindu (96.67%), married (86.96%), Service (63%), Non vegetarian (63.33%), Krura Koshtha (69%), Vata Kaphaja Prakruti (49 %), at baseline.

Results

A total of 30 patients with Purishaja Udavarta completed the study and were included in the final analysis.

Primary Outcomes: Administration of Eranda taila produced a statistically significant and clinically robust reduction in the primary patient-reported endpoint. The composite PAC-SYM score declined from a baseline of 17.70 ± 7.54 to 4.93 ± 2.15 post treatment (mean difference 12.77; 95% CI): [10.42,15.11]; Wilcoxon Z=6.01, p <0.001, effect size r=1.10). On an item-mean basis (1.06 -point reduction), this exceeded the pre-defined MCID threshold (≥ 0.50). (Table 5), (Figure 3)

Concurrently, the primary classical endpoint, Purisha Sanga (retention of feces), demonstrated a 90.0% reduction from 4.00 ± 0.00 to 0.40 ± 0.50 (p <0.001, r=1.10) with 86.7% of patients experiencing complete resolution of retention of feces. (Table 4), (Figure 2)

Secondary Outcomes: Significant improvements were observed across all individual PAC-SYM domain subscales: Stool symptoms decreased by 77.2% (8.90 ± 3.73 to 2.03 ± 1.25, p < 0.001), Abdominal symptoms by 67.1% (4.77 to 2.33± 1.57 to 0.86, p< 0.001), and Rectal symptoms by 66.9% (4.03 ± 2.04 to 1.33 ± 0.61, p < 0.001). (Table 5), (Figure 3)

Evaluation of the remaining five cardinal symptoms of Purishaja Udavarta revealed parallel reductions: Atopa decreased by 80.0% (p < 0.001), Shoola by 70.7 (p < 0.001), Parikartika by 61.5% (p < 0.001), Urdhavavata by 61.9% (p < 0.001), and Adhmana by 51.2% (p< 0.001). Overall, the cumulative Ayurvedic symptom severity score declined by 74.7% (from 11.07 ± 2.94 to2.80 ± 1.54, p < 0.001, r = 1.10), confirming comprehensive therapeutic efficacy. (Table 4), (Figure 2)

Table: 4 Effect of Eranda taila on Ayurvedic symptoms — Wilcoxon signed-rank test

Ayurvedic Symptom (Cardinal Signs)	Pre-Intervention (Mean ± SD)	Post-Intervention (Mean ± SD)	Wilcoxon Signed-Rank (p-value)	Effect size (r = Z/√N)	95% CI of Difference
Atop	1.83 ± 0.99	0.37 ± 0.49	P<0.001(Z=4.89)	r=0.89	[1.21,1.72]
Shoola	1.37 ± 0.81	0.40 ± 0.50	P<0.001(Z=4.88)	r=0.89	[0.74,1.20]
Adhmana	1.43 ± 0.82	0.70 ± 0.47	P<0.001(Z=3.94)	r=0.72	[0.44,1.03]
Parikartika	1.73 ± 1.14	0.67 ± 0.61	P<0.001(Z=4.43)	r=0.81	[0.73,1.41]
Purisha sanga	4.00 ± 0.00	0.40 ± 0.50	P<0.001(Z=6.01)	r=1.10	[3.41,3.79]
Urdhvavata	0.70 ± 0.88	0.27 ± 0.45	P<0.001(Z=3.46)	r=0.63	[0.22,0.65]
Total Ayurvedic Symptom Score	11.07 ± 3.16	2.80 ±1.83	P<0.001(Z=6.01)	r=1.10	[7.55,8.98]

Table: 5 Effect on subjective parameters of PAC-SYM — Wilcoxon signed-rank test

PAC-SYM Parameter	Pre-Intervention (Mean ± SD)	Post-Intervention (Mean ± SD)	Wilcoxon Signed-Rank (p-value)	Effect size (r = Z/√N)	95% CI of Difference
Abdominal Symptoms (Q1–Q4)	4.77 ± 2.33	1.57 ± 0.86	P<0.001(Z=6.01)	r=1.10	[2.48,3.92]
Rectal Symptoms (Q5–Q7)	4.03 ± 2.04	1.33 ± 0.61	P<0.001(Z=4.70)	r=0.86	[2.01,3.39]
Stool Symptoms (Q8–Q12)	8.90 ± 3.73	2.03 ± 1.25	P<0.001(Z=6.01)	r=1.10	[5.69,8.04]
Composite PAC-SYM Score	17.70 ± 7.54	4.93 ± 2.15	P<0.001(Z=6.01)	r=1.10	[10.42,15.11]

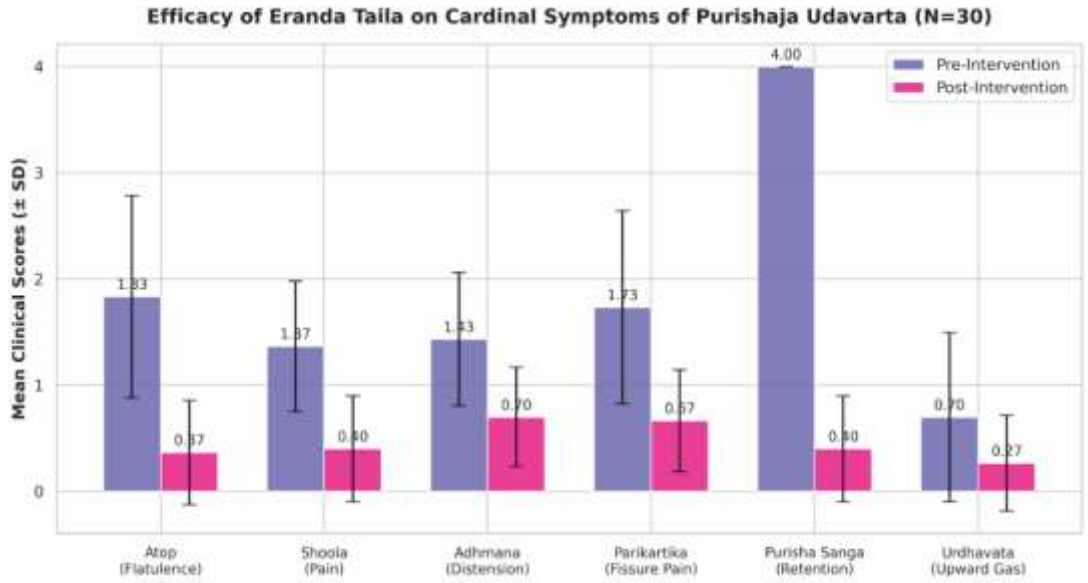


Figure: 2 Ayurvedic cardinal symptoms results.

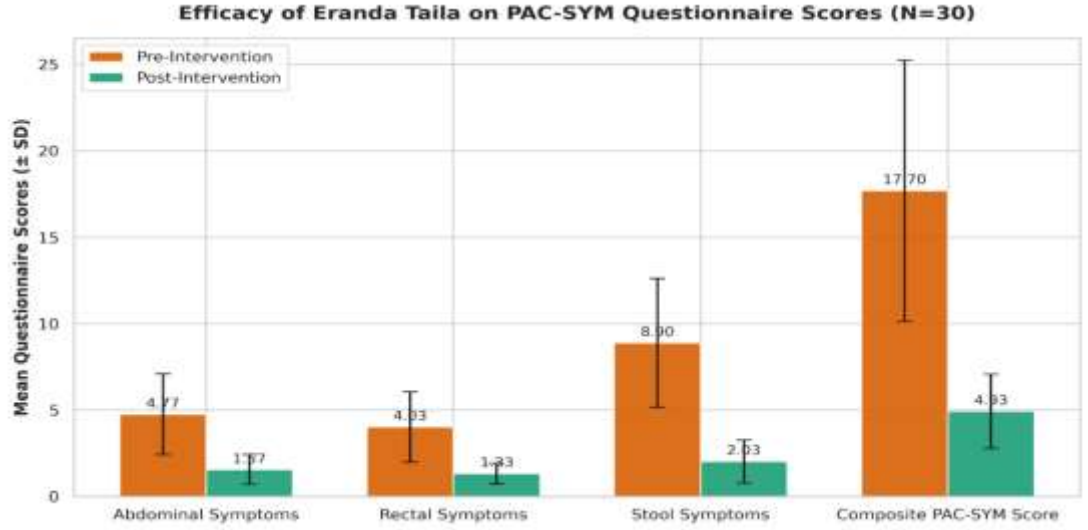


Figure: 3 PAC-SYM questionnaire results.

Discussion

Eranda taila helps in propulsion of the intestines. Eranda taila produced a statistically highly significant reduction in all six cardinal symptoms of Purishaja udavarta. The relief of symptoms such as Atop, Shoola, Adhmana, Parikartika, Purisha sanga, Urdhavavata is clinically meaningful, since these symptoms most directly impair the daily functioning of the patients. The progressive decline in symptom severity across the assessment points, demonstrated by the statical analysis, indicates a steady and sustained therapeutic effect rather than a transient one. Reduction of score of PAC SYM and its stable scores with oral administration of Eranda taila (castor oil) indicates its therapeutic efficacy in Purishaja udavarata and its needful excretion.

Comparison with previous studies

Based on an extensive search of indexed biomedical and Ayurvedic electronic databases, there is an absence of published prospective clinical trials specifically evaluating the effect of cold-pressed Eranda taila in Purishaja Udavarta using validated patient-reported outcomes such as the PAC-SYM questionnaire. Traditional use of Eranda taila as a best Anulomana and Vata-Shamana formulation is extensively documented in classical Ayurvedic texts, contemporary empirical clinical studies reporting quantitative effect sizes, symptom-specific trajectory, and safety profiles remain virtually absent. Subsequently, the present findings of this study may use as foundational baseline data for future controlled trials.

Probable mode of action

The Eranda taila possesses madhura (sweet), katu (pungent), and kashaya (astringent) rasa (taste) helps in the mitigating the vitiation of the Vatadosha and also possesses qualities i.e. Snigdha Guna (unctuousness) imparts lubrication and moisture to the intestinal lumen, thereby counteracting the aggravated Ruksha (dry) and Khara (rough) in the intestines induced by vitiated Vata Dosha, Ushna (warm) promoting Vilayana (liquefaction/softening) of hardened feces (Grathita Purisha) in the Pakwashaya. By virtue of its Snigdha (unctuous) and Ushna (warm), Sara (mobility), Picchila (sliminess) coating effect over the intestinal lumen, Srotovishodhanam (cleansing of obstructive pathology occurring in intestine) attributes, Eranda taila facilitates the pacification of aggravated Vata Dosha, thereby promoting physiological downward regulation (Anulomana) of Apana Vata and helps in management of the Purishaja Udavarta [21].

Snehana (internal oleation) of Eranda taila produces Vishyandan (liquefication). Vishyandan primary therapeutic action of Sneha helps in the liquefication of the Purisha which removes hardening and dryness of the Purisha because of this there is easily excretion of Purisha (feces).

Eranda taila possesses Madhura-Kashaya Rasa, Snigdha Guna (unctuousness), and Ushna Virya (warm potency), which directly pacify the aggravated Sheeta (cold) and Ruksha(dry) attributes of Vata (Vata-Shamana) and helps in relieving Shoola. Its Tikshna (penetrating) and Sukshma (subtle, channel-clearing) attributes help in Sroto-vibandha and simultaneously relieves Adhamana. The Snigdha and Guru qualities of the Eranda taila coat and soothe the mucosal lining, counteracting Kharata (intestinal roughness) helps in relieving Atopa. The Picchila (mucilaginous), Snigdha (unctuous), and Ropana (healing/soothing) properties of Eranda taila relieves Parikartika. Urdhavavata is relieves due to Eranda Taila reverses Vimarga-gamana of Vata Dosha and restoring the physiological downward direction of Apana Vata (Anuloma-gati).

The principal constituent of the castor oil is ricinoleic acid which stimulates intestinal EP3 prostanoid receptors regulates the intestinal motility, and influences fluid exchange within the gastrointestinal lumen thereby facilitating bowel evacuation [25]

Limitations of Study

Larger and longer-term trials are required to fully assess the risks and benefits of the use of Eranda taila for Purishaja udavarta.

Limitations of the current study include an inadequate number of patients to prove efficacy of Eranda taila, an insufficient duration to assess fully the long-term benefit–risk ratio and an insufficient prospective validation of the magnitude of responses to understand the clinical significance of the effects. This study was open-label design, single center trial without control cohort, reliance solely on subjective outcomes and lack of Bristol Stool Form Scale. Lastly, the study protocol was restricted to an acute 21-day interventional phase without an extended post-

treatment wash-out follow-up window. Consequently, data regarding long-term recurrence, relapse rates, or sustained therapeutic efficacy following the cessation of Eranda Taila could not be captured. Subsequent clinical trials must incorporate longitudinal 4- to 12-week post-intervention monitoring to evaluate long-term bowel habit sustainability

Conclusion

During a treatment period of 3 weeks with the oral administration of the Eranda taila there is significantly increased the number of spontaneous, complete bowel movements, reduced the severity of symptoms in patients with Purishaja udavarta. Eranda taila given at a dose of 2.5 ml with 50 ml of lukewarm water before food at night as an internal oleation therapy was found effective in the management of Purishaja udavarta. Notably, no adverse events were reported during the study.

Authors contributions

SRP: Methodology, Data collection, Writing–original draft preparation, Visualization, Statistical analysis. UVT: Conceptualization, Methodology, Formal analysis, Writing -Reviewing and Editing, Supervision,

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Consent for publication: Not applicable; no identifiable individual data are reported.

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