Publisher
Maharshi Charaka Ayurveda
www.maharshicharaka.in

E-ISSN:2456-3110

Journal of Ayurveda and Integrated Medical Sciences

2025 Volume 10 Number 7 JULY

Research Article

Dusparsakadi Kashayam

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# An Analytical and Pharmacognostic Insight into Dusparsakadi Kashayam for the Management of Arśas

Fulatariya Y[1], Joy A[2*], Francis S[3], Sandhya VR[4], D Ramanathan[5]

DOI:10.21760/jaims.10.7.10

[1] Yash Fulatariya, CRAV Scholar, Sitaram Ayurveda P Ltd, Thrissur, Kerala, India.

[2*] Anu Joy, Research Officer, Sitaram Ayurveda P Ltd, Thrissur, Kerala, India.

[3] Smitha Francis, Botanist, Sitaram Ayurveda P Ltd, Thrissur, Kerala, India.

[4] Sandhya VR, Botanist, Sitaram Ayurveda P Ltd, Thrissur, Kerala, India.

[5] D Ramanathan, CRAV Guru, Sitaram Ayurveda P Ltd, Thrissur, Kerala, India.

Dusparsakadi Kashayam is a classic ayurvedic herbal formulation for the treatment of piles (hemorrhoids). The Kashayam works by balancing the body's Doshas, particularly Pitta and Vata, which play a crucial role in the development of hemorrhoids. This article describes the benefits of Dhusparsakadi Kashayam, which consists of five powerful ingredients such as Dushparsha, Bilwa, Yavani, Nagara and Patha, known for their therapeutic effects in managing piles. This article explores the preparation, physicochemical properties, phytochemistry, Thin-layer chromatography (TLC), and therapeutic benefits of Dusparsakadi Kashayam. The presence of sugar, alkaloids, terpenoids, flavonoids are responsible to reduce inflammation, alleviate pain, and support digestive health. It highlights its natural and effective potential as a remedy for individuals suffering from Arśas (piles). This scientific research on Dusparsakadi Kashayam will facilitate further studies on its clinical and pharmacological aspects.

**Keywords:** Dusparsakadi Kashayam, Hemorrhoids, TLC, Phytochemistry

**Corresponding Author**

Anu Joy, Research Officer, , Sitaram Ayurveda P Ltd, Thrissur, Kerala, India.

Email: research@sitaramayurveda.co.in

**How to Cite this Article**

Fulatariya Y, Joy A, Francis S, Sandhya VR, D Ramanathan, An Analytical and Pharmacognostic Insight into Dusparsakadi Kashayam for the Management of Arśas. J Ayu Int Med Sci. 2025;10(7):73-80.

Available From

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| Conflict of Interest | Funding | Ethical Approval | Plagiarism X-checker | Note |
|---|---|---|---|---|
| None | Nil | Not required | 11.65 | |

# Introduction

Ayurveda is an ancient system of health and healing, rooted from *Atharvaveda*. Its main goal is to maintain body's natural balance. The fundamental components of body include *Doshas*, *Dhatus, Malas,* and *Agni*. *Doshas* are classified into physical (*Vata, Pitta,* and *Kapha*) and mental (*Rajas* and *Tamas*), influencing both body and mind, and they exist in three states: decrease (*Kshaya*), normalcy (*Sthana*), and increase (*Vriddhi*).**[1]** The term "*Kashaya*" refers to a substance that helps restore balance in body by stabilizing physiological functions and promoting healing. The word itself is derived from three parts: 'Ka' representing body (*Shareera*), 'Sha' signifying its functions, and 'Ya' indicating regulation. *Kalpana* (formulations) refers to process of preparing medicines using either a single ingredient or a combination of multiple drugs. The Sanskrit term "*Kwatha*" refers to *Kashayam* and is derived from "*Kwathana*," which literally means process of boiling.**[2]**

Piles, or haemorrhoids, are a common health concern affecting people across all age groups, often causing significant discomfort and a decline in quality of life. These swollen or inflamed veins in the anal region can lead to symptoms like pain, itching, bleeding during bowel movements, and in more severe cases, prolapse. The causes typically include chronic constipation, prolonged sitting, low-fibre diets, and straining during defecation.**[3]**

Modern medicine offers various treatment options such as lifestyle changes, stool softeners, topical creams, minimally invasive procedures like rubber band ligation, and surgical interventions. Recurrence, post-operative pain, infections, and potential complications like anal stenosis or incontinence remain concerns, especially in advanced stages.**[4,5]**

From an Ayurvedic perspective, piles are described under the condition called *Arsha*, considered one of the *Ashta Mahagada* due to its chronic and stubborn nature. Ayurveda attributes its origin to the imbalance of *Vata* and *Pitta Doshas*, often aggravated by impaired digestion (*Mandagni*) and irregular bowel habits. Treatment, therefore, is focused not just on symptoms but on correcting the root imbalances—regulating digestion, pacifying *Doshas*, reducing inflammation, and improving circulation in the anal region.**[6]**

One such traditional Ayurvedic remedy is *Dusparsakadi Kashayam*, a classical decoction formulation known for its effectiveness in managing anorectal conditions like *Arsha* (piles) and *Bhagandara* (fistula-in-ano). The formulation comprises a combination of medicinal herbs, each contributing distinct pharmacological actions that support the management of piles (hemorrhoids). *Tragia involucrata* exhibits anti-inflammatory and analgesic properties, which help in reducing rectal inflammation and alleviating pain.**[7]** *Aegle marmelos* offers anti-inflammatory and gastroprotective effects,**[8]** aiding in mucosal healing and regulation of bowel movements, which is crucial in hemorrhoidal conditions. *Trachyspermum ammi* acts as an analgesic and antioxidant, providing pain relief and supporting tissue repair.**[9]** *Zingiber officinale*, known for its anti-inflammatory**[10]** and circulatory stimulant actions, helps reduce swelling and improve blood circulation in the affected anal region. Lastly,**[11]** *Cyclea peltata* demonstrates strong anti-inflammatory and wound-healing properties, promoting tissue regeneration and defending against oxidative stress. Together, these herbs create a synergistic formulation that addresses the core symptoms of piles, including inflammation, pain, mucosal damage, and poor circulation.

Although *Dusparsakadi Kashaya* has been used for generations in clinical practice, scientific standardization and quality control of this formulation are still in the early stages. As the global demand for traditional herbal remedies grows, ensuring consistency, safety, and efficacy through proper standardization is more important than ever. This includes evaluating sensory characteristics, establishing physicochemical parameters like pH, viscosity, and specific gravity, and identifying bioactive markers through techniques such as HPTLC or HPLC.**[1]**

This study aims to address these gaps by systematically standardizing *Dusparsakadi Kashayam* using modern analytical tools while respecting the formulation's traditional roots. By doing so, it hopes to pave the way for broader clinical acceptance and improved therapeutic outcomes for patients suffering from piles.

As per the Charaka Samhita,**[12]** *Pachavidha Kashaya Kalpana* consists of five forms: *Rasa, Kalka, Sritha, Seetha,* and *Phanta*.

*Dusparsakadi Kashaya* is a classical Ayurvedic formulation which is explained in the classical text of *Arsha Chikitsa Prakarana* and *Sahasrayogam*.**[13]**

## Materials and Methods

### Collection of Raw materials

The raw materials were sourced from the raw material store of Sitaram Ayurveda Pvt. Ltd., Thrissur, and were identified and verified at the Pharmacognosy Division. Specimen samples were subsequently stored in the Quality Control Division of Sitaram Ayurveda Pvt. Ltd., under specimen numbers SAPL/QC/CS/217, SAPL/QC/CS/012, SAPL/QC/CS/216, SAPL/QC/CS/233 and SAPL/QC/CS/071, respectively. The ingredients and the specific parts used in the preparation of the *Kashaya* are listed in Table No. 1.

### Preparation of Kashayam

*Dusparsakadi Kashayam* was prepared at the production division of Sitaram Ayurveda Pvt. Ltd. following the guidelines of *Sarangadhara Samhita*. **[14]** The raw materials used for the *Kashayam* are listed in Table 1 and presented in Figure 1. These ingredients were thoroughly cleaned, dried, and broken into smaller pieces. A total of 48 grams (one *Pala*) of the processed herbs was mixed with 768 ml of water (16 parts) and heated in an earthen pot over a gentle flame until the liquid was reduced to 96 ml, which is one-eighth of the initial volume.

**Table 1: List of raw materials of *Dusparsakadi Kashayam***

| SN | Sanskrit Name | Botanical Name | Part used | Ratio |
|---|---|---|---|---|
| 1. | Dushparsha | Tragia involucrata | Root | 1 part |
| 2. | Bilwa | Aegle marmelos | Root | 1 part |
| 3. | Yavani | Trachyspermum ammi | Fruit | 1 part |
| 4. | Nagara | Zingiber officinale | Rhizome | 1 part |
| 5. | Patha | Cyclea peltata | Rhizome | 4 part |



**Figure 1: Raw materials of *Dusparsakadi Kashayam.* A: *Tragia involucrata;* B: *Aegle marmelos;* C: *Trachyspermum ammi;* D: *Zingiber officinale;* E: *Cyclea peltata***

### Physicochemical Analysis of Raw Materials

The physicochemical parameters of the raw material, such as total ash, acid-insoluble ash, water-soluble extractive, and alcohol-soluble extractive, were analysed using standard protocols outlined in the *Ayurvedic Pharmacopoeia of India.* ***[15]***

### Organoleptic and Physicochemical Analysis of *Kashayam*

The organoleptic properties help establish the authenticity of the *Kashaya*. Ayurvedic parameters such as colour, odour, and taste were evaluated, along with key physicochemical characteristics like pH, specific gravity, and total soluble solids.**[16]**

### Preliminary Phytochemical Analysis

The *Dusparsakadi Kashayam* was subjected to preliminary phytochemical analysis. Various tests, including Dragendorff's for alkaloids, the alkaline reagent test for flavonoids, and others for tannins, saponins, glycosides, steroids, and triterpenoids, were conducted.**[16]**

### Thin Layer Chromatography (TLC) Fingerprint Analysis

Thin Layer Chromatographic (TLC) fingerprinting was carried out to separate and identify active constituents of *Dusparshakadi Kashayam*. The Kashayam (20 ml) was subjected to reflux with 40 ml of methanol for one hour, followed by filtration and evaporation. The resulting residue was dissolved in 1 ml of methanol and applied to silica gel-coated glass plates. Extracts of each individual raw ingredient were also prepared using same procedure. The TLC plate was developed using Toluene and Ethyl acetate (9:1) as mobile phase & observed under UV light at 254 nm & 366 nm for visualization & comparison of chemical profiles.**[16]**

## Results

### *Rasadi* properties of Ingredients17

**Table 2: *Rasadi* properties of *Dusparsakadi Kashayam* ingredients.**

| SN | Sanskrit Name | Rasa | Guna | Veerya | Vipaka | Doshakarma |
|---|---|---|---|---|---|---|
| 1. | Dushparsha | Katu, Thiktha, Madhuara, Kashaya | Laghu, Snigdha | Seeta | Katu | Vata Pitta Kapha Samana |
| 2. | Bilwa | Kashaya Thiktha | Laghu, Ruksha | Ushna | Katu | Kaphavatahara |
| 3. | Yavani | Kashaya Thiktha | Laghu, Ruksha, Thikshna | Ushna | Katu | Vatakapha Samana |
| 4. | Nagara | Katu | Laghu, Snigdha | Ushna | Madhura | Vata Kaphahara |
| 5. | Patha | Tiktha | Laghu, Tikshna | Ushna | Katu | Vatakapha Samaka |

*Dusparshakadi Kashayam* is known for its *Tikta* (bitter) and *Katu* (pungent) *Rasa*. It primarily possesses *Laghu* (light), *Teekshna* (sharp) guna, *Ushna Veerya* (hot potency), and *Katu Vipaka* (pungent post-digestive effect). *Dusparsha*, one of the main ingredients, has *Laghu* and *Snigdha* properties along with *Sheeta Veerya* (cool potency), making it effective as a coolant and hemostatic agent. *Bilwa* is noted for its anti-inflammatory effects, making it beneficial in reducing piles. *Yavani* and *Sunthi*, with their *Kapha-Vata* balancing properties, help in alleviating pain and inflammation. *Patha* supports wound healing (*Vranaropana*) and also shows anti-helminthic and anti-inflammatory activity, aiding the healing process of fistula and piles. The formulation is therapeutically rich, with actions such as *Deepana* (enhancing digestion), *Pachana* (digestive), *Samgrahi* (absorbent), *Soolaghna* (pain reliever), and *Arsoghna* (effective against hemorrhoids). The *Tikta Rasa* helps in drying up excess fluids, while the *Teekshna Guna* clears bodily channels (*Srotoshodhana*), thereby relieving pain. Additionally, its *Samgrahi* and *Pachana* effects support proper tissue metabolism (*Dhatu Pachana*) and cleanse the system.

### Physicochemical Analysis of Raw Materials.

Physicochemical analysis of Raw materials in *Dusparsakadi Kashayam* were Tabulated in Table no. 3

**Table 3: Physicochemical Analysis of Raw Materials.**

| SN | Raw Materials | Total Ash | Acid Insoluble Ash | Water Soluble Extractives | Alcohol Soluble Extractives |
|---|---|---|---|---|---|
| 1 | Tragia involucrata | 6.38% | 1.72% | 12.16% | 4.20 % |
| 2. | Aegle marmelos | 4.59% | 2.92% | 4.22% | 4.12% |
| 3 | Trachyspermum ammi | 6.29% | 1.86% | 10.99% | 4.51% |
| 4 | Zingiber officinale | 5.84% | 1.51% | 10.89% | 3.63% |
| 5 | Cyclea peltata | 6.68% | 1.21% | 13.11% | 11.20% |

### Organoleptic and Physicochemical Analysis of *Kashayam*

Organoleptic evaluation, which involves examining colour, odour, and taste, serves as a preliminary check for the *Kashaya's* authenticity and helps detect any inconsistencies or adulteration in the product. In addition, physicochemical analysis, including pH, specific gravity, and total soluble solids, offers detailed insights into the formulation's composition, stability, and consistency.

Collectively, these analyses ensure that the *Kashaya* adheres to the required standards for safety, efficacy, and quality, thereby enhancing its therapeutic value and reinforcing consumer confidence in *Dusparsakadi Kashayam.* Table no. 4 shows the organoleptic and physicochemical parameters of *Dusparsakadi Kashayam*.

**Table 4: Organoleptic and Physicochemical analysis of *Dusparsakadi Kashaya***

| SN | Parameters | Results |
|---|---|---|
| 1. | Colour | Dark Brown |
| 2. | Odour | Characteristic |
| 3. | Taste | Astringent, Bitter |
| 4. | pH | 5.59 |
| 5. | Specific gravity | 1.05 |
| 6. | Total soluble solids | 14 |

**Preliminary Phytochemical Analysis**

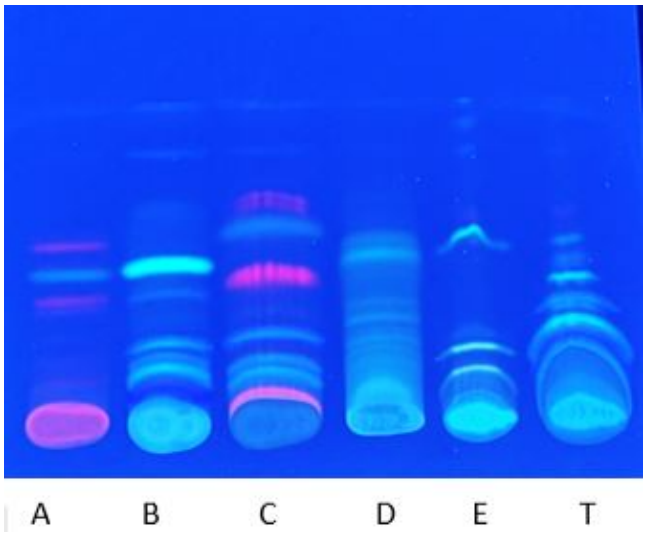
In this study, the phytochemical constituents of *Dusparsakadi Kashayam* were analyzed and documented in Table 5. It helps determine the active compounds responsible for its therapeutic effects, ensuring the product's efficacy.

**Table 5: Phytochemical analysis of *Dusparsakadi Kashayam***

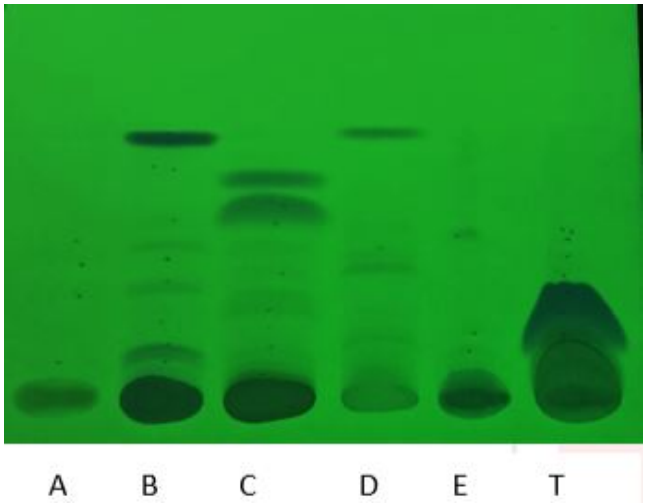
| SN | Organic Phytochemical constituents | Name of the test conducted | Present / Absent |
|---|---|---|---|
| 1. | Carbohydrate | Molisch's test | - |
| 2. | Sugar | Benedict's test | + |
| 3. | Ketose | Seliwanoff's test | - |
| 4. | Protein | Biuret test | - |
| 5. | Starch | K I test | + |
| 6. | Glycoside | Keller killiani test | - |
| 7. | Steroid | Salkowski test | - |
| 8. | Terpenoid | Salkowski test | + |
| 9. | Flavonoid | Alkaline reagent | + |
| 10. | Phenol | Phenol reagent test | + |
| 11. | Saponin | Foam test | - |
| 12. | Alkaloid | Wagner reagent | + |
| 13. | Tannin | Ferric chloride test | - |
| 14. | Coumarin | NaOH test | + |

**+ : Presence, – : Absence**

**Thin Layer Chromatography (TLC) Analysis.**




**Under 254 nm**




**Under 366nm**

**Figure 2: TLC profile of *Dusparsakadi Kashayam* A: *Dhusparsa;* B: *Bilwa;* C: *Yavani;* D: *Nagara,* E: *Patha;* T: *Dusparsakadi Kashayam***

**Table 6: Rf Values of *Dusparsakadi Kashayam* along with its ingredients**

| No. | Samples | Rf Values |
|---|---|---|
| 1 | A | 0.12,0.23,0.37,0.50 |
| 2 | B | 0.12,0.17,0.23,0.33,0.39,0.48,0.63,0.74 |
| 3 | C | 0.10,0.17,0.27,0.37,0.48,0.54 |
| 4 | D | 0.18,0.29,0.41 |
| 5 | E | 0.12,0.17,0.44 |
| 6 | T | 0.19,0.25,0.31,0.34,0.40,0.44,0.46 |

## Discussion

In Ayurveda, Physicochemical analysis of raw materials is essential for maintaining the quality, consistency, and safety of products. Understanding the physicochemical properties of raw materials such as Total Ash, Acid insoluble ash, Water and alcohol soluble extractives aids in optimizing formulation processes, ensuring product efficacy, and adhering to regulatory standards. The Ash value and Acid insoluble ash value of all raw materials used in *Dusparsakadi Kashayam* complies the standards. The water-soluble extractive value of a raw material is determined to assess the presence of water-soluble compounds. This test helps to evaluate the solubility, potency, and quality of herbal materials in *Dusparsakadi Kashayam*. The compounds soluble in alcohol medium were analysed and all the results of alcohol soluble extractive value of each herbal raw material meets the specification. This approach is vital for maintaining the integrity of the final product and minimizing the risk of batch-to-batch variations or contamination, ultimately ensuring consumer safety and satisfaction.**[18]**

The organoleptic evaluation of *Dusparsakadi Kashayam* highlighted specific sensory attributes that help to establish its authenticity and identity. The formulation displayed a dark brown colour, characteristic of herbal decoctions, suggesting the presence of diverse phytoconstituents. Its odour was noted as distinctive or characteristic, indicative of the natural aromatic compounds in the ingredients. Regarding taste, the *Kashaya* exhibited astringent and bitter, which are commonly associated with Ayurvedic formulations known for their anti-inflammatory and detoxifying properties.

The physicochemical evaluation of *Dusparsakadi Kashayam* provided essential information regarding its composition and stability. The formulation exhibited a pH of 5.59, indicating a mildly acidic nature, which aligns with the characteristics of many herbal decoctions and may enhance its therapeutic potential. The specific gravity, recorded at 1.05, suggests an optimal concentration of dissolved constituents, ensuring the formulation's potency and consistency. Furthermore, the total soluble solids content was measured at 14, signifying the presence of bioactive compounds that contribute to its medicinal benefits.

These findings play a crucial role in the standardization of the formulation, ensuring the quality, stability, and effectiveness of *Dusparsakadi Kashaya*. The phytochemical analysis of *Dusparsakadi Kashayam* revealed the presence of alkaloids, coumarins, phenols, flavonoids, terpenoids, starch, and sugars, all of which are known for their pharmacological benefits. Alkaloids are recognized for their analgesic properties, contributing to the formulation's effectiveness in pain management.[19] Coumarins exhibit anti-inflammatory and anticoagulant effects, potentially aiding in reducing inflammation and improving blood circulation.[20] Phenols and flavonoids possess strong antioxidant and anti-inflammatory activities, which may enhance pain relief and promote wound healing.[21] Terpenoids are known for their anti-inflammatory and vasoprotective actions, which could help reduce hemorrhoidal swelling. Additionally, starch and sugars present in the formulation may act as bioavailability enhancers, supporting overall therapeutic efficacy.[22] These findings suggest that the synergistic interaction of these phytoconstituents plays a key role in the pain-relieving and anti-hemorrhoidal effects of *Dusparsakadi Kashayam.*

The comparative TLC analysis of *Dusparsakadi Kashayam* and its ingredients reveals distinct Rf values for both the individual components and the final formulation. Under 366 nm the Rf values for *Dusparsa* at 0.12, 0.23, 0.37, and 0.50 correspond with those of *Dusparsakadi Kashayam* Rf at 0.12, 0.23, and 0.37, suggesting the presence of common compounds. Likewise, *Bilwa* exhibits matches at 0.12, 0.23, and 0.48, contributing to the overall chemical profile of the *Kashayam*. *Yavani* shows overlaps Rf at 0.17, 0.37, and 0.48, while *Nagara* aligns at 0.41, and *Patha* matches at 0.12, 0.17, and 0.44. These results indicate that *Dusparsakadi Kashayam* contains compounds from all its ingredients, with several key Rf values being shared across the samples. This correlation emphasizes the contribution of each ingredient to the overall phytochemical composition of the formulation.

## Conclusion

*Dusparsakadi Kashayam* is a traditional Ayurvedic formulation renowned for its effectiveness in managing conditions like hyperacidity, anorexia, and digestive discomfort.

It is a polyherbal remedy that primarily balances the Kapha and *Pitta Doshas*, with a combination of ingredients that possess qualities, alongside a pungent taste. It is particularly beneficial in treating gastrointestinal disorders, such as heartburn, bloating, loss of appetite, and other digestive issues. Furthermore, it has shown potential in alleviating symptoms associated with conditions like haemorrhoids and chronic indigestion. This study aims to provide scientific validation and standardization of *Dusparsakadi Kashayam*, ensuring its safety and efficacy profile in modern therapeutic applications. By combining ancient Ayurvedic wisdom with contemporary scientific evaluation, the research supports the continued use of this formulation in Ayurvedic practice. The findings of this study contribute to the formulation's therapeutic profile, providing evidence for its role in managing various digestive and gastrointestinal conditions. Additionally, the methodologies used in this study can serve as a model for the standardization and quality control of other Ayurvedic remedies, further promoting the reliability and acceptance of traditional medicines in the healthcare sector.

**Acknowledgement**

The authors sincerely thank Dr D. Ramanathan (Managing Director), Dr Vignesh Devaraj (Technical Director), and Smt. Janani Ramanathan (Director), Mr Sandeep VR (Chief General Manager- Unit Head), Dr. Adithya Peethambara Panicker (AGM M&I) and Quality assurance & Quality Control departments of Sitaram Ayurveda P. Ltd. for their constant support and encouragement.

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