Available online through
www.jbsoweb.com
ISSN 2321 - 6328

Research Article

MODIFICATION OF MUSTA INDRAYAVA PRAMATHYA INTO SYRUP: A PHARMACEUTICAL - ANALYTICAL EVALUATION

Arya JP [1]*, Gazala Hussain [2], Prajwal Sanakyanavar [1], Anandhu KM [1]
[1] PG Scholar, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan, Karnataka, India
[2] Professor, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan, Karnataka, India
*Corresponding Author Email: jp.aryakannan@gmail.com

Article Received on: 05/08/25 Accepted on: 04/10/25

DOI: 10.7897/2321-6328.135408

ABSTRACT

Introduction: Atisara (diarrhoea) remains a major global health issue despite being seen as a simple condition. Ayurveda offers natural remedies for managing Atisara, often utilizing herbs with anti-diarrheal properties, either singly or in combination. One such classical formulation is Musta Indrayava Pramathya, which combines Musta (*Cyperus rotundus*) and Indrayava (*Holarrhena antidysenterica*), both known for their anti-diarrheal and digestive benefits. However, its short shelf life and poor taste limit its use and storage. Given the advantages of syrups —such as improved taste, ease of administration, enhanced stability, and longer shelf life, this study aims to develop a syrup form of Pramathya and to compare its pharmaceutical-analytical properties with the original formulation Methods: Musta Indrayava Pramathya was prepared as per classical reference, and syrup form was made using the same ingredients as mentioned in Sarkara Kalpana. Both were evaluated and compared for shelf life, taste, and acceptability. Results: The syrup form showed improved palatability, longer shelf life and stable physicochemical properties. Organoleptic evaluation confirmed a pleasant taste and aroma in the syrup, while the classical form was poorly palatable. Discussion: Converting Musta Indrayava Pramathya into a syrup effectively improved its palatability and shelf life. Aligning with Ayurvedic Sarkara Kalpana principles, the syrup offers a patient-friendly, commercially viable dosage form, supporting broader use, easier distribution, and better patient compliance.

Keywords: Musta, Indrayava, Pramathya, Syrup, Atisara.

INTRODUCTION

Kwatha Kalpana is regarded as one of the important preparations among Panchavidha Kashaya Kalpana, the five primary forms of Ayurvedic pharmaceutics. In addition to these, classical Ayurvedic texts also describe various secondary Preparations, categorized under the term Upakalpana of Panchavidha Kashaya Kalpana[1]. These are grouped based on similarities in their method of preparation and therapeutic utility. The boiling process, Kwathana, is essential to both Kwatha Kalpana and Pramathya preparations. Due to their similar preparation techniques, Pramathya is classified as an Upakalpana (secondary formulation) of Kwatha Kalpana[2].

Musta Indrayava Pramathya is a classical formulation indicated for Raktatisara[3]. Musta (*Cyperus rotundus*) is a key herb in Ayurveda, effective in both Ama (early) and Pakwa (advanced) stages of Atisara (diarrhoea). In Amaavastha, it acts as a Pachaka (digestive stimulant), enhancing Agni and reducing undigested toxins. In Pakwaavastha, it serves as a Stambhana (astringent), helping arrest diarrhoea by promoting absorption and reducing intestinal secretions[4]. Indrayava (Kutaja Beeja) is highly effective in treating digestive disorders like Atisara (diarrhoea), Raktatisara, and Krimi (worm infestation) due to its Sangrahi (bowel-binding), astringent, and digestive properties[5]. It helps reduce excessive bowel movements and strengthens Agni (digestive fire), aiding faster recovery from gastrointestinal issues.

Atisara (diarrhoea) is primarily characterized by frequent, loose, and watery stools. It is often caused by improper dietary habits and lifestyle choices (Mithya Ahara Vihara). From an Ayurvedic perspective, the condition typically involves a Vata-dominant Tridoshic imbalance. Patho-physiologically, diarrhoea results when the intestines either fail to reabsorb fluids adequately or when there is excessive secretion into the bowel. Hence, Ayurvedic management of Atisara focuses on restoring fluid balance by enhancing absorption and curbing excess secretion[4].

While Musta Indrayava Kwatha may not be explicitly mentioned in the classical Ayurvedic texts, Musta Indrayava Pramathya is well-documented for its use in treating Raktatisara (bloody diarrhoea). This underlines its therapeutic significance and establishes its relevance in the Ayurvedic management of diarrheal disorders.

However, the practical use of Pramathya has been limited due to its low palatability and short shelf life. These characteristics pose challenges in terms of patient compliance and clinical usability. To address these issues, a syrup form of Musta Indrayava Pramathya has been developed. This syrup offers improved taste, longer shelf life, and easier administration. Being widely accepted across all age groups, the syrup form enhances patient compliance and therapeutic utility[6].

Objectives of the Study: A comparative pharmaceutical analytical study of Musta Indrayava Pramathya and Musta Indrayava Pramathya syrup.

MATERIALS AND METHODS

The materials and methods can be classified into following section.

- Pharmaceutical study
- Analytical study

PHARMACEUTICAL STUDY

Materials

The materials required for the preparation include a weighing machine, measuring cylinders, stainless steel vessels (1-litre capacity), a gas burner with an LPG cylinder, a pair of tongs, and cloth for handling.

Table 1: Drugs used for preparation of Musta Indrayava Pramathya[1]

Drug	Quantity
Musta (*Cyperus rotundus*)	50g
Indrayava (*Holarrhena antidysenterica*)	50g
Water	800ml

Table 2: Rasapanchaka of Musta and Indrayava[5]

Dravya	Rasa (Taste)	Guna (Quality)	Virya (Potency)	Vipaka (Post-digestive taste)	Doshagnatha	Karma
Musta	Tikta (Bitter), Katu (Pungent), Kashaya (Astringent)	Laghu (Light), Ruksha (Dry)	Sheeta (Cold)	Katu (Pungent)	Kapha-Pitta Shamana (Pacifies Kapha and Pitta)	Deepana, Pachana, Krimighna, Balya, Shothahara, Sthambhana
Indrayava	Tikta (Bitter), Kashaya (Astringent)	Laghu (Light), Ruksha (Dry)	Sheeta (Cold)	Katu (Pungent)	Kapha-Pitta Shamana (Pacifies Kapha and Pitta)	Sangrahi (bowel-binding)

Methodology

Preparation of Musta Indrayava Pramathya[1]

100 g of the drug was taken (50 g Musta and 50 g Indrayava), and a *Kalka* (paste) was prepared from the drugs. 800 ml of water was added to a stainless-steel vessel, and the *Kalka* was incorporated. The vessel was placed on mild heat, and the mixture was stirred intermittently. Heating was continued until the mixture was reduced to one-fourth of its original volume. The heat was then turned off, and the prepared *Pramathya* was filtered and stored in a sterile container for further analytical study.

Figure 1: Preparation of Musta Indrayava Pramathya

Musta Indrayava Pramathya syrup

100 ml of Pramathya was taken, and 200 ml of sugar was added. The mixture was heated until the sugar completely dissolved, then filtered and reheated until it reached a one-thread consistency. The final syrup was stored in an air-tight container.

Figure 2: Preparation of Musta Indrayava Pramathya syrup

Analytical study

The analytical evaluation of *Musta Indrayava Pramathya* and *Musta Indrayava Pramathya* syrup was carried out at the Quality Control Laboratory, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan. The samples were analyzed for organoleptic characteristics, pH, refractive index, specific gravity, and total suspended solids, as per the protocol for testing ASU drugs published by CCRAS[7].

OBSERVATION AND RESULT

Table 3: Observation during the process

Observation	Pramathya	Syrup
Initial colour	Brownish	Brownish
Final colour	Milky brown	Dark Brown
Time taken for preparation	1 hr	15 min
Final quantity	200ml	250 ml

Table 4: Organoleptic study of Musta Indrayava Pramathya and syrup

Organoleptic Characters	Pramathya	Syrup
Sparsha	Liquid, Sheeta	Viscous Liquid, Sheeta
Roopa	Milky brown	Dark Brown
Rasa	Tikta pradhana	Madhura - Tikta
Gandha	Characteristic	Honey like

Table 5: Analytical observations of Musta Indrayava Pramathya And syrup

Analytical Parameters	Pramathya	Syrup
PH	5.02	5.86
Specific Gravity	1.02	1.35
Refractive Index	1.341	1.453
Viscosity	3.05	-
TSS	14%	74%

DISCUSSION

Modification into syrup form was attempted with the aim of enhancing palatability, shelf life, patient compliance, and reducing the required dosage. The syrup was prepared based on the classical Ayurvedic formulation of Sarkara Kalpana (syrup)[8].

Both preparations contain the same drugs, with the addition of sugar in the syrup.

The syrup was cooked over mild heat (Mandagni) until it reached a one-thread consistency, giving it a honey-like texture. Filtering the mixture after the complete dissolution of the sugar helped remove any physical impurities. The colour changed from dark brown to a lighter brown, and the free-flowing nature of the Pramathya became more viscous. The distinct smell of Musta and Indrayava transformed into a pleasant, aromatic honey scent. Likewise, the taste evolved from bitter (Tikta), astringent (Kashaya), and sour (Amla) to a more balanced taste profile of sweetness (Madhura), bitterness (Tikta), and astringency (Kashaya). The addition of sugar significantly influenced the organoleptic characteristics of the syrup.

The pH of Pramathya was 5.02, and the pH of the syrup was 5.86, indicating the acidic nature of both samples. Absorption, efficacy, and irritability of a medicine also depend on the pH value. The presence of sugar is important in reducing the acidity of the syrup[6].The refractive index of Pramathya is 1.341, and that of the syrup is 1.453. The increase in the refractive index of the syrup is due to the addition of sugar particles, which increase the density of the syrup.

The specific gravity of Pramathya is 1.0232, and that of the syrup is 1.3564. The increase in specific gravity is due to the presence of sugar particles in the syrup. The specific gravity of simple syrup is not less than 1.30150 [6], suggesting that the quality of the prepared syrup is within normal limits. The total solid substance (TSS) of Pramathya is 14 %, and that of the syrup is 78 %. The presence of sugar particles in the syrup causes a significant increase in the TSS of the syrup. The viscosity of the syrup could not be measured due to its extremely thick consistency.

The self-preservative action is due to the sugar in the syrup. The high osmotic pressure in syrups prevents the growth of Bacteria, Fungi, and Molds, thus preventing decomposition.[6]

CONCLUSION

Musta Indrayava Pramathya is denser and heavier (Guru) in comparison to Kwatha (decoction). Due to its stronger efficacy and heavier nature, it is particularly suitable in Madhyama Doshavastha (moderate stage of disease).

In cases of Sashonita Pakwatisara, where blood is present in the stool, the treatment focuses on controlling both the bleeding and the diarrhoea. Musta, with its cold potency (Shitavirya) and Kashaya-Madhura rasa, acts as a pittahara and raktashodhaka, effectively managing both bleeding and diarrhoea. Indrayava is effective in treating diarrhoea (Atisara) by promoting stool normalization and enhancing digestive strength, thus facilitating recovery.

Converting traditional formulations into syrup form enhances therapeutic efficacy by improving palatability and patient compliance, especially in children and those sensitive to bitter tastes. Syrups offer a patient-friendly and commercially viable dosage form, making them suitable for wider use and easier distribution. Effective treatment relies not only on the safety and efficacy of medications but also on their acceptability.

REFERENCES

1. Angadi R. Bhaishajya Kalpana Vijnana. 1st ed. Varanasi: Chaukhamba Surbharati Prakashan; 2011. p. 31–100.
2. Patil AA, Patil DB. Comparative pharmaceutico-analytical study of Mustakadi Pramathya and Mustakadi Kwatha. J Ayurveda Integr Med Sci. 2017;1:114–6. DOI: http://dx.doi.org/10.21760/jaims.v2i1.7497
3. Tripathi B. Sharangdhar Samhita. 2015 ed. Varanasi: Chaukhamba Surbharati Prakashan; 2015. p. 103–144.
4. Bagade SV, Byadigi SD. Musta in the management of Atisara. Res J Ayurvedic Sci. 2022;9(2):8–12. DOI:10.26463/rjas.9_2_5
5. Pandey G, editor. Dravyaguna Vijnana. Vol. 2. Varanasi: Krishnadas Academy; 2001. p. 636.
6. Thomas S, Sharma G, Kadibagil V, Sunil Kumar KN. Preparation and modification of Chinnodbhavadi Kvatha to syrup and quality standardisation. J Pharm Sci Innov. 2016;5:134–137. DOI:10.7897/2277-4572.0553
7. Lavekar GS, Padhi MM, Pant P, Sharma MM, Verma CS, Singh A, et al. Laboratory Guide for Analysis of Ayurveda and Siddha Formulations. New Delhi: CCRAS; 2010. p. 31, 33, 42, 53, 74, 103.
8. Acharya YT. Dravya Guna Vijnanam. 2nd ed. Bombay: Satyabhamabai Pandurang; 2003. Uttarardha, Pradhama Paribhasha Khanda, Shloka 56. p. 40–41.

Cite this article as:

Arya JP, Gazala Hussain, Prajwal Sanakyanavar and Anandhu KM. Modification of Musta indrayava pramathya into syrup: A Pharmaceutical - Analytical evaluation. J Biol Sci Opin 2025;13(5): 39-41. http://dx.doi.org/10.7897/2321-6328.135408

Source of support: Nil; Conflict of interest: None Declared