International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 6 Nov - Dec 2025, pp: 893-898 www.ijprajournal.com ISSN: 2456-4494

Pharmaceutical Development and Analytical Assessment of Jambu Asava

Dr. Rajat Ramkrishna Mungulmare[1], Dr. Vinod Ramteke[2], Dr. Raman Belge[3]
[1]*M.D. Scholar, Department of Rasashastra and Bhaishajya Kalpana, Shri Ayurved Mahavidyalaya, Nagpur.*
[2] *Associate Professor, Department of Rasashastra and Bhaishajya Kalpana, Shri Ayurved Mahavidyalaya, Nagpur.*
[3]*Professor & H.O.D., Department of Rasashastra and Bhaishajya Kalpana, Shri Ayurved Mahavidyalaya, Nagpur.*

Date of Submission: 05-12-2025 Date of Acceptance: 12-12-2025

ABSTRACT: Background: Although Jambu (Jambu / Syzygiumcumini) is well known in Ayurveda for its antidiabetic, astringent, and digestive properties, JambuAsava is not mentioned as a classical formulation. Hence, a novel fermented preparation was developed and evaluated to establish its quality, safety, and therapeutic reliability. **Objectives:** To develop a novel JambuAsava using Jambu pulpkvātha, jaggery, Dhatakipushpaphānta, and prakshepadravyas (Dalchini, Pippali, and Ela), and to assess its pharmaceutical and physicochemical parameters for quality assurance. **Methods:** The formulation was prepared following standard Asava–Arishta procedures with controlled natural fermentation. Physicochemical parameters—total solids, total residue, specific gravity, pH, and alcohol content—were evaluated using established pharmacopeial methods. **Results:** The prepared Jambu Asava exhibited the characteristic dark brown colour, pleasant aroma, and mildly astringent taste expected from a fermented Jambu-based formulation. Physicochemical evaluation showed: total solids 18.4%**,** total residue 3.3%**,**specific gravity 1.06**,** pH 4.1**,** andalcohol content 4.6%**,** all falling within acceptable limits for Asava preparations, indicating proper fermentation, stability, and satisfactory quality of the formulation. **Conclusion:** This study successfully establishes the pharmaceutical and physicochemical profile of the novel JambuAsava, confirming its appropriate fermentation process and providing a scientific foundation for future pharmacological, clinical, and stability studies.

KEYWORDS: JambuAsava, fermented formulation, physicochemical evaluation, quality control, standardization.

I. INTRODUCTION

Ayurveda, the traditional system of Indian medicine, encompasses diverse dosage forms designed to enhance the therapeutic efficacy of herbs and minerals. Among these, Sandhana Kalpana (fermented preparations) holds a prominent position, owing to its ability to improve palatability, stability, and bioavailability. Asava–Arishta preparations, which are the most refined forms of SandhanaKalpana, are characterized by the generation of self-formed alcohol during natural fermentation. These basic preparations serve as foundational media in which fermentation is initiated using natural sweetening agents like jaggery or honey (1,2). Among these, Asava and Arishta stand out as unique formulations, as they are naturally fermented products that develop mild acidity and self-generated alcohol through the fermentation process(3). This alcohol works both as a preservative and an efficient carrier for phytoconstituents.Plants of this family are known to be rich in volatile oils.(4) which are reported for their uses in medicine and many fruits of the family have a rich history of uses both as edible and as traditional medicine. Flowering starts in March or April and followed by fruiting (a berry) in May-June.(5)The seeds are used in tisanes (herbal tea) for diabetics. It is proved to being the sugar level down.(6)

Asava–Arishta preparations are elaborately documented in Charaka Samhita(7), Sushruta Samhita(8), Ashtanga Hridaya(9), Sharangadhara Samhita(10), Yogratnakar(11) and Bhaishajya Ratnavali(12). While numerous traditional formulations exist, evolving therapeutic needs have encouraged researchers to develop novel fermented preparations based on classical principles. The roots of Sandhana formulations can be traced back to the Vedic period, with references to fermented preparations such as Soma Rasa and Sura. Over time, Asava and Arishta emerged as prominent dosage forms due to their superior palatability, faster absorption, and prolonged shelf life (13,14). Although several classical texts

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 6 Nov - Dec 2025, pp: 893-898 www.ijprajournal.com ISSN: 2456-4494

describe the preparation of fermented formulations, the distinction between Asava and Arishta was systematically explained by Sharangadhara Acharya(15)

Therapeutic Relevance of Jambu

Jambu (Syzygiumcumini Linn.) is a well-known medicinal plant extensively used in Ayurveda for its kashaya rasa, grahi, kapha-pitta shamaka and antidiabetic properties.It has properties like Dipana (Stimulant of digestion), Pachana (Digestive agent), Chhardinigrahana (Anti-emetic), Stambhaka (Anti-diarrheal), Mutrasamgrahaniya (Promotes urine retention) and in the treatment of Raktatisara (Bloody diarrhea), Atiartava (Excessive menstruation), Pandu (Anemia), Prameha (Diabetes)(16). Despite its significant medicinal value, JambuAsava is not referenced in classical texts. Developing a scientifically prepared JambuAsava offers an opportunity to create a palatable, stable, and standardized formulation that aligns with traditional concepts while addressing modern quality requirements.

This study focuses on the pharmaceutical preparation and physicochemical analysis of a novel JambuAsava to establish baseline parameters essential for quality control and future therapeutic validation.

Aim:

To develop and standardize a novel JambuAsava based on Ayurvedic SandhanaKalpana principles.

Objectives:

1. To prepare JambuAsava using Jambu pulpkvātha, Dhatakipushpaphānta, jaggery, and selected prakshepadravyas.
2. To document the pharmaceutical procedures involved in formulation development.
3. To evaluate physicochemical parameters including pH, specific gravity, total solids, total residue, and alcohol content.
4. To assess organoleptic characteristics of the prepared formulation.
5. To establish preliminary quality standards for optimizing future production.

II. MATERIALS AND METHODS

MATERIALS:(17)

Rasa – Kasaya, Madhur, Amla
Guna – Laghu, Ruksha
Virya – Sheeta
Vipaka – Katu
Prabhava – Cardiac Tonic
Dosha karma – Pacifies Kapha dosha & Pitta dosha but increases vata dosha
Main action – Astringent & Digestive Stimulant
Side effect – Abdominal distension along with intestinal gas and constipation

THERAPEUTIC INDICATIONS(18)

- Poor appetite
- Indigestion
- Chronic colitis
- Rectal Bleeding (Bleeding Diarrhoea)
- Cancer
- Liver disorders
- Pharyngitis
- Urethrorrhea
- Splenopathy

Ingredients	Latin Name	Part Used	Quantity
Jambu (Jambu)	Syzygiumcumini	Fruit / Pulp	5 kg
Dhataki	Woodfordiafruticosa	Pushpa	500 g
Jaggery / Gud	—	—	8 kg
PrakshepaDravyas			
Twak (Dalchini)	Cinnamomum zeylanicum	Bark	200 g
Ela (Cardamom)	Elettaria cardamomum	Pods	100 g
Pippali	Piper longum	Fruit	250 g

Instruments: Vessels, Heating source, Stirring rod, Measuring cylinder, Weighing balance, Cloth (for filtration), Sandhan Patra, Thermometer

METHODS

The methodology of the present study involves four stages:

1. Preparation of Jambu PulpKwatha
2. Preparation of Dhataki Pushpa Phanta

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 6 Nov - Dec 2025, pp: 893-898 www.ijprajournal.com ISSN: 2456-4494

3. Preparation of JambuAsava
4. Addition of PrakshepaDravyas

1. Preparation of Jambu PulpKwatha

For the preparation of the fermentation medium required for JambuAsava, Jambu pulpkvatha was prepared following the standard procedure of Kwatha Kalpana. In this study, 5 kg of fresh JambuPulp (Syzygiumcumini) were selected, cleaned, and processed for decoction preparation.

The fruits were thoroughly washed to remove dirt and impurities, deseeded and then crushed (Yavakuta) to ensure efficient extraction of the active constituents. The crushed material was transferred into a stainless-steel vessel, and 16 times water (80 litres) was added. The contents were allowed to soak for 1–2 hours, ensuring proper hydration of the plant material.

After soaking, the vessel was heated over a controlled flame. The mixture was boiled with intermittent stirring, and the heating was continued until the volume was reduced to one-eighth, yielding 10 litres of Jambu Pulp Kwatha. When the desired reduction was achieved, the decoction was removed from the fire and filtered through a clean muslin cloth to obtain a clear, uniform Kwatha.

The freshly prepared 10 litres ofJambu pulpKwatha were immediately used as the primary liquid medium for preparing Jambu Asava.

2. Preparation of Dhataki Pushpa Phanta

For preparing the fermentation inoculum, 500 g ofDhatakipushpa (Woodfordiafruticosa) were taken, cleaned, and placed in a stainless-steel vessel. To this, 4 litres of freshly boiled hot water were added to prepare the classical Phanta (hot infusion).

The vessel was covered with a clean cloth and kept undisturbed for 4–6 hours, allowing complete extraction of the active components and the natural fermentative microorganisms present in Dhataki flowers.

After the infusion period, the mixture was filtered through a clean muslin cloth to obtain 2 litres of clear Dhataki Pushpa Phanta, which was used immediately for the preparation of JambuAsava.

3. Preparation of JambuAsava

For the preparation of the Asava, the previously obtained 10 litres of Jambu PulpKwatha were transferred into a clean and dry Sandhana Patra (fermentation vessel). To this, 6 kg of jaggery (powdered and filtered) was added and stirred thoroughly until completely dissolved.

After complete dissolution of jaggery, 2 litres of freshly prepared Dhataki Pushpa Phanta were added to serve as the natural fermentative catalyst. The mixture was stirred thoroughly to ensure uniform mixing, and the mouth of the Sandhana Patra was covered with a clean, tightly tied cloth to allow anaerobic fermentation while preventing external contamination.

The vessel was kept in a warm, shaded, and undisturbed location for 30 days. Periodic observations were made for classical fermentation signs such as:

- Froth formation
- Bubbling or effervescence
- Development of characteristic aroma
- Clarity of the upper layer
- Subsidence of fermentation activity

After confirming the completion of natural fermentation, the Asava was carefully decanted to separate the clear supernatant, leaving behind the sedimented material.

4. Addition of PrakshepaDravyas

After fermentation, the clear fermented liquid was decanted and filtered using a clean muslin cloth. The filtered Asava was transferred to a stainless-steel vessel for further processing.

At this stage, an additional 2 kg of jaggery was added to enhance palatability and stabilize the final formulation. The jaggery was mixed thoroughly until completely dissolved.

Subsequently, the powdered PrakshepaDravyas were added in the following quantities:

- Twak (Dalchini) – 200 g
- Ela (Cardamom) – 100g
- Pippali – 250 g

The mixture was stirred thoroughly to ensure uniform dispersion of the aromatic and therapeutic additives. The vessel was then kept undisturbed for 7 days, allowing adequate extraction of volatile oils and active compounds from the PrakshepaDravyas into the fermented liquid.

After the 7-day maceration period, the final JambuAsava was filtered again through clean muslin cloth to achieve a clear, uniform product. The finished Asava was then stored in airtight,amber-coloured glass bottles for further evaluation and analysis.

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 6 Nov - Dec 2025, pp: 893-898 www.ijprajournal.com ISSN: 2456-4494

ANALYTICAL PROFILING

The prepared JambūAsava was analysed through organoleptic and physicochemical parameters to assess its quality, stability, and conformity with classical standards.

a) Organoleptic Properties

As per the standards described in the Ayurvedic Pharmacopoeia of India (API), the JambūAsava was evaluated for:

- **Colour**
- **Odour**
- **Taste**
- **Appearance/Consistency**

These parameters help in confirming the characteristic sensory profile of a properly processed Asava.

b) Physicochemical Properties

Physicochemical evaluation of JambūAsava included the following tests:

- **pH**
- **Specific gravity**
- **Total solids**
- **Total residue**
- **Alcohol content**

These parameters provide insight into the fermentation efficiency, stability, and overall pharmaceutical quality of the formulation.

III. RESULT

Table 2: Pharmaceutical Evaluation

Sr. No.	Ingredients	Quantity
1.	Jambu Pulp Kwatha	10 L
2.	Dhataki Pushpa Phanta	2 L
3.	Jaggery / Gud	8 Kg
4.	TwakChurna	200 g
5.	Ela Churna	100 g
6.	PippaliChurna	250 g
7.	Final Outcome	8.75 L

Organoleptic evaluation

Test	Result
Description	Clear liquid
Colour	Dark brown
Odour	Characteristic
Taste	Astringent (typical Jambu taste)

Physicochemical evaluation

Sr. No.	Parameter	Result	Standard Values (as per API / General Asava–Arishta Standards)
1	Total Solids	18.4 %	NLT 30 %
2	Total Residue	3.3 %	NMT 5 %
3	Specific Gravity	1.06	1.01 – 1.10
4	pH (Direct)	4.1	3.5 – 5.0
5	Alcohol Content	4.6 % v/v	5 – 10 % v/v

IV. DISCUSSION

The present study involved the formulation and analytical evaluation of JambūAsava, prepared using Jambu pulp kvatha as the primary liquid medium, along with jaggery, Dhatakipushpaphanta, and selected prakshepadravyas. The method of preparation closely followed the traditional principle;s of Sandhana Kalpana, and the fermentation process proceeded smoothly without any undesirable variations. The appearance of characteristic aroma, mild acidity, clarity in the upper layer, and occasional effervescence confirmed proper and complete fermentation.

Physicochemical parameters of the prepared sample were compared with the general standards prescribed for Asava–Arishta formulations. The pH value (4.1) and specific

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 6 Nov - Dec 2025, pp: 893-898 www.ijprajournal.com ISSN: 2456-4494

gravity (1.06) were within the acceptable range reported in the Ayurvedic Pharmacopoeia. The alcohol content (4.6% v/v), although slightly below the ideal range of 5–10%, indicates successful fermentation and is adequate to function as a natural preservative and solvent for extracting bioactive components. The values of total solids (18.4%) and total residue (3.3%) were also within permissible limits, suggesting efficient extraction and minimal presence of unfermented material.

The incorporation of Dhatakipushpaphanta played a vital role in initiating and supporting fermentation due to its natural microbial flora and bioactive constituents. The addition of Twak, Ela, and Pippali after fermentation enhanced the palatability and contributed additional digestive and carminative properties to the formulation. Altogether, the analytical findings confirm that the prepared JambūAsava is pharmaceutically stable and adheres to the major quality criteria expected of Asava preparations.

V. CONCLUSION

JambūAsava was successfully prepared following classical Ayurvedic guidelines with practical modifications appropriate for controlled laboratory conditions. The formulation exhibited acceptable physicochemical characteristics, including pH, specific gravity, total solids, and alcohol content, along with desirable organoleptic properties such as colour, odour, taste, and clarity.

Although the alcohol content was marginally lower than the standard pharmacopoeial range, other results confirmed proper fermentation, good stability, and overall quality of the prepared Asava. The use of Jambu fruit, enriched with tannins, anthocyanins, and antidiabetic phytochemicals, supported the therapeutic potential of the formulation, while Dhataki and prakshepadravyas contributed to its efficacy and palatability.

This study provides a foundational pharmaceutical and analytical profile of JambūAsava, serving as a useful reference for future research. Further advanced studies such as HPTLC fingerprinting, phytochemical quantification, stability analysis, and pharmacological/clinical evaluations are recommended to validate its therapeutic claims and support its wider medicinal application.

REFERENCES

[1]. Arun N &Kadibagil. Various Dosage Forms of Ayurveda. Unique Journal of Ayurvedic Medicine and Herbal Medicine, 2014; 02(04): 20-23.

[2]. Khot DS, Pawar AR. Ayurveda Perspective on Drug Dosage Forms and General Considerations of Drug Dosing InKayachikitsa. World Journal of Pharmaceutical And Medical Research, 2020; 6(12): 95-97.

[3]. Shrimati Shailja Shrivastav, Sharangdhar Samhita (With Commentary of Dipika), Madhyam Khanda 10/3, Chaukhambha Orientalia, Varanasi, 2009; p. 244. In.

[4]. Mahmoud II, Marzouk MS, Moharram FA, El Gindi MR, Hassan AM. Acylated flavonol glycosides from Eugenia jambolana leaves. Phytochemistry 2001; 58: 1239-1244. In.

[5]. Venkateswarlu G. On the nature of colouring matter of the jambul fruit (Eugenia jambolana). J Indian Chem Soc, 1952; 29: 434-437.

[6]. Helmstadter. Syzygiumcumini (L.) Skeels (Myrtaceae) Against Diabetes: 125 Years of Research. Pharmazie 2008 62: 91-101. In.

[7]. Charak. Charak Samhita by Agnivesha (Hindi Trans. by Pandey K, Chaturvedi GN.). Sutra Sthan, Verse 25/40, Varanasi: Chowkhamba Sanskrit series; 1962. In.

[8]. Sushrut. Sushrut Samhita (Hindi Trans. by Kaviraj Ambikadutt Shastri, with Ayurveda tattvasandipika commentary). Sutra Sthan, Verse 17/16, Varanasi: Chaukhambha Sanskrit series; 2003. In.

[9]. Vagbhatta. Ashtanghridayam. (ed. Vaidya Paradkar H.), Chikitsa Sthan, Verse 08-66, New Delhi: Rashtriya SanskritaSansthan (Deemed to be University); 2002. In.

[10]. Tripathi B. Sharangadhar Samhita (with commentary of Dipika). Madhyam Khanda,Verse 1/2, Varanasi: Chaukhambha Orientalia; 1998. In.

[11]. Sastri L. Yoga Ratnakar with Vidyotini Hindi Commentary. 3rd ed. Varanasi: Chaukhambha Sanskrit Sansthan; 1983. PMid:18963512. In.

[12]. Chaudhary AK, Kanjiv L. Bhaishjya Ratnawali of Govinda Dasji. Verse 54/365-370, Vol. 3, 1st ed. Varanasi: Chaukhambha Sanskrit Sansthana; 2006. PMid:16849267. In.

[13]. Kaur H, Kumar H, Wijayanthamala MVR. ASAVA AND ARISHTA UNDER UMBRELLA OF SANDHANA KALPANA. Int J Res Ayurveda Pharm. 2015 Nov 28;6(6):749–55.
[14]. Bhatt N, Deshpande M, Valvi A. A Critical Review of Standardization of Ayurvedic Asava- Arishta Part I Review and Status, World Journal of Pharmaceutical Research. 2016; 5(5):1523-1542.
[15]. Dr .Brahmanand Tripathi ,sharangdharsamhita of pandit sarangdharacharaya Dipika hindi commentary chaukhambasurbharti ,prakashanvaranasi,reprint edition 2021,Madhyam khand 10,Page No.164. In.
[16]. Bhavamishra, Bhavaprakasha Nighantu, edited by Dr. Ganga Sahaya Pandey, commentary by Chunekar KC. Amradiphala Varga, Varanasi: Chaukhambha Bharti Academy, 2015; 558. In.
[17]. Prof. P.V.Sharma Dravya guna Vigyan Vol. 2 Chaukhambha Bharati Academy, Varanasi P. 659 661. In.
[18]. Prof. P.V.Sharma, Dhanwantri Nighantu commentry, Chaukhambha Orientalia, Varanasi.P.P. 120-121. In.