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Research Article

PHYSICO-CHEMICAL ANALYSIS OF DRAKSHASAVA PREPARED USING TWO DIFFERENT SANDHANA DRAVYA IN TWO DIFFERENT CONTAINERS

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ABSTRACT

Introduction: *Drakshasava* is a well-known *Ayurvedic* formulation used as general health tonic, carminative, and blood purifier, commonly used to treat digestive disorders, and cardiac issues. In the present study *Drakshasava* was prepared using two different *Sandhana Dravya Dhataki-pushpa* and yeast. Two different containers were used in the fermentation process. Materials and Methods: *Drakshasava* was prepared pharmaceutically, ingredients being *Draksha*, *Dhataki*, *Jati*, *Lavanga*, *Kakkola*, *Lavaliphala*, *Swetha Chandana*, *Twak*, *Ela*, *Patra* and *Pippali*. Observation and result: *Drakshasava* with *Dhataki-pushpa* is dark brown colour and *Drakshasava* with yeast is lemon colour. Various parameters were analysed. Discussion: In an experimental study comparing the fermentation processes of two distinct *Sandhan Dravya* (fermenting drugs) like *Dhataki-pushpa* (*Woodfordia fruticosa kurz*) and yeast. And also comparing two types of containers like earthen vessels and plastic containers. Were analysed and discussed. Conclusion: This study aims to investigate the preparation of *Drakshasava* using two different *Sandhan Dravya* (fermenting drugs) with two different vessels, specifically yeast and *Dhataki-pushpa* (*Woodfordia fruticosa kurz*), their impact on the physicochemical properties of the final product. Through the physicochemical analysis, identified the little variances in the final products.

Keywords: *Drakshasava*, *Dhataki-pushpa* and Yeast

INTRODUCTION

Ayurveda, the ancient Indian science of life encompasses a holistic approach to health and wellness through its various branches. Among these, *Bhaishajya Kalpana* stands out as a vital field focused on Ayurvedic pharmaceuticals, emphasizing the preparation of medicinal formulations harnessing the natural power of microorganisms to enhance the therapeutic properties of herbal ingredients.

Sandhana Kalpana are one of the best dosage forms practised, where liquid dosage forms such as *Swarasa* or *Kwatha* are subjected to fermentation process by different techniques and thereby potentiating the formulation pharmaceutically and therapeutically. Through biochemical processes facilitated by microbial activity and anaerobic respiration, this method not only enriches the formulations but also improve their bioavailability and efficacy.

In Ayurvedic practice, *Asava* (Herbal fermented drink) preparations are typically made without boiling allowing for the gentle extraction of constituents. As an exception, in case of *Drakshasava*, *Kasaya* (decoction) of *Draksha* (*Vitis vinifera linn*) is prepared initially, to which further ingredients such as *Sandhana Dravya* and *Prakshepa dravya* are added. In addition to conventional technique of fermentation using *Dhataki-pushpa* (*Woodfordia fruticosa kurz*) and Brewer's yeast is also utilised at present times to promote optimal fermentation.

Additionally, choice of containers plays a crucial role in the fermentation process. In this instance, both plastic containers and traditional mud pots are utilized, each contributing unique properties to the fermentation environment. In this study, we aim to compare the formulations prepared using different *Sandhan Dravya* (fermenting drugs) in two different containers. This investigation seeks to explore how these factors influence the overall outcomes of fermentation, enhancing our understanding of their effects on the final product.

MATERIALS AND METHODS

Table 1: Guna and Karma of Ingredients

Drugs	Latin name	Rasa	Guna	Virya	Veepaka
<i>Draksha</i> ¹	<i>Vitis vinifera</i> Linn.	<i>Madhura</i> (sweet)	<i>Snigdha</i> (unctuous), <i>Guru</i> (heavy)	<i>Sita</i> (cold)	<i>Madhura</i> (sweet)
<i>Dhataki</i> ²	<i>Woodfordia fruticosa</i> Kurz	<i>Kashaya</i> (astringent)	<i>Laghu</i> (light) <i>Ruksha</i> (rough)	<i>Sita</i> (cold)	<i>Katu</i> (pungent)
<i>Jati</i> ³	<i>Hibiscus rosa-sinensis</i> Linn	<i>Kasaya</i> (astrigent) <i>Madhura</i> (sweet)	<i>Snigdha</i> (unctuous), <i>Laghu</i> (light)	<i>Sita</i> (cold)	<i>Katu</i> (pungent)
<i>Lavanga</i> ⁴	<i>Syzygium aromaticum</i> Linn	<i>Tikta</i> (bitter) <i>Katu</i> (pungent)	<i>Laghu</i> (light) <i>Snigdha</i> (unctuous)	<i>Sita</i> (cold)	<i>Katu</i> (pungent)
<i>Kakkola</i> ⁵	<i>Piper cubeba</i> Linn.	<i>Katu</i> (pungent) <i>Tikta</i> (bitter)	<i>Laghu</i> (light) <i>Ruksha</i> (rough) <i>Tikshna</i> (sharp)	<i>Ushna</i> (hot)	<i>Katu</i> (pungent)
<i>Lavaliphala</i>	<i>Phyllanthus acidus</i>	<i>Madhura</i> (sweet) <i>Amla</i> (sour)	<i>Ruksha</i> (rough) <i>Guru</i> (heavy)	-	-
<i>Swetha Chandana</i> ⁶	<i>Santalum album</i> Linn.	<i>Tikta</i> (bitter) <i>Madura</i> (sweet)	<i>Laghu</i> (light) <i>Ruksha</i> (rough)	<i>Sita</i> (cold)	<i>Katu</i> (pungent)
<i>Twak</i> ⁸	<i>Cinnamomum zeylanicum</i> Blume	<i>Katu</i> (pungent) <i>Tikta</i> (bitter)	<i>Laghu</i> (light) <i>Ruksha</i> (rough) <i>Teekshna</i> (sharp)	<i>Ushna</i> (hot)	<i>Katu</i> (pungent)
<i>Ela</i> ⁹	<i>Elettaria cardamomum</i> Maton	<i>Katu</i> (pungent) <i>Madura</i> (sweet)	<i>Laghu</i> (light) <i>Ruksha</i> (rough)	<i>Sita</i> (cold)	<i>Katu</i> (pungent)
<i>Patra</i> ¹⁰	<i>Cinnamomum tamala</i>	<i>Katu</i> (pungent) <i>Tikta</i> (bitter) <i>Madhura</i> (sweet)	<i>Laghu</i> (light) <i>Ruksha</i> (rough) <i>Teekshna</i> (sharp)	<i>Ushna</i> (hot)	<i>Katu</i> (pungent)
<i>Pippali</i> ¹¹	<i>Piper longum</i> Linn.	<i>Katu</i> (pungent)	<i>Laghu</i> (light) <i>Snigdha</i> (unctuous)	<i>Ushna</i> (hot)	<i>Madhura</i> (sweet)

Table 2: Ingredients with quantity taken¹²

Drugs	Quantity taken	Part used
<i>Draksha</i>	100gm	Fruit
Water	2lit	
<i>Sharkara</i>	100gm	Jaggery
<i>Madhu</i>	100gm	Honey
<i>Dhataki</i>	7gm	Flower
<i>Jati</i>	1/2gm	Arils
<i>Lavanga</i>	1/2gm	Flowers buds
<i>Kakkola</i>	1/2gm	Fruit
<i>Lavaliphala</i>	1/2gm	Fruit
<i>Shweta Chandana</i>	1/2gm	Heart wood
<i>Pippali</i>	1/2gm	Fruit
<i>Twak</i>	1/2gm	Bark
<i>Ela</i>	1/2gm	Fruit
<i>Patra</i>	1/2gm	Leaf

METHOD OF PREPARATION

To prepare the decoction, coarsely pounded *Draksha* (*Vitis vinifera* Linn) is placed in a large vessel with 8 parts of water. This vessel was set over a mild to moderate fire, and the liquid was boiled and reduced one-fourth of its original volume. After filtering the reduced liquid into a clean, wide-mouthed container and allowing to cool, coarsely powdered *Guda* (Jaggery) is added and stirred until fully dissolved. The mixture was then filtered again to remove any impurities.

Dhataki-pushpa (*Woodfordia fruticosa* Kurz) was dried and mixed uniformly with the appropriate *Prakshhepa*

Dravya(excipients). A suitable fermentation vessel was chosen, and *Dhupana*(fumigation) was performed. The jaggery-infused decoction is carefully poured into the fermentation vessel, which is continuously stirred and then covered with cloth and a lid to keep it undisturbed.

Onset of fermentation is monitored daily for 3 to 5 days. Once fermentation began, *Sandhi bandana* (Binding method) done and vessels left undisturbed for 15 days for yeast sedimentation and 25 days for *Dhataki-Pushpa* (*Woodfordia fruticosa* Kurz). Completion of fermentation was assessed using lime water and candle flame tests. When fermentation is complete, the mixture was siphoned off and stored in airtight plastic containers.

	
Preparation of Kwatha	Filtered Kwatha
	
Adding Prakshepa dravya	Adding sugar
	
Adding Madhu	Sandhi bandana done- both Plastic and mud pot
	
Placed in husk	Candle test positive after fermentation

OBSERVATION AND RESULT

The preparation of *Kasaya* (decoction) from *Draksha* (*Vitis vinifera* linn) took 40 minutes, during which the hard, dry *Draksha* (*Vitis vinifera* linn) transformed into a soft, pulpy form due to exposure to heat and water, resulting in a brownish-red colour. After preparing the *Kwatha* (decoction), the addition of *Prakshepa Dravya* (excipients) caused it to float on the surface, indicating that the components were not fully integrated. Additionally, the consistency of the *kwatha* (decoction) thickened upon adding the *Prakshepa Dravya* (excipients), enhancing its

therapeutic properties and altering its physical characteristics. During the process of fermentation with *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz) The added *Prakshepa Dravya* (excipients) got settled at the bottom of vessel leaving *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz). After adding *Sandhan Dravya* (Fermenting drugs) it took 4 days to initiate the fermentation. During the process of fermentation with yeast. *Prakshepa dravya* (Excipients) got settled at the bottom of vessel leaving yeast, adding *Sandhan Dravya* (Fermenting drugs) took two days to initiate the fermentation.

OBSERVATION ON ANALYTICAL STUDY

Table 3: Organoleptic Characters of *Drakshasava* with *Dhataki-pushpa Sandhan Dravya*

Parameters	Values
Colour	Dark Brown
Odour	Alcoholic
Taste	Sour
Appearance	Liquid

Table 4: Organoleptic characters of *Drakshasava* with yeast *Sandhan Dravya*

Parameters	Values
Colour	Lemon yellow
Odour	Alcoholic
Taste	Sour
Appearance	Liquid

PHYSICO-CHEMICAL ANALYSIS

- 1) pH
- 2) Specific gravity
- 3) Viscosity
- 4) Refractive index
- 5) Alcohol content

Table 5: Analytical parameters

Parameter	After fermentation in earthen vessel with <i>Dhataki-pushpa Sandhan Dravya</i>	After fermentation in plastic container with <i>Dhataki-pushpa Sandhan Dravya</i>	After fermentation in earthen vessel with yeast <i>Sandhan Dravya</i>	After fermentation in plastic container with yeast <i>Sandhan Dravya</i>
pH	2.68	2.60	3.51	3.66
Specific gravity	1.170	1.168	0.989	1.128
Refractive index	1.40	1.41	1.35	1.40
TSS	30	30	11	30
Viscosity	0.0698	0.0487	0.0160	0.0853
Alcohol content	0.7944	0.0099	1.0012	0.9947
Reducing and non-reducing sugar	0.5%	1%	0.5%	0.5%

DISCUSSION

In an Experimental study Comparing the fermentation processes of two distinct *Sandhan Dravyas* (Fermenting drugs) like *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz) and yeast. various factors were observed across two types of containers like earthen vessels and plastic containers. The fermentation duration differed significantly; the earthen vessel with *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz) took twenty days which help in the hydrolysis of sucrose to alcohol which is the final product *Sandhana* (fermentation) it took more time for fermentation¹³, while the plastic container with yeast completed fermentation in just fifteen days it contains ethanol to reach values of 11-13% for instance for fermentation¹⁴.

Analytical results revealed that the pH levels in both earthen and plastic containers containing *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz) were more acidic than those with yeast. Additionally, the specific gravity was higher in the earthen vessel with *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz), whereas the yeast-containing earthen vessel exhibited a notably lower specific gravity. The refractive index was also lower in the yeast-containing earthen vessel compared to the others.

Non-reducing sugar content was highest in the *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz) plastic container, while the remaining vessels exhibited similar levels. Total suspended solids were minimal in the yeast-containing earthen vessel, with other vessels showing comparable amounts. Despite these differences in chemical composition and fermentation characteristics, all vessels exhibited similar viscosity levels. the earthen vessel with yeast yielded a higher alcohol content than the other samples. Overall, these findings highlight the significant influence of container and *Sandhan Dravya* (fermenting drug) on fermentation dynamics, acidity, and product yield.

CONCLUSION

Drakshasava is a well-known *Ayurvedic* formulation recognized for its benefits as a general health tonic, carminative, and blood purifier, commonly used to treat digestive disorders, and cardiac issues. This study aims to investigate the preparation of *Drakshasava* using two different *Sandhan Dravyas* (fermenting drugs) with two different vessels, specifically yeast and *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz), their impact on the physicochemical properties of the final product. Preliminary observations indicate that the fermentation time differs significantly between the two, with *Dhataki-pushpa* (*Woodfordia fruticosa* Kurz), potentially requiring a longer duration for optimal fermentation. Through the physicochemical analysis, identified the little variances in the final products.

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