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COMPARATIVE PHYSICOCHEMICAL EVALUATION OF *TAKRARISHTA* PREPARED USING *TAKRA* OBTAINED BY DIFFERENT METHODS

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ABSTRACT

Takrarishta is a classical Ayurvedic fermented formulation prepared using *Takra* or buttermilk as the fermentation medium. Variations in the method of *Takra* preparation may influence the fermentation process and physicochemical profile of the final product. The study aims to comparatively evaluate the physicochemical parameters of *Takrarishta* prepared using *Takra* obtained by two different methods. Two batches of *Takra* were prepared by two different classical methods and *Takrarishta* was prepared from those, while maintaining identical ingredients and fermentation conditions. Organoleptic characters and physicochemical parameters such as pH, specific gravity, alcohol content, total solids were analysed using standard procedures. Both samples complied with general quality standards of *Arishta* preparations, with observable variations in pH and alcohol content. The method of *Takra* preparation significantly influences the physicochemical characteristics of *Takrarishta*, emphasizing the need for standardization of *Takra* preparation methods.

KEYWORDS: *Takrarishta*, *Takra*, physicochemical evaluation, fermentation, standardization.

INTRODUCTION

Asava and *Arishta*, the main products of *Sandhana Kalpana*, classical fermented liquid dosage forms, which has self-generated alcohol are described extensively in Ayurvedic texts, valued for their enhanced bioavailability, palatability, and prolonged shelf life. *Takrarishta* seen described in classical Ayurvedic texts such as *Bhaishajya* Ratnavali[1] and *Charaka Samhita*,[2] is a unique formulation in which *Takra* (buttermilk) serves as the fermentation medium instead of water or decoction, imparting additional digestive and gut-modulating properties to the formulation. *Takra* is regarded as *laghu*, *deepana*, *grahi* and *tridosha-shamaka*,[3] particularly beneficial in disorders of the gastrointestinal system and acts as a solvent and preservative while facilitating better extraction and assimilation of phytoconstituents. *Takrarishta* is traditionally indicated in gastrointestinal disorders including *Gulma, Arshas, Udara, Krimi*. The use of *Takra* distinguishes *Takrarishta* from conventional water-based *Arishta* preparations and suggests a specific influence on digestion and absorption.

From a pharmaceutical and analytical standpoint, the fermentation process in *Takrarishta* results in biochemical transformations such as alcohol formation, pH modulation, and enhanced solubilization of phytoconstituents. Variations in raw materials, fermentation conditions, and processing methods can significantly influence the physicochemical profile and therapeutic consistency of the formulation. Classical Ayurvedic texts describe different methods for the preparation of *Takra* using varying ratios of *Dadhi* and water. As *Takra* serves as the fermentation medium in *Takrarishta*, these variations may affect the physicochemical characteristics of the final product. Hence, the present study was undertaken to evaluate and compare *Takrarishta* prepared using *Takra* obtained by two different methods through established organoleptic and physicochemical parameters.

AIMS AND OBJECTIVES

Aim

To comparatively evaluate the physicochemical parameters of *Takrarishta* prepared using *Takra* obtained by different classical methods.

Objectives

1. To prepare *Takra* according to different classical Ayurvedic references.
2. To prepare *Takrarishta* using the prepared *Takra* samples, maintaining identical ingredients and fermentation conditions

3. To compare the physicochemical parameters of the prepared *Takrarishta*.

MATERIALS AND METHODS

Ingredients and Quantity

Ajamoda	- 42.25g
Amalaki	- 42.25g
Pathya	- 42.25g
Maricha	- 42.25g
Panchalavana	- 14g each
Takra	- 900ml

Pharmaceutical study of *Takrarishta*

Preparation of *Takra*

Takra is prepared by churning *Dadhi* with water, and different classical texts have described varying ratios of *Dadhi* and water for its preparation.

a. According to AFI[4] and *Sushruta Samhita*[5], half part water is to be taken.

मन्थनादिपृथग्भूत स्नेहमर्द्धोदक च यत् | नाति सान्द्रद्रवं तक्रं स्वाद्वम्ल तुवरं रसे ||

b. According to *Bhavaprakasha*[6] and *Kaiyadeva Nighantu*[7], 1/4th part water is to be taken

तक्रं पादजलं प्रोक्तं ……॥

पादोदकं भवेत्तक्रं ..... ॥

Procedure

- *Dadhi* was procured from an authorised vendor.
- This *Dadhi* was added with water, in one sample ½ part and in other 1/4th part, and churned for 3 hours.[8]
- It is then filtered through clean cotton cloth and used for preparing *Takrarishta*.

Table 1: Quantity of *dadhi*, water and *takra* obtained.

Batches	Quantity of *Dadhi*	Quantity of water added	*Takra* obtained
A	600ml	300ml	900ml
B	720ml	180ml	900ml

Preparation of *Takrarishta*[1]

- All raw drugs were powdered separately.
- The prepared *Takra* was transferred into a fumigated porcelain vessel (*Sandhana Patra*), and the powdered drugs were added gradually with continuous stirring.
- The vessel was done *Sandhibandhana* and kept undisturbed for 8 days for fermentation.

- After completion of fermentation, the vessel was opened and confirmatory tests were carried out.
- The fermented *Takrarishta* was filtered three times through a clean cotton cloth.
- The filtrate was stored in a glass container in a cool, dark place, protected from direct sunlight.

OBSERVATION AND RESULTS

Organoleptic evaluation of *Takrarishta*

Table 2: Organoleptic evaluation of *Takrarishta.*

Parameter	Batch A	Batch B
Colour	Dark brown	Light brown
Odour	Strong aroma of *ajamoda*	Strong aroma of *takra* and *ajamoda*
Taste	*Amla, kashaya*	*Amla, kashaya*
Consistency	Liquid	Thick liquid

Takrarishta obtained

Batch A – 650ml

Batch B – 720ml

Physicochemical evaluation of *Takrarishta*

Table 3: Physicochemical evaluation of *Takrarishta.*

Parameter	Batch A	Batch B
pH	3.38	3.46
Specific Gravity	1.0677	1.0739
Refractive Index	14	14
Alcohol content (%v/v)	2.4	4.8
Total Solids	14.904	16.163

DISCUSSION

The physicochemical evaluation of the two samples revealed variations in certain analytical parameters, indicating the influence of the fermentation medium on the final product. Both Batch A and Batch B exhibited acidic pH values, which is characteristic of *Sandhana Kalpana* and reflects the progression of fermentation and organic acid formation. The marginal difference in pH between the two batches suggests comparable fermentation environments, with slight variation attributable to the nature of *Takra* used. Specific gravity and total solids were observed to be higher in Batch B when compared to Batch A, indicating a greater concentration of dissolved solids. This may be due to enhanced extraction of soluble constituents or increased metabolic by-products formed during fermentation. The refractive

index remained identical in both batches, suggesting similarity in the overall solute composition despite quantitative differences. A notable variation was observed in alcohol content, with Batch B showing a higher percentage compared to Batch A. This difference may be attributed to the method of *Takra* preparation, which could have influenced the availability of fermentable substrates and microbial activity, thereby affecting alcohol generation. Overall, the findings indicate that the method of *Takra* preparation plays a significant role in modulating the physicochemical characteristics of *Takrarishta*.

CONCLUSION

The present study concludes that the method of *Takra* preparation plays a significant role in determining the physicochemical characteristics of *Takrarishta*. Both samples complied with the general quality parameters of *Sandhana Kalpana*, indicating successful fermentation in both batches. However, variations were observed in parameters such as pH, specific gravity, alcohol content, and total solids, reflecting differences in the fermentation profile. The higher alcohol content and total solids observed in Batch B suggest enhanced fermentation activity, probably due to comparatively lesser dilution of the fermentation medium.

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