



PHARMACEUTICAL AND ANALYTICAL STUDY OF *KANJI-A* FERMENTATIVE PREPARATION

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Received 15th March 2024; Revised 19th April 2024; Accepted 11th Aug. 2024; Available online 1st June 2025

<https://doi.org/10.31032/IJBPAS/2025/14.6.9112>

ABSTRACT

In Ayurveda pharmaceuticals various preparations are explained; many of which are different dosage forms and a few are preparations used for processing of drugs or for preparation of other formulations. *Kanji* (sour gruel) is one such important preparation in *Rasashastra and Bhaishajya Kalpana* which comes under *Shukta Sandhana Kalpana* (acidic fermentation). It is widely used in different preparation. Different methods are mentioned for the preparation of *Kanj*; in this study the *Kanji* was prepared according to the reference explained by Acharya Yadavji Trikamji in a text book of Dravyaguna as it is easy and simple to prepare.

Here, the prepared sample was analyzed on the first and seventh day by Organoleptic and Physico-chemical parameters and difference is reported in this paper. The prepared *Kanji* was pale in color with pleasant sour odour and it had characteristic sour taste. It was highly acidic in nature with a pH value of 3.1. The suspended solids in it was 1 and specific gravity was noted to be 3 and the viscosity of the sample was 0.0081.

Keywords: Rasashastra, Kanji, Sandhana, Analytical

INTRODUCTION:

Sandhana Kalpana is a unique dosage form in which acidic and alcoholic fermented formulations are prepared. Here the drugs and liquid media are kept for fermentation for certain period of time where extraction of active principle of the drug is achieved. The *Sandhana Kalpas* are mainly classified as *Madhya Kalpa* (Alcoholic preparations) and *Shukta Kalpa* (Acidic preparations). *Asava* and *Arishta* comes under *Madhya Kalpa* and *Kanji* comes under *Shukta Kalpa* [1]. The preparation of *Kanji* is explained in Parada Vignyaniam, Bhavaprakasha, Sharangdhara Samhita and Dravyaguna Vignana. The pharmaceutical and therapeutic importance of *Kanji* is explained in much classics. The application of *Kanji* is seen in various places such as; in Rasashastra for *Ashta sanskara* of *parade* and *shodhana* of *rasa dravyas*. In Bhaishajya Kalpana it is used in various preparations as base or ingredient. The reason behind its vast applicability is because of its shelf life, quick absorption and therapeutic efficacy. *Kanji* possesses the *Daha nashana* (relieve burning sensation), *Vata Kaphahara* (alleviates *Vata* and *Kapha*), etc. [2].

In this research paper the preparation of *Kanji* was carried out according to Dravyaguna

vignana [3]. And assessment was done based on physicochemical parameters like pH, Viscosity, Specific gravity, Refractive index and Total suspended solids. These parameters are used to decide the quality of *Kanji*.

MATERIALS AND METHODS

The Shali (Rice grains) was collected from the local market. A new earthen pot of 4 liter capacity was taken and was carefully washed with water and dried. Then the pot was fumigated with Trikatu churna (Powder of *Zingiber officinale*, *Piper nigrum* and *Piperlongum*), Guggulu (*Commifera mukul*), Usheera (*Vetiveria zizanioides*).

The Shali (Rice grains) was weighed using digital weighing machine and taken in stainless steel vessel. It is washed and then added with five parts of water according to volume by volume wise [4]. It was heated on mandagni (mild flame) until the rice was properly cooked and then three parts of water was added [5].

The rice along with water was transferred to the fumigated earthen pot and sandhi bandhana (sealing) was done with multanimitti and cotton cloth. The pot was kept in heap of husk for seven days in room for the fermentation process to complete.

Table 1: Ingredients used for the preparation rice

S. No.	Ingredients	Quantity
1.	Shali (Rice grains)	400gm (1part)
2.	Water	2320 ml (5parts)

Table 2: Ingredients used for the preparation of *Kanji*

S. No.	Ingredients	Quantity
1.	Cooked rice	575 gm
2.	Water	1850ml(3parts)

PRECAUTION:

The rice was cooked on mandagni (mild flame). Fumigation of mud pot was done. The *Kanji* pot was kept in husk so that uniform temperature is maintained and is not affected by the external atmosphere. Mud pot was not opened before stipulated time of fermentation for fermentation to complete. After fermentation the *Kanji* was filtered in another vessel and stored.

ANALYTICAL STUDY:

The sample was analyzed on the first and seventh day on the basis of Organo-leptic

characters like colour, taste, odour and consistency and tested by Physico-chemical parameters like pH, Specific Gravity and Total Soluble Solids (TSS).

OBSERVATIONS AND RESULT:

During the preparation the temperature of the room was around 28 °- 32⁰ C. The boiled rice along with water was thin in consistency compared to *Kanji*. It was observed that the total yield of *Kanji* obtained was 2470ml. It took seven days for the completion of fermentation.

Table 3: Results of organoleptic parameters

S. No.	Parameters	1 st day	7 th day
1.	Colour	Clear and white	Pale
2.	Odour	Pleasant	Sour
3.	Taste	Sour	Sour
4.	Consistency	Thin	Thick

Table 4: Results of Physico-chemical parameters

S. No.	Parameters	1 st day	7 th day
1.	pH	7.01	3.1
2.	Specific gravity	1	3
3.	Viscosity	0.0069	0.0081
4.	TSS	0.9	1
5.	Refractive index	1.3354	1.3395

Figure-01	Figure-02	Figure-03
		
Fumigation	Cooked rice	Sandhibandhana (sealing) of pot
Figure-04		
		
Prepared kanji		

DISCUSSION:

In treatises of Ayurveda, different references for the preparation of *Kanji* are mentioned, where each preparation involves different ingredients with different proportion. Here the *Kanji* was prepared by using only *Shali* (Rice grains) as an ingredient. Initially the rice was prepared by adding five parts of water volume wise as the water is not sufficient for cooking the rice if added according to weight wise. Later three parts of water was added to the cooked rice according to volume wise. After

mixing well the gruel along with rice particles was transferred to fumigated earthen pot. Fumigation of pot was done as it acts as disinfectant and makes the pot free from contamination. The sandhibandhana (sealing) of the pot was done with multanimitti and cotton cloth to avoid the air entry as it is an anaerobic fermentation procedure. The temperature observed during the preparation was 28⁰C-34⁰ C which is supportive for the preparation. As the fermentation process is affected by the temperature and seasonal

variations, it was kept in the husk as the temperature can be maintained throughout the process. According to classics minimum time required for the fermentation of *Kanji* is seven days and maximum is six months.

Here the time taken for the fermentation was seven days. After seventh day, the pot was taken out and tested for *Kanji* siddha lakshana's (confirmatory test) to confirm the completion of preparation later the liquid inside the container was collected.

The sample of *Kanji* was tested on first day and seventh day to see the differences through Organoleptic and analytical parameters. Initially the liquid was alkaline in nature and after seven days it was converted into acidic in nature which is main confirmation test for *Shukta Sandhana* (acidic fermentation). *Kanji* may be considered as a result of acetic acid formation and is carried out in the absence of air.

The specific gravity indicates the relative density and that depends on dissolved and suspended particles present in the *Kanji*. The presence of dissolved substances in the samples changes the value of specific gravity. On the first day specific gravity of the liquid was 1 and after fermentation it was 3 which indicate the percentage of dissolved rice particles were more compared to the first day. Viscosity is the resistance of a liquid to flow. The Viscosity on seventh day was more which

shows the presence of more solutes in the *Kanji* or the concentration of the *Kanji*.

The total suspended solids test indicates the suspended and dissolved solids. Here the TSS was more after fermentation which shows presence of more solid substances in *Kanji*.

CONCLUSION:

Kanji is a preparation used in processing of other drugs and also for formulating other preparations. It is an acidic fermentation. The preparation is simple and requires just two ingredients. The organoleptic and physico-chemical parameters are suggestive that the prepared sample possesses the qualities mentioned for *Kanji* and it can be taken as preliminary standard for further studies.

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