



# Plant Archives

Journal homepage: <http://www.plantarchives.org>

DOI Url : <https://doi.org/10.51470/PLANTARCHIVES.2025.v25.no.1.263>

## CULTURAL FLAVOR: EXPLORING FERMENTED AND NON-FERMENTED FOODS AND BEVERAGES OF THE JAUN SAR- BAWAR TRIBE OF UTTARAKHAND INDIA

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(Date of Receiving : 28-01-2025; Date of Acceptance : 14-04-2025)

### ABSTRACT

The Jaunsar-Bawar region, situated in the Himalayas, is known for its unique and diverse culinary practices that have been passed down through generations. The review presents a comprehensive overview of the various traditional food products, including fermented and non-fermented items that are locally made and consumed by the tribal community. These foods, such as balam, jaan, kacchi, sez, bhatooru, aske, chilra, dhindki, kadhiyek, siddu, seera, mashyada bhaat, sattu, pakhlī sur and Baari are integral to the cultural and social fabric of the Jaunsar-Bawar people. In addition to showcasing the tribe's inventiveness and culinary legacy, the processing and preparation of these ethnic meals is essential to the preservation of their traditional knowledge and customs. The evaluation also looks at how these traditional foods and drinks might advance the social and economic advancement of the area. The study intends to emphasize the value of maintaining traditional knowledge and encouraging sustainable development in the Jaunsar-Bawar region by promoting and protecting these cultural traditions. Overall, this research offers a thorough understanding of the Jaunsar-Bawar tribe's cultural distinctiveness and emphasizes the importance of preserving, promoting, and documenting their distinctive culinary traditions for the benefit of coming generations.

**Keywords :** Ethnic Foods & Beverages, Traditional Knowledge, Cultural Preservation, Jaunsar-Bawar Region, Culinary Legacy.

### Introduction

Uttarakhand lies in the lap of the Himalayas, which is not only known for its exquisite locality and surroundings but also its different cultures. Culture plays effervescent in developing togetherness and are spawned by individual art and trials passed across genesis known as 'tradition'. Tradition represents the landscape, biography, values, dietary pattern, practices, and ceremonies of nations. In Uttarakhand, fermented foods and beverages are prepared during special festivals and seasons. Uttarakhand folk are also fantastical about ethnic foods, which are organic in nature and loaded with nutritional benefits because

they are free from synthetic chemicals and harmful substances. There are unique ethnic foods made by different tribal people that exhibit different medicinal properties of ethnic foods, which elevate their constant utilization. A survey conducted in the jaunsar-bawar divulges that the tribal society still pursues its old-epoch ritual of accomplishing authentic fermented foods and beverages (Kristbergsson and Oliveira, 2016)). For fermented foods, starters are typically prepared with the help of nearby grown cereals, condiments, and brushwood of therapeutic utility (Rawat *et al.*, 2018). Fermented beverages are produced during special festivals and have deep-rooted

unity in rituals. These drinks are also strengthened by the integrity of probiotics microorganisms, which amuses an incumbent role in upgrading the widely fortified forms of the drink (Tomar *et al.*, 2023). Virtually various cultures on Earth have shown influential traditions of using fermented foods and beverages in their cuisine (Rawat *et al.*, 2018).

Fermentation is one of the ancient traditions and productive approaches for generating and maintaining food that has been prepared across the world (Jeyaram *et al.*, 2009). Ethnic fermented food evolution is one of the leading specialized techniques throughout the globe (Sekar and Mariappan, 2007). Fermented foods provide significant benefits (Table 1) to diets because they are an affordable approach that preserves food and enhances its nutritional importance. Microorganisms,

which are intricate in fermentation, are a kind of probiotic that provides health benefits to the entire standard, flavor, and incense of the eatables (Şanlıer *et al.*, 2019). Fermented food acts as a functional food and dietary supplement, which gives advantageous health benefits. LAB grows freely in fermented food products and subordinates the amount of pH of the food therefore, other resisting microorganisms are not competent to grow (Angmo *et al.*, 2016). Fermentation aids in the augmentation of palatability and deterioration of intricate sugars into simple ones and ameliorates the altitude of a mendicant or auxiliary essentialities to be engrossed and outworn by the body (Şanlıer *et al.*, 2019). Nowadays, more than 5,000 diverse foods are utilized by humans for their better improvement in health (Ray *et al.*, 2016).

**Table 1:** Health Benefits of Fermented and Non-fermented Foods and Beverages

S. No.	Food	Health benefits	References
1.	Lemdi, sattu, and baari	Maintain acceptable digestion	Rana <i>et al.</i> (2004)
2.	Dhindi and kadiyiek	Strengthens the bones	Rana <i>et al.</i> (2004)
3.	Mashyada bhaat	Excellent source of iron, fiber and magnesium	Rana <i>et al.</i> (2004)
4.	Pandye	Opulent in protein, vitamins,	Rana <i>et al.</i> (2004)
5.	Shashaunta	Protect against cold	Rana <i>et al.</i> (2022)
6.	Apong	Helpful in preventing kidney stones formation	Ray <i>et al.</i> (2016)
7.	Judima	Useful against infection and beneficial for kidney ailments and also good for heart and treat psychological disorders	Ray <i>et al.</i> (2016)
8.	Zutho	Enhancement of the immune system, prevent infection, lower bad cholesterol and prevent loss of appetite	Teramoto <i>et al.</i> (2002)
9.	Chakti	Anti-microbial and anti-oxidative effects, improves gastrointestinal riddle	Kumari <i>et al.</i> (2023)
10.	Lugdi	Protection against cold, rich in protein and phenolic compounds	Kumar <i>et al.</i> (2013)

### Traditional Fermented Food of Jaunsar-Bawar Tribe of Uttarakhand

Jaunsar-Bawar is a tribal region of Uttarakhand where people still used to follow their traditions. Jaunsar-Bawar is rich in diverse culture and known for its indigenous foods and beverages. Jaunsar-Bawar people have a heritage of composing different fermented and non-fermented foods, along with liquor in the Jaunsar-Bawar locality included in their tribal culture.

### Chilra

Chilra is authentic fermented food of Uttarakhand made by the tribal people (Figure 1&2).

### Method of preparation

Chilra is devised by composing a viscous mixture of wheat (*Triticum aestivum*) flour and leaving it for 3 hours for spontaneous fermentation. After 4 hours, the viscous mixture is disseminated over a heated plate with the help of a basin and given a spherical geometry. It is then cooked on a low flame, mostly

from one side, and then served with clarified butter (ghee) and honey (Rawat *et al.*, (2021)).



**Fig. 1:** Chilra (served with clarified butter)



**Fig.2:** Chilra (served with honey & clarified butter)

### Siddu/Sidde/Sidku

Sidku is a traditional fermented food of Uttarakhand. There are two types of sidku made by tribal people in the Tons Valley region of Uttarakhand, peethae ke sidku, and aalu ke mishyare siddu (Figure 3 & 4).

### Method of preparation

Peethe ke siddu is made by mixing rice (*Oryza sativa*) gluten with lukewarm water and made a smooth dough. The dough is leaving for 2-3 hours for fermentation. After fermentation, takes a small amount of dough and make round ball, then flatten and stuff it with a thick black gram (*Vigna mungo*) batter or urad daal, or in tribal language, maash ki daal, and also stuff it with overheated gingelly seeds (til). Take a broad-bottomed vessel and fill it with water upto one-fourth of the total quantity. Add a second container on top of the bottom container, place the siddu with the leaves of the citrus plant, and leave for steam cooking on moderate blaze for 15 to 20 minutes (Rawat *et al.*, 2021).



**Fig. 3:** Peethe ke Sidku



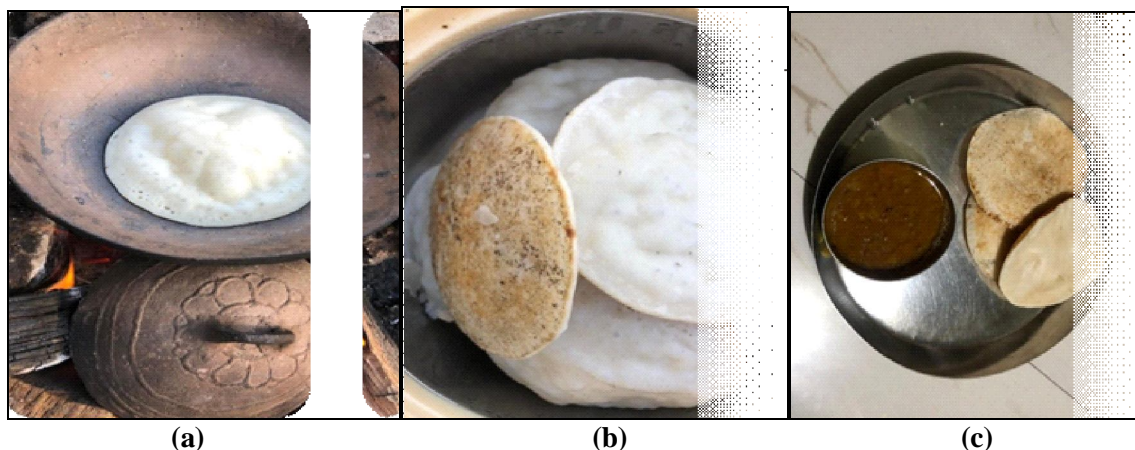
**Fig.4:** Aalu ke Mishyare Sidku

The second one is Aalu ke mishyare sidku. It is made by mixing potatoes with Hemp or Bhang (*Cannabis sativa*), Opium or afeem (*Papaver somniferum*), Bhangjeera (*Perilla frutescens*), and also some crushed Walnuts, and adding a pinch of salt and sugar to make a mixture. These mixtures are then filled in small tortillas (chapati), and lightly stewed on a heated plate (tawa) for a few minutes. The baked roti is then steam-cooked similarly to peethe ke sidku. Both varieties of sidku are served with ghee (clarified butter). The cuisine is typically prepared during traditional festivities like Bishu mela, Jakholi mela, and Jaagra mela (Rana *et al.*, 2022).

### Aske/ Kapreudi

Aske or Kapreudi is a traditional fermented food of the Jaunsar-Bawar tribe of Uttarakhand (Figure 5 (b)).





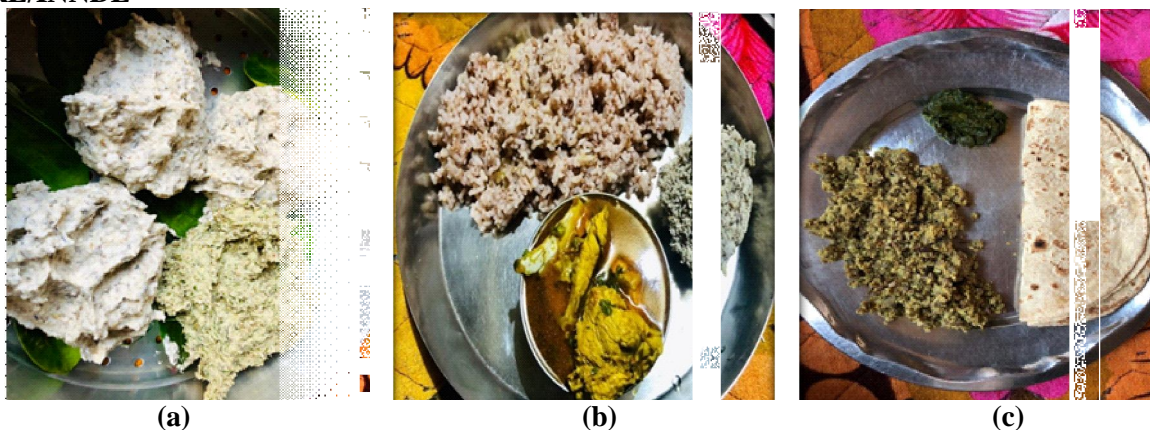
**Fig. 5:** (a) Preparation of Aske/Kapreudi, (b) Cooked of Aske/Kapreudi & (c) Served with kidney beans (Rajma)

### Method of preparation

Kapreudi is prepared by mixing rice flour and wheat flour in somewhere around ratio of 3:1 with lukewarm water to form a slurry, which is left for 2-3 hours for fermentation. It is flooded with the help of a

ladle into the pot (made up of soil) and covered with a lid for blistering from one side under a moderate flame (Figure 5 (a)). Aske is served with Rajma (KIDNEY BEAN) as shown in figure 5(c) or ghee (Rana *et al.*, 2022).

### HINDRE/INNDE



**Fig. 6:** (a) Steamed Hindre/Innde, (b) Hindre/Innde served with Chicken & (c) Fried Hindre/Innde served with green chutney (sauce) and chapati (tortilla/bread)  
It is a traditional fermented dish of Jaunsar-Bawar that is mainly prepared in the winter season (Figure 6).

### Method of preparation

To prepare this dish, add horse gram, gahatdal or kulthi to lukewarm water and leave overnight. The next day, take these soaked horse grams and make a thick batter with the help of grinding stone or silbatta. After grinding, leave the batter for 1-2 hours for fermentation. Take a wide-bottomed container fill it with water up to one-fourth of the total volume. Add a second container on top of the bottom container, place the batter with the leaves of the citrus plant and, leave for steam cooking on low flame for 15 to 20 minutes. It is eaten with roti and meat as well (Rana *et al.*, 2022).

### Traditional non-fermented food of jaunsar-bawar tribe of Uttarakhand

Jaunsar-Bawar is a tribal region of Uttarakhand where people still used to follow their traditions. Jaunsar-Bawar is rich in diverse culture and known for its indigenous foods and beverages. Jaunsar-Bawar people have a heritage of composing different fermented and non-fermented foods, along with liquor in the Jaunsar-Bawar locality included in their tribal culture. Jaunsar-Bawar has thousands of varieties of traditional foods, and they are rich in nutrients and boost immunity.

### Khenda/Baadi

Khenda is a very popular dish in the region of Jaunsar-Bawar (Figure 7).

#### Method of preparation

To prepare this, wheat flour and jaggery are mandatory. To begin with, jaggery is melted in searing water, and then wheat flour is carefully added to the jaggery water and mixed with the help of a wooden ladle; therefore, there are no lumps left over in the mixture. Leave for 5 minutes, make a soothing dough of this fusion, and serve in the figure of a pond loaded with clarified butter on a plate. Khenda is rich in nutritious and is mostly utilized by women after parturition. On the event of idolize of goddess Maa Kaali, khenda is served as prashaad (Rana *et al.*, 2022).

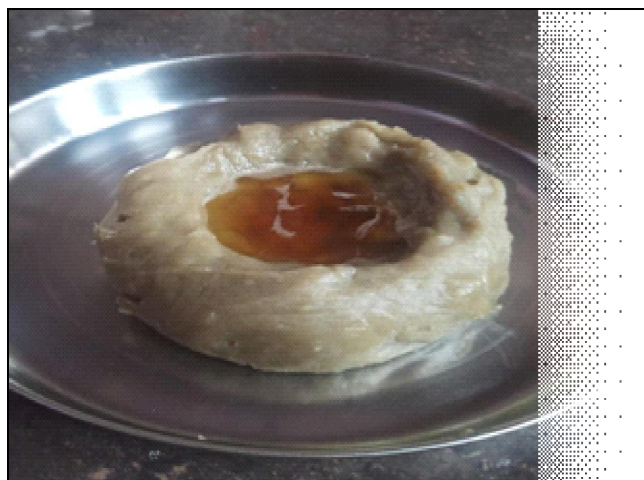


Fig. 7: Khenda/Baadi

### Mashyada Bhaat

Mashyada Bhaat is a kind of palao that is made of chiefly red rice along with split black lentils (urad daal) (Figure 8).

#### Method of preparation



Fig. 8: Mashyada Bhaat

First, black lentils are drowned in water nighttime and then boiled in a cook stove. Add red rice in the same cooker with black lentils, cook for 5-10 minutes, and finally the dish is prepared. Mashyada bhaat is usually served with a combination of walnut (akhrot), bhangjeer (*Perilla frutescens*), sesame seed (til) Hemp or Bhang (*Cannabis sativa*), Opium or afeem (*Papaver somniferum*), clarified butter (ghee), ginger, curd, and chutney as shown in the figure 8. This dish is advised wholesome in nature and usually eaten in winter to conserve the body's temperate (Rana *et al.*, 2022).

### Taiya/Babar

Taiya is a deep-fried traditional dish of Jaunsar-Bawar (Figure 9).

#### Method of preparation

Taiya is prepared in two forms: stuffed and non-stuffed. Stuffing could be ended with a boiled potato and a fusion of, bhangjeer (*Perilla frutescens*), hemp or bhang (*Cannabis sativa*), opium or afeem (*Papaver somniferum*, and a pinch of salt etc. Additionally, taiya is famous by other names such as kadaya, babar, poori. In Jaunsar-Bawar, normal roti is also called koduwa. Taiya is also eaten with ghee and curd (Rana *et al.*, 2022).



Fig. 9 : Taiya/Babar served with curd

### Lembada/ Lembadi

Lembadi is a dish that is salty in taste and is ingested by tribal people repeatedly as it provides fortitude and immunity (Figure 10).

#### Method of preparation

It is made by cooking the ground amaranth (chaulai) grains with water. Lambda is eaten with clarified butter, milk, and butter milk and it is salty in taste (Rana *et al.*, 2022).





(a)



(b)

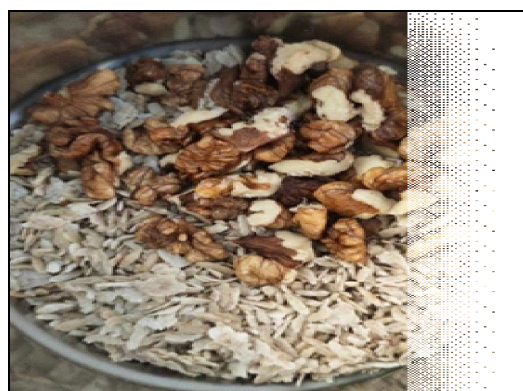
**Fig. 10:** (a) Lembadi/ Lembada & (b) Lembadi/ Lembada served with lassi (butter milk)

### Chewda & Mudda

Chewda and Mudda are composed by tribal people during special events along with festivals like Diwali, Bakra Eid, Jakholi, Bishu (Figure 11 & 12).

### Method of preparation

Mudda is made from boiled wheat grains (*Triticum aestivum* L.), and the wheat grains are dehydrated under daylight for 2-3 days. The dried wheat grains are searing in warm sand and strained. It is apportioned with walnuts (Akharot), bhangjeer (*Perilla frutescens*), Hemp or Bhang (*Cannabis sativa*). In contrast, chewda is prepared by dripping paddy in water for 2-3 days. The dripping paddy is hardly superheated on warm pan and beat with the help of mortar (okhali) till the mask of the seeds is eliminated. Chewda is then suitably immaculate and integrated with nuts, bhangjeer, and a miniature amount of sugar is added and served to the guests (Rana *et al.*, 2022).



**Fig. 11:** Chiwda



(a)



(b)

**Fig. 12** (a): Mudda prepared by using red rice & (b) Mudda prepared by using wheat

### Khobale



**Fig. 14:** Khobale

Khobale is usually prepared and devour in the month of January (Figure 14).



### Method of preparation

Khobale is made with wheat flour and loaded with nuts, jaggery, and the fat (charbi) of goat. The loaded chapatti is then deluged in boiling water for stewing. The stewing stuff is raised above the exterior of the water and assembled. It is served with clarified butter and advised to be very balanced eatables possess the body warm in winter (Rana *et al.*, 2022).

### Meat

Jaunsar-Bawar, is also known for its maintaining food methods such as preserving meat of sheep and goat as shown in the figure 16. Tribal folk restore the meat by executing salt and turmeric powder and leaving it for de-humidify. By using de-humidify approach, meat can be safeguarded and used for a cycle of 6-8 months. In Jaunsar-Bawar, there is a heritage that meat is served during festivals and marriages as shown in figure 15 (Rana *et al.*, 2022).



**Fig. 15: Meat**



**Fig. 16: Preserved Meat**

### Shashaunta/Aumlanji/Chashani

It is a dish that is mainly prepared when a person is dealing with a cold, fever, etc. (shown in figure 17).

### Method preparation

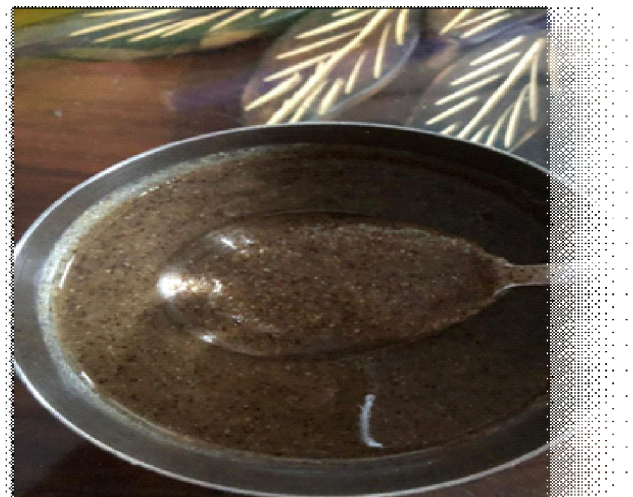
It is prepared when cooked rice is added to buttermilk and made into thick slurry with added organic spices and roasted cumin seeds (Rana *et al.*, 2022).



**Fig. 17: Shashaunta**

### Kadiyiek

The name of this extinct dish is kadiyiek. When sprouted grains were used by a few people with knowledge of Ayurveda, this method of making dishes from sprouted grains became very famous in Jaunsar-Bawar (Figure 18).



**Fig. 18: Kadiyiek**

### Method of preparation

Kadiyiek is a kind of desert prepared from raagee (finger millet) and jau (barley grains) rinsed in water and abandoned in a pouch or vessel for to grow sprouted seeds that are clutched in sunbeam for about a week. To prepare kadiyiek, stone ground flour is added in lukewarm water to make a slurry. The slurry is cooked for about 5-6 hours on a moderate blaze lacking the addition of sugar. This desert is dietary for female during parturition (Rana *et al.*, 2022).

### Baude

Baude is traditional dish of Jaunsar-Bawar region and made on the occasion of Maha Shivratri (Figure 19).



**Fig. 19 :** Baude

### Method of preparation

Baude is prepared from black gram (*Vigna mungo*) batter, or urad daal, or in tribal language, it is called maash ki daal. Black lentil is soaked in water overnight. The next day, drain the water, make a thick batter with the help of grinding stone or silbatta, and left for 2 hours for natural fermentation. After fermentation, add salt and coriander and whisk it with the help of your hand for 5-10 minutes. Takes a small amount of batter and makes it into a ball, and then flattens it to make a hole between the batter, and deep-fry it, and serve it with chutney and tea (Rana *et al.*, (2022)).

### Traditional Beverages of jaunsar-bawar tribe of Uttarakhand

There is distinct kind of beverages planned by tribal people. Consumption of alcohol has been an integral part of tribal life (Tomar *et al.*, 2024). There is deep rooted history behind consumption of alcohol, which is mostly consumed during custom, either

religious or frolic some (Tamang, 2020). As the cultures and custom deviate from place to place, methods and preparation vary as well (Tomar *et al.*, 2024). There are almost 250 varieties of indigenous food and beverages in Jaunsar-Bawar (Tamang, 2020). In Uttarakhand yield of conventionally prepared beverages by tribal people is somewhat common (Roy *et al.*, 2004).

### Pakhali or Pakhoi

Pakhoi is an ethnic fermented beverage (Figure 20 (a)) of Uttarakhand prepared from jau (barley), raagee (finger millet) or rice grains (Tomar *et al.*, 2024).

### Method of preparation

Keem is used as a starter that is made from herbs and shrubs as shown in the figure 20(c). Villagers collect different medicinal plants during the rainy season. Herbs like Patkaniya (*Alysicarpus vaginalis* (L.) DC), Baisheyi (*Adhatoda zeylanica* Medik.), Chamara (*Artemisia roxburghiana* Wall. Ex Bess), Bhang (*Cannabis sativa* L.), Guradra (*Cinnamomum tamala* (Buch-Ham.) Nees ex Eberm), Bhirmoli (*Colebrookia oppositifolia* Sm.), Dhatura (*Datura stramonium* L.), Latkaniya (*Physalis minima* L.), Atthu (*Sapindus muorossi* Gaertn.), Bhartoi (*Arachne cordifolia* (Decne) Hurusawa), Kashmal (*Berberis lyceum* Royle), Karonda (*Carissa opaca* Stapf ex Haines), Panvar (*Cassia tora* L.), Genthi (*Dioscorea bulbifera* L.), Parhu (*Cymbopogon maritini* (Roxb.) Wats.), Kathmul (*Diclitra roxburghiana* Nees), Jaljamni (*Cocculus hirsutus* (L.) Diels), (Tomar *et al.*, 2024).



**Fig. 20:** (a) Pakhoi (b) Vessel used for Pakhoi preparation (Large) and storage (Small) and (c) Keem

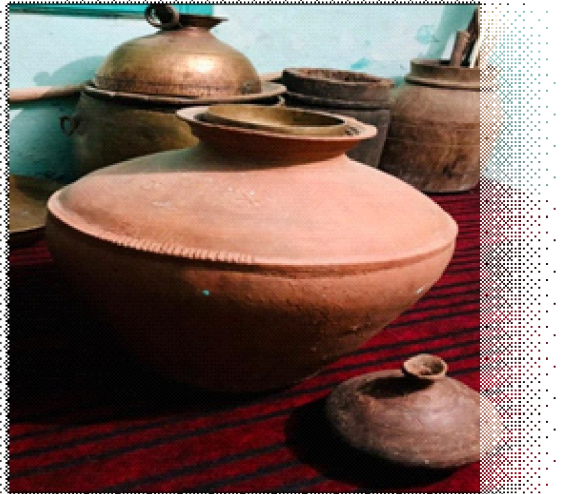
These herbs are dried and powdered. The powder is mixed with about 50kg of barley flour. A sufficient amount of dry mixture is added to a sufficient quantity

of jayaras, in a massive container for whole night, and making a round cake of about 2kg (Rana *et al.*, 2004). The cooked grain (jau, raagee, or rice grains) are



positioned in a huge pot with linear pieholes, and water is raised to it. Keem, along with jaggery and molasses, is merged into it. The broth is guarded in a bleak room for fermentation for a course of 2-3 months. The pot (Figure 20(b)) is barred with squeezed flour. Once the fermentation is done, liquor is clarified and store in a unique traditional mud pot known as bhandki (Figure 20(b)). Pakhoi is served in memorable basin made up of bronze called katora. Pakhoi is served during traditional festivals and marriages (Tomar *et al.*, 2024).

### Ghandie/Ghaingti



**Fig. 21:** Vessel used for Gaingti preparation (Large) and storage (Small)

It is also a traditional drink of Junsar-Bawar (Figure 21).

### Method of preparation

It is prepared in a similar way to pakhoi; however, sattu is used as commence unbaked resource that is made of jau (barley). Ghaingti is identified peculiarly because of its turbidity. Here, Fermentation is completed within 15 days. It is sporadically devised in the existing time (Tomar *et al.*, 2024).

### Soor

Soor is favoured in virtually several townlet of Jaunsar-Bawar (Figure 22). It is prepared from barley grain or finger millets (Tomar *et al.*, 2024).

### Method of preparation

For the preparation of substrate, jaggery and water were totally mixed. Every once in a while, broiled rice is also added. This is infused with keem in an extensive receptacle. Receptacle is concealed with fleecy cloth except mouth to keep it warmish and allow it to effervesce. Fermentation is done within 7-10 days, with a sign of CO<sub>2</sub> formation and a classic aroma and relish of the pottage. The pottage is drained and

jammed into vessel for distillation. It contain 35-40% alcohols (Tomar *et al.*, 2024).



**Fig. 22:** Soor Preparation

### Jaan

Jaan is a local beer that is made by Bhotiya tribal. Balam is the entrant culture that is prepared by using wheat (*Triticum spp.*) as base and blend with medicinal plant and spices (Kishor *et al.*, 2013).

### Method of preparation

For balam preparation, wheat grains are washed and sundried, ground into flour, and then roasted till they brown in tone. The roasted flour is mixed with plant Dalchini/ Cinnamon, black cardamom, pepper and sacred fig (Das and Pandey, (2007)). It is then gently mixed with essential plants parts and water and beaded into a chunky batter, left to semi-dehydrated. The semi-dehydrated fusion is then made into sphere of the required size. Balam sphere are desiccated in dimness and store, and now it is ready to use. It is prepared by fermentation of boiled rice (*Oryza sativa* Linn.). To make jaan, foremost clean and wash the rice grains. Then boil the washed rice; after boiled, pour out the water and leave to moderately cool. Balam is thoroughly mixed with it, and the mixture is relocated to a pot. The pot is partially airtight and left for 7 days in a dark place for fermentation. The ferment is distilled, and percolate is dubbed jaan. Left rice is decrepit in forming authentic cuisine called sez (Kishor *et al.*, 2013).

### Conclusion

The traditional foods and beverages of the Jaunsar-Bawar tribe are an integral part of their rich cultural heritage and offer a range of health and medicinal benefits. These ethnic foods are deeply connected to the socio-cultural, ecological, and

spiritual life of the community, with each dish having a specific significance and meaning. The review highlighted the importance of preserving and promoting these traditional food products, which are rapidly disappearing due to urbanization and modernization. By documenting and scientifically studying these ethnic foods, we can not only preserve the cultural heritage of the Jaunsar-Bawar tribe but also promote sustainable development in the region. The fermented foods are rich in probiotics and have been known to aid digestion and boost immunity. The non-fermented foods are rich in fiber and have been used to treat various health issues. These traditional foods not only provide essential nutrients but also contribute to the cultural and social fabric of the community. In conclusion, this review emphasizes the need to preserve and promote the traditional foods and beverages of the Jaunsar-Bawar tribe, not only for their cultural significance but also for their health benefits. By documenting and scientifically studying these ethnic foods, we can contribute to the social and economic development of the region while also preserving the cultural heritage of the tribe.

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