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Living Traditions: Preservation Methods of Manipuri Ethnic Communities

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ABSTRACT: This study explores traditional food preservation practices in Manipur, focusing on indigenous methods employed by local communities. Research was conducted in five villages—Waithou, Kakching Mahabali Kabui Khul, Moirang and Nambol— selected based on their sustained reliance on traditional food preservation techniques. The sample consisted of 73 women, predominantly elderly, as women hold the primary role in food preservation activities in this region. Employing a snowball sampling technique ensured adequate representation and minimized selection bias. Field data were collected between March and May, 2025 using a pre-tested interview schedule, enabling in-depth documentation of traditional preservation methods practiced across the study sites. The responses were systematically categorized into five food groups: fish-based foods, bamboo shoot–based foods, soybean-based foods, leafy vegetable–based foods, and fermented beverages. This classification facilitated a comprehensive analysis of various preservation techniques and aided in capturing the cultural richness and diversity of Manipuri indigenous food systems. Particular attention was given to the ingredients utilized and the detailed methodologies involved in preparing fermented food items, which constitute a significant aspect of the region's culinary heritage. Results highlight the critical role of women, especially elderly participants, as custodians of traditional knowledge that sustains food security, cultural identity and nutritional diversity in Manipur. The practices documented span processes such as drying, fermentation, pickling and smoking, underscoring their applicability and relevance in local dietary contexts. The findings also emphasize the importance of preserving and promoting this intangible cultural heritage in the face of modernization and changing food habits. By systematically documenting indigenous food preservation techniques, the study contributes valuable insights into sustainable food practices that can inform broader efforts in food security and cultural conservation. The comprehensive data affirms the resilience of traditional food systems and their potential adaptation to future challenges within Manipur and similar agro-ecological zones.

KEYWORDS: *drying, fermentation, pickling modernization, indigenous food, preservation techniques, agro-ecological zones*

1. INTRODUCTION

Food preservation has become an indispensable element of modern life, underpinning daily sustenance and enabling the safe storage and consumption of a diverse range of perishable products. The primary function of food preservation is to inhibit the growth of bacteria, fungi—including yeasts—and other pathogenic microorganisms, thereby extending shelf-life and maintaining the nutritional and sensory quality of food items (Cooke *et al.*, 1987). Among numerous traditional methods, sun drying, smoking and fermentation are recognized as particularly significant, especially within the Indigenous communities of Manipur—namely the Meitei, Meitei-Pangal and the thirty-two tribes constituting Naga and Kuki ethnic groups. These communities have, since ancient times, developed and refined food preparation and preservation techniques that transform fish, meat, vegetables, fruits, and crops into products with unique flavours and functional properties, often utilizing drying or fermentation as principal processes.

For instance, *Ngari* (fermented fish), *Nga ayaiba* (dried fish), and *Sha ayaiba* (dried meat) serve as essential culinary ingredients across both valley and hill populations, while additional preserved items are stored for future provisioning (Haokip *et al.*, 2011). Rice remains the staple food for most households, consistent with dietary patterns observed throughout Northeast India. Dried fish is widely consumed among ethnic groups residing in Manipur's valley, which constitutes approximately one-ninth of the state's total area, whereas dried meat is more prevalent among tribes in the hilly regions. Each community possesses distinct traditional foods and beverages, reflecting a wealth of indigenous knowledge regarding boiling, fermenting, brewing and

nutrient-enriching practices applied to local crops, forest products, and animal sources. The region's agricultural abundance, as well as rich biodiversity—including crops, fruits, vegetables, and wild animal resources—facilitates varied preservation activities tailored to local production capacities (Click and Ridberg, 2010). A notable example is the fermentation of *Soibum* in bamboo shoot-rich locales (Giri and Janmejay, 2000). Manipur's favourable climatic conditions further support the thriving growth of diverse plant and shrub species, which provide habitats for wild animals and birds. Traditional medicinal knowledge, leveraging harvested flora and fauna, also remains an integral aspect of community well-being, underscoring the multifaceted importance of food preservation in this context. By keeping these points in mind, the present study was planned with the following objectives-

1) To document the various types of fermented foods of Manipur.
2) To study the traditional knowledge associated with the indigenous preservation techniques of Manipur.

2. METHODOLOGY

Study area: The study was conducted in five villages of Manipur, namely Waithou, Kakching Mahabali Kabui Khul, Moirang and Nambol. These sites were selected due to their continued reliance on traditional food preservation practices.

Sampling and sample size: The sample comprised 73 respondents, all of whom were women. Women were specifically chosen because food preservation activities in Manipur are traditionally and predominantly carried out by them. More than 50% of the participants were elderly, as they continue to practice and preserve indigenous methods. The respondents were selected using the snowball sampling technique, which was employed to ensure adequate representation and to reduce selection bias.

Period of data collection: The fieldwork was carried out between March, 2025 and May, 2025.
Tools and techniques of data collection: Data were collected using a pre-tested interview schedule. The responses of the participants were recorded in detail, focusing on traditional food preservation practices. For systematic analysis and interpretation, the information was categorized into five groups:

1. Fish-based foods
2. Bamboo shoot–based foods
3. Soybean-based foods
4. Leafy vegetable–based foods
5. Fermented beverages

Additionally, detailed information regarding the ingredients used and the preparation techniques of each fermented food item was documented.

Results and discussion: The common preservation methods practiced by the ethnic communities of Northeast India were primarily drying and fermentation (Sarangthem and Singh, 2003). Fish and meat were most frequently preserved by drying. Traditional fermentation techniques had also been employed for generations, forming an integral part of preserved food practices in the region. In Manipur and the neighbouring states, these preservation methods were not only functional but also carried cultural significance. Such household practices were transmitted across generations (Devi *et al.*, 2024; Singh *et al.*, 2012). Table 1 represents the vernacular, scientific and common names of the selected fermented samples of Manipuri people.

Table 1. Vernacular, scientific and common names of the selected fermented samples of Manipuri people

S. no.	Vernacular name	Scientific name	Common name	Family
1	*Sougri*	*Hibiscus cannabinus* L.	Sorrel leaves	Malvaceae
2	*Heikru*	*Phyllanthus urinaria* L.	Emblic myrobalan / Gooseberry	Euphorbiaceae
3	*Yongchak*	*Parkia speciosa*	Bitter bean, twisted cluster bean or stink bean	Fabacea
4	*Heimang*	*Rhus chinensis*	Nutgall tree or Chinese sumac	Anacardiaceae
5	*Kangla yen*	*Schizophyllum commune*	Common split gill	Agaricaceae
6	*Uyen*	*Lentinellus cochleatus*	Aniseed cockleshell	Auriscalpiaceae
7	*Heiribob*	*Citrus macroptera*	Sat Kara	Rutaceae
8	*Heibi*	*Vangueria spinosa*	-	Rubiaceae

S. no.	Vernacular name	Scientific name	Common name	Family
9	*Uchina*	*Auricularia polytricha*	Black ear Mushroom	Auriculariaceae
10	*Soibum or Soijin*	*Bambusa vulgaris*	Bamboo shoot	Poaceae
11	*Haona*	*Cymbopogon citratus,* Stapf.	Lemon Grass	Poaceae
12	*Beef singju*	*Bos taurus* L.	Dry beef	Bovidae
13	*Ukaabi*	*Anabas testudineus*	The climbing perch	Anabantidae
14	*Muka nga*	*Amblypharyngodon mola*	The mola carplet	Cyprinidae
15	*Meitei ngamu*	*Channa orientalis*	Asiatic Snake Head	Channidae
16	*Row akangba*	*Labeo rohita*	Rohu	Cyprinidae
17	*Ngafak*	*Phlogacanthus thyrsiformis*	Fermented fish	Acanthaceae
18	*Heitup*	*Grewia microcos*	Microcos paniculata - Elm-Leaf Grewia	Tiliaceae
19	*Heinou*	*Mangifera indica* L.	Mango	Anacardiaceae
20	*Pangkhok*	*Houttuynia cordata* Thunb.	Houttuynia cordata	Saururaceae
21	*Boroi*	Lam. *Ziziphus mauritiana*	Indian Jujube, Indian plum, Chinese date, Chinese apple	Rhamnaceae
22	*Atingba*	-	Beverages fermented alcohol	-
23	*Hentak*	*Esomus danricus*	Indian flying barb	Cyprinidae
24	*Hawaizar*	*Glycine max*	Fermented soybean	Fabaceae
25	*Nung-hawai/ Hawaijar*	*Glycine max*	Dried soybean/ Edamame beans	Fabaceae
26	*Hawaizar*	*Glycine max*	Soybean pickles	Fabaceae
27	*Ngari*	*Puntius sophore*	The pool barb, Spotfin swamp barb or Stigma barb	Cyprinidae
28	*Khajing*	*Oreocnide integrifolia*	Wild Rhea	Ulmaceae
29	*Ngaprum*	*Monopterus albus*	Fresh Water Eel	Anguillidae
30	*Ziang dui / Ziang sang*	*Brassica juncea*	Fermented mustard leaves	Brassicaceae

For the present study, thirty preserved food items were selected from the data shared by seventy-three respondents. Each method of preparation was found to be unique and distinct from the others. The selected samples were prepared either by drying or by fermentation. The survey further revealed that tribal communities preserved green leafy vegetables in ways different from those living in the plains, and their dietary patterns also varied accordingly. Table 2 presents the details of preserved foods, the plant or animal parts used, the ingredients employed in their preparation and the preservation methods commonly practiced by the people of Manipur.

Table 2- List of preserved food, part of the plant used, ingredients required for preparation and preparation methods of various food items commonly used by Manipuri people

S. no.	Name	Parts used	Ingredients	Method of preparation
1.	*Sougri*	Leaf	Fresh leaves	The leaves were sun-dried as part of the traditional preservation process.
2.	*Heikru*	Fruit	Fruit, salt and chilli powder	Make it fresh *Heikru* is sliced in to pieces where salt and chilli powder are added and dried under sun.
3.	*Yongchak*	Tender pot	*Yongchak*	The material was sun-dried after the peel was removed.
4.	*Heimang*	Fruit and Fresh leaves	Fruit, salt and chilli powder	Cleaned fruits were mixed with salt and chili powder. Alternatively, they could be ground into a powdered form
5.	*Kangla yen*	Whole part	Mushroom	The material was subjected to sun-drying for

				about 20 days, a process that facilitated moisture reduction and enabled long-term preservation.
6.	*Uyen*	Whole part	Uyen	It was sun-dried for approximately 20 days and subsequently preserved for future use.
7.	*Heiribob*	Whole fruit	Fruit	It is cut into pieces and dried under sun.
8.	*Heibi*	Whole part	Fruits	Fresh fruits were sun-dried and subsequently preserved for later use.
9.	*Uchina*	Whole part	Mushroom	It is prepared by sun drying.
10.	*Soibum or Soijin*	Shoot	Bamboo shoot, oil, salt, chilli powder.	Bamboo shoots were sliced and thoroughly washed, after which they were soaked overnight in hot water. On the following day, the bamboo shoots were cooked. Chillies and fenugreek seeds were roasted in a small quantity of oil and ground into a dry powder using a mixer. This powdered spice blend was mixed with the cooked bamboo shoots and salt was added. The mixture was then boiled until the excess water evaporated. Crushed garlic and cloves were incorporated into the boiled pickle mixture, which was kept covered for half an hour before being transferred into an airtight container for preservation.
11.	*Haona*	Leaves	Lemon Grass leaves	Fresh leaves were subjected to sun-drying, which enabled their preservation for extended storage.
12.	*Beef singju*	Raw beef	Beef meat	The meat should be cut into pieces and boiled with a little water, salt, chili, pepper and turmeric powder. Beef masala was to be added and the mixture boiled until the water dried up. After that, it had to be fried without oil and stirred well. After some time, it would be ready to eat and then dried in the sun.
13.	*Ukaabi*	All parts	Fish	It is cut into pieces, smoked and then dried in the sun.
14.	*Muka nga*	Whole part	Fish	After being cut into pieces, it is smoked and then sun-dried.
15.	*Meitei ngamu*	Whole part	Fish	It is prepared by smoking and later it is dried under the sun.
16.	*Row akangba*	Whole part	Fish	It is prepared by smoking and then dried in the sun.
17.	*Ngafak*	Whole part	Fish	It is smoked over fire and dried in the sun.
18.	*Heitup*	Whole part	Dry fruits	Fresh fruits were to be taken and peeled, then washed and boiled. They had to be cut into pieces, with salt, a little oil, and chilli powder added and mixed. Finally, they were to be dried in the sun.
19.	*Heinou*	Whole part	Dry Fruits	Fresh fruits were to be taken, peeled, washed, and boiled. They had to be cut into pieces, mixed with salt, a little oil, and chili powder, and then dried in the sun.
20.	*Pangkhok*	Leaf	Fresh leaves	Fresh leaves are dried under the sun.

21.	*Boroi*	Whole part	Fruits	*Boroi* was to be taken and kept until ripe. After ripening, it had to be washed and cooked in a pressure cooker, jaggery powder was to be added, and then it had to be stored in a container.
22.	Beverages (fermented alcohol)		Cooked rice	Cooked rice was to be kept for five days. After that, it had to be mixed with *Hamei*, and a small amount of water was to be poured in just to immerse it. It was then to be covered with a muslin cloth. Heat would be released for 2–3 days, after which water was to be added to reduce the heat. The preparation would then be ready to drink.
23.	*Hentak*	Whole part	Fish	*Fabou nga* was used for the preparation of *Hentak*. The fish was thoroughly cleaned and sun-dried until the moisture content reached the minimum level. It was then crushed into a powdered form. Wild Colocasia stems were washed, cut into pieces, and crushed. The powdered fish and the crushed Colocasia stems were mixed thoroughly, rolled into round shapes and stored in a container.
24.	*Hawaijar*	Seeds	Soybean	Soybeans were washed and cooked in a pressure cooker, after which they were poured onto a plate. The excess water was drained using a bamboo colander. A banana leaf was placed as a base in the colander, and the soybeans were then poured over it. They were subsequently covered tightly with a cloth, folded three times, and sun-dried.
25.	*Nung-hawai/ Hawaijar*	Seeds	Soybean	The fermented soybean was dried under sunlight until the moisture content was completely removed.
26.	Soybean pickles		Soybean	Fermented soybean was processed by frying in oil with added masala and a small amount of salt. The mixture, along with the residual oil, was subsequently sealed in a bottle, which facilitated extended storage stability.
27.	*Ngari*	Whole part	*Phabou nga*	*Phabou nga* was thoroughly washed with water and sun-dried until it became crisp. The fish heads were then crushed using a hammer. For the preparation of *Ngari*, a special vessel was employed, in which mustard oil was applied as a coating. The dried fish were stacked in an orderly manner, and the container was made nearly airtight after filling. To achieve airtight conditions, a layer of sand was placed on the top, allowing natural fermentation to take place. The fermentation period lasted approximately 3 to 6 months, after which the product was considered mature and ready for consumption.
28.	*Khajing*	Whole part	Prawn	The product was consumed in its fresh form, but it was also subjected to sun-drying as a method of preservation.

29.	*Ngaprum*	Whole part	Kind of fish	It was smoked over fire and subsequently sun-dried as part of the traditional preservation process.
30.	Ziang dui / Ziang sang	Fresh leaves	*Hangam* (Brassica campestris Linn.)	Leaves of *Hangam* were sun-dried and subsequently crushed using a traditional wooden crusher. The material was then subjected to fermentation for a period of 2–3 days. The fermented juice was extracted manually by hand-squeezing and concentrated through boiling. The liquid form of the fermented extract was referred to as *Ziang dui*, whereas the concentrated paste was known as *Ziang sang*. This concentrated leaf extract was preserved in traditional bamboo containers, enabling year-long storage as a food resource.

Various preservation techniques traditionally used by Manipuri communities-

1. **Sun drying-** The process of sun drying is a widely practiced traditional method for food preservation in Manipur, yielding a range of ethnic ingredients that are integral to the region's cuisine.Analysis of sun-dried products such as *Sougri*, *Heigru*, *Yongchak*, *Kanglayen*, *Uyen*, *Haribob*, *Heibi*, *Uchina*, *Haona*, *Beef singju*, *Heitup*, *Pangkhok* and *Khajing* indicates that the technique effectively reduces moisture content, thereby inhibiting microbial growth and preventing spoilage (Table 2). These foods are preserved for extended periods without refrigeration, ensuring year-round availability and supporting food security in local communities. Their inclusion in traditional Manipur dishes not only imparts distinct aromas and flavours but also retains notable nutritional and medicinal properties. The results demonstrate that sun drying is an eco-friendly, cost-effective strategy suited to rural and resource-limited settings with abundant sunlight. Moreover, the sustained use of sun-dried ingredients reflects strong cultural continuity and adaptation to local environmental conditions, underlining their significance in both daily consumption and culinary heritage (Kabui *et al.,* 2025; Singh *et al.,* 2012).

2. Pickling- Pickling represents a pivotal food preservation method within Manipuri cuisine, utilizing anaerobic fermentation in brine or vinegar to extend the shelf-life of perishable ingredients by several months. The analysis of ethnic pickled products from Manipur, such as bamboo pickles, Boroi pickles and soybean pickles, reveals their prominent role in daily diets (Table 2). The process involves immersing cleaned fruits or vegetables in jars containing brine, vinegar or both, complemented by various spices, and permitting fermentation until the desired level of sourness or saltiness is achieved. The acidic environment produced-characterized by a pH less than 4.6-not only enhances flavour but also suppresses the proliferation of spoilage microorganisms, ensuring food safety and stability. Bamboo and soybean pickles, in particular, are found in almost every household and are valued for their distinctive taste, nutritional benefits, and ability to complement a variety of dishes. Their continued popularity underscores both their culinary and cultural importance in Manipur's food system, demonstrating the adaptability and resourcefulness of traditional preservation techniques in promoting sustainable diets (Lhouvum and Liveini, 2025).

3. Smoking- Smoking is commonly employed in Manipur as a complementary technique to curing, chiefly enhancing the flavour, aroma, and visual appeal of locally sourced freshwater fish products rather than acting as a primary means of food preservation. The analysis of smoked fish varieties such as *Ukaabi*, *Nga*, *Ngamu*, *Row Akangba*, *Ngafak* and *Ngaprum* demonstrates their central role in the preparation of iconic Manipuri dishes, notably *Eromba* and *Kangsoi* (Table 2). Traditionally, these fish are smoked over wood fires—a practice rooted in ancient customs—which not only imparts a characteristic smokiness and unique taste but also assists in partial dehydration, indirectly contributing to extended shelf-life. However, in comparison to other preservation techniques, the process is prized more for its sensory attributes than its effect on microbial stability or longevity. The continued prevalence of smoked fish in Manipur's culinary repertoire underscores the method's cultural importance, offering depth and complexity to traditional food experiences while reflecting adaptation to local freshwater resources and community practices (Singh *et al.*, 2012; Click and Ridberg, 2010).

4. Fermentation- Fermentation in food processing is the conversion of carbohydrates to alcohols and carbon dioxide or organic acids using yeast, bacteria or a combination thereof, under anaerobic conditions. Fermentation is a metabolic process that converts sugar to acids, gases and alcohol. It occurs in yeast and bacteria, and fermentation is also used more broadly to refer to the bulk growth of microorganisms on a growth medium. From the above table, the products of fermentation are: (a) fermented alcohol, (b) fermented fish, (c) fermented soybeans, (d) fermented leafy vegetables (Singh *et al.,* 2023; Soibam and Ayam, 2018; Jeyaram *et al.,*2009). Different fermented alcohols are found in Manipur and are made from rice and fruits, with various

traditional methods applied to produce these beverages, often using starter cultures like *Hamei*. Fermented fish in Manipur, known as *Ngari*, is commonly consumed and is an essential ingredient in many Manipuri dishes, prepared through the long-term fermentation of sun-dried fish. Fermented soybean is also widely used; the people of Manipur traditionally prepare fermented soybean at home, following established indigenous methods and steps (Devi *et al.*, 2024; Soibam and Ayam,2018; Bhanishana *et al.*, 2012; Singh *et al.*, 2012; Devi and Kumar, 2012).

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4. CONCLUSION

In conclusion, the food culture of the Manipuri communities reflects a deep interconnection between ecology, tradition and social practices, where indigenous methods of processing and preservation play a central role in sustaining unique ethnic identities. However, as these practices adapt to modern demands, it becomes essential to integrate hygienic awareness and scientific approaches without compromising cultural authenticity. Promoting Good Manufacturing Practices and adopting systematic food safety measures such as HACCP will not only safeguard consumer health but also ensure the long-term survival, recognition and wider acceptance of these traditional foods. Ultimately, balancing heritage with modern standards can create opportunities for both cultural preservation and sustainable economic growth.

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