

Indigenous Alcoholic Beverage ‘Chakti’ of High Altitude Bhotiya Community of Chaudans Valley of Kumaun Himalayas

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Abstract

The traditional foods and beverages are an indicative of the simplicity and uniqueness of the life of tribal people living in close proximity of nature as well as each other. One such community is the *Bhotiya* tribe of Uttarakhand residing in the high altitude Indian Himalayan Region, known globally for its ethnic knowledge and traditional practices. They have old age traditions of producing indigenous alcoholic beverages. The present study undertakes one such practice of preparing a traditional drink called ‘Chakti’ using a wheat-based ethnic starter culture ‘*balma*’ having *Thymus linearis* (*Jungali ajwain*) as the main ingredient. The traditional drink is not only a part of their household or societal ceremonies and festivals but is a source of nutrition as well as income generation and livelihood. Furthermore, there is a need of assessment and documentation of these traditional beverages in terms of quality so as to with the aim of preserving indigenous knowledge as well as utilise it accordingly.

1. Introduction

In many of the world’s culture, alcoholic beverages comprise an important category of fermented food products which have been in preparation and consumption by mankind since previous times. In many tribal areas of South Asia, a variety of traditional alcoholic beverages are produced using indigenous technology and knowledge of fermentation. This makes traditional alcohol brewing a major homemade industry in rural areas. These beverages can be of multifarious types based on the variety of raw material, processing steps, alcoholic fermentation, distillation and post-distillation processing (Franz *et al.*, 2011). These are palatable, nutritious and inexpensive. The knowledge of making these fermented food and beverages is believed to have originated from the Yunnan–Guizhou, China (Kumari *et al.*, 2016). The processes of producing indigenous beverages usually involves natural or spontaneous fermentation which may contain a mixed microflora and sugar-rich material such as fruits, cereals, grains, etc.

In India, the high altitude Himalayan region is known to be the focal point of production of traditional fermented food and

beverages by the local ethnic groups and tribal communities who have devised their own cultures for fermentation by utilising the available natural resources. Approximately 250 varieties of common as well as lesser-known indigenous fermented foods and beverages are known to be prepared by different tribal communities of the Himalayan region (Tamang, 2010). The consumption of these ethnic drinks has its roots in various cultural and religious practices of every tribal group. These traditional foods and beverages are not only a source of household-cum-societal drinking activity but of livelihood also. Furthermore, ancient literature such as “Ayurveda” also contains the medicinal importance of the fermented alcohols, *i.e.*, ‘*madya*’ (Kumari *et al.*, 2016). The varieties in the indigenous alcoholic beverages can be attributed to cultural as well as biological diversity witnessed in the Himalayan belt. Some common indigenous alcoholic beverages include *poko*, *chee*, *jann* and *judima* prepared by *Gorkha*, *Lepcha*, *Bhotiya* and *Dimasa* tribes, respectively (Targais *et al.*, 2012; Chakravarty *et al.*, 2013; Kumari *et al.*, 2016,). Starting from the method of preparing microbial inocula (ethnic starter) to choosing of substrates and distillation processes, each community has devised specific procedures for making

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indigenous fermented beverages characteristic to each community. The present article focuses on the methods employed in the production of one such traditional alcoholic beverage 'Chakti' prepared by using the indigenous technology and knowledge of the *Bhotiya* community of Chaudans valley situated in the Dharchula region of Pithoragarh district, Uttarakhand.

2. Materials and Methods

2.1. Study area

The study was carried out in Chaudans valley situated between 30°2' N to 29°58' N latitude and 80°35' E to 80°40' E longitude situated in the Dharchula region of Pithoragarh district, Uttarakhand. The valley has a mean temperature of 16°C and an average precipitation of 1500 mm. The variable topography of the valley serves in the formation of several climatic zones supporting different types of vegetation. The vegetation can be broadly classified into, a) subtropical forest of *Pinus roxburghii*; b) moist temperate forest dominated by *Acer caesium*, *Betula alnoides*, *Lyonia ovalifolia* and *Quercus semecarpifolia*; c) dry temperate dominated by *P. wallichiana* and *Abies spectabilis*; d) sub-alpine dominated by *Betula utilis*, *Rhododendron campanulatum* and *R. anthopogon*; and e) alpine meadows dominated by mesophytic herbs such as *Anaphalis*, *Anemone*, *Bistorta*, *Geranium*, *Potentilla*, etc.

2.2. Data collection

The study was carried out in the month of August 2019 in the Chaudans valley of Kumaun Himalayas. The house head and village elders were requested to share their traditional knowledge and practices on different aspects of the topic such as the process of preparation of starter cultures (*Balma* and floral diversity used in it), fermentation and distillation followed in the production of their ethnic fermented drink, 'Chakti'. Apart from this, the traditional uses of beverages and its implications on the socio-economic culture of the inhabitants were also investigated. Collected information was again confirmed from people engaged in the home-based production of the beverages.

3. Results and Discussion

3.1. Procedure of alcoholic beverage production

The *Bhotiya* is largest indigenous community inhabiting the valley and is largely dependent on forest resources for their livelihood. Alcohol brewing also forms a major part of their home-based industry, mostly carried out by rural women. The traditional drink made by the locals of the valley is known as 'Chakti', a wheat-based fermented beverage. The drink is prepared by using the locally made and available inoculums called 'Balma' having *Thymus linearis* Benth. in Wall. as the main ingredient.

3.2. Plant collection and description

The plant material, *i.e.*, *Thymus linearis*, is collected from the

high altitude alpine region (3000m-4000m) of the valley by the local people during the month of May to September. It is a perennial creeping aromatic herb belonging to the family Lamiaceae. The plant is known by several vernacular names in different parts of Himalayan belt like Himalayan or wild thyme, 'Jungali ajwain' and 'Balma'. It is 15-30 cm high having procumbent basal branches with leaves fascicles at nodes and short erect flowering shoot. The stem is quadrangular and pilose. Leaves are elliptic-obovate to linear-lanceolate, glabrous or covered by few eglandular hairs with reddish sessile oil-globules on both surfaces. Flowers are monoecious, bracteate and deep purplish or violet in colour arranged in verticillate inflorescence. Calyx (3.5-4 mm) is in the form of a 3.5-4 mm long tube with oil globules, while corolla (6mm long) is weakly 2-lipped and purplish-pink or violet. The upper lip is notched, while lower is 3-lobed, a characteristic feature of thyme species. Nutlets are pale brown, ovoid (1x0.75mm) with small V-shaped attachment scar. The flowering period of the plant is from April to September. It is distributed across all the major Himalayan countries, *i.e.*, Afghanistan, Pakistan, India, China and Nepal as well as in the temperate parts of Europe and Africa. It is found on dry and rocky cliffs in the Himalayas at an altitude range of 3000–4500 m above sea level.

A variety of essential oils, essentially thymol and carvacrol, are obtained from the leaves and flowers of the plant exhibiting strong antibacterial, antifungal, antiviral, antibiotic, and antioxidant, antispasmodic and carminative activities (Bashir et al., 2019). The decoction of the leaves is used in the preparation of herbal tea, *i.e.*, Green thyme tea, which is known to be beneficial for gastrointestinal problems such as diarrhoea.

3.3. Preparation of 'Balma' (ethnic starter culture)

The leaves and branches of *T. linearis* are used in the preparation of the wheat-based starter or inocula 'Balma', along with various ingredients shown in Table 1. The dried leaves and branches of Himalayan thyme are mashed and mixed with spices like clove, nutmeg, black pepper and long pepper to form a powdered 'balma' mixture. Meanwhile, wheat flour is roasted over fire for a short period of time and

Table 1: Ingredients used in the preparation of wheat-based starter or inocula 'Balma'.

Name of the ingredient	Vernacular name	Quantity
Wheat flour (<i>Triticum aestivum</i>)	Gehun	2.5 kg
Himalayan thyme (<i>Thymus linearis</i>)	Jungali ajwain	500 g
Clove powder (<i>Syzygium aromaticum</i>)	Laung	50 g
Black pepper (<i>Piper nigrum</i>)	Kalimirch	50 g
Nutmeg (<i>Myristica fragrans</i>)	Jaayphal	50 g
Long pepper (<i>Piper longum</i>)	Pipla	2

removed before it becomes brown. To the flour, the prepared 'balma' mixture added and kneaded into thick paste using optimum quantity of water. The paste then rolled into round balls of required sizes and left to shade-dry for 2-3 days. These 'Balma' balls are later used for preparation of 'chakti'.

3.4. Preparation of 'Chakti' (local alcohol)

Prior to the preparation, the whole distillation apparatus and utensils are cleaned properly to avoid contamination and clean water is used throughout the process. Ground barley or wheat is soaked in normal water in a proportion of 2:1 and mixed thoroughly with starter culture, i.e., 'balma' (100g/5kg substrate) and 1 kg sugar in a partially airtight container and left for 6-7 days separately with irregular shaking. The mixture is then transferred into a distillation pot 'taula' and left to simmering heat for 3-4 days to carry out the fermentation process. The pot is perforated in the middle and a copper plate (parat) is fixed at its mouth in such a way that it partially covers its opening. Another small vessel is kept above the pot which is filled with cold water. The vapours from the distillation pot when strikes to the bottom of the vessel filled with cold water condense and the droplets get collected in earthen pot or container after passing through a small pipe attached to the middle perforation in the distillation pot. This distillate having a significant odour is called 'chakti', which, after 4-5 days, is stored in bottles or containers for future consumption. The cold water in the vessel is regularly changed in order to keep it cool. An approximate of 5 kg of substrate is enough to make 3-4 containers of 'chakti'.

The alcoholic beverage prepared by the indigenous community is of pivotal importance in the social, cultural as well as religious life of the population. The beverages act as a binding agent among the tribal communities. The diverse variety of indigenous alcohols across the Himalayan belt is attributed to the cultural diversity of different ethnicities who have devised their characteristic starter cultures, fermentation and distillation processes, etc. The characteristic step in the fermentation procedure applied by the Bhotiyas of Chaudans valley is the use of *T. linearis* as a major ingredient of the starter culture, which has not been reported before. Hence, the potential of 'balma' as major yeast medium is needed to be explored by microbiologists, in order to estimate its commercial potential in pharmaceutical and food processing industries. It is not only consumed as an amusement drink but is even a source of nutrition and good health for the people (Kishor *et al.*, 2013). The traditionally made drink is a source of bio-nutrients possessing health-promoting benefits such as antimicrobial and antioxidative effects (Kumari *et al.*, 2016). It is also used as a mild laxative agent and in treating physical and mental fatigue. The beverage is also known to treat cold, cough, insomnia, headache and gastrointestinal problems such as indigestion, constipation, cholera etc. The preparation of the drink is also a home-based brewing industry involving participation of women of all households. They sell 'Chakti'

at a price ranging from 40-80 rupees per litre depending on season to season, while the 'Balma' balls are sold at a cost of 50-60 rupees per kilogram. This not only provides them with a source of income but even becomes essential for the upliftment of the community as a whole.

The indigenous technologies used in production of fermented beverages were sound practices similar to scientific procedures, thus exhibiting the importance of traditional knowledge. Hence, an integrated approach, where traditional knowledge is reinforced with modern science, is the need of the hour. Efforts should be made to promote traditional food systems of rural communities. Furthermore, methods of fermentation, knowledge of microorganisms and most importantly quality control could be defined to improve the production of the beverages. Assessment of beverages in terms of quality characteristics such as ethanol, acid content, sugar content, etc. could be performed so as to use them in therapeutic medicines (Kumari *et al.*, 2016). Research on traditional knowledge and its documentation should be undertaken with the aim of preserving indigenous knowledge, not exploit.

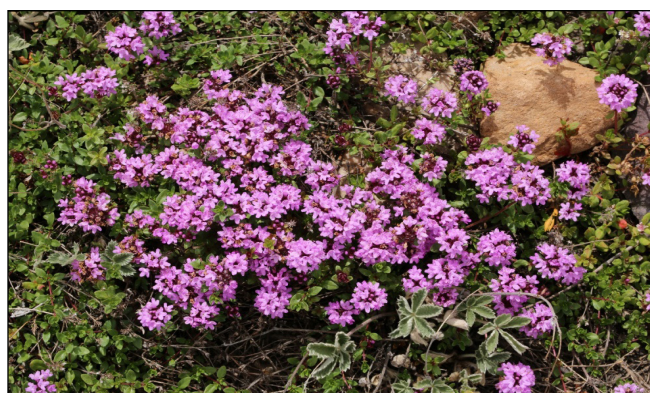


Figure 1: *Thymus linearis* Benth. in wall.

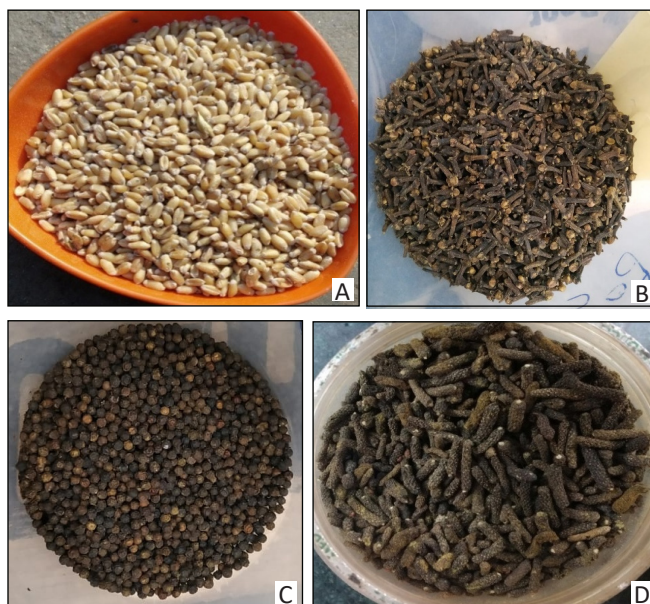


Figure 2: Continue...



Figure 2: A- *Triticum aestivum*, B- *Syzygium aromaticum*, C- *Piper nigrum*, D- *Piper longum*, E- *Myristica fragrans* (inner part), F- *Myristica fragrans* (outer part)



Figure 3. A- 'BALMA' balls (starter culture), b- local woman engaged in alcohol brewing, c- distillation apparatus

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