ORIGINAL RESEARCH PAPER

Anthropology

A STUDY ON THE USE OF FERMENTED RICE BEVERAGE (SUJEN) BY THE DEORIS OF BRAHMAPUTRA VALLEY: SOCIO-CULTURAL VALUES AND HEALTH RELATED ISSUES

KEY WORDS: Indigenous food, fermented rice beverage, socio-cultural, traditional food knowledge.

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ABSTRACT

Indigenous communities experience significant marginalisation and disadvantages, with common issues surrounding their traditional food systems, food security, and overall welfare. Their traditional food wisdom plays a vital role in improving their nutrition and health. Indigenous foods are acquired from the natural environment and form the cultural food pattern of Indigenous People. India is blessed with a variety of indigenous foods that carry unique cultural importance within local and ethnic groups. This traditional food knowledge encompasses unprocessed, small-scale, and low-tech human-managed natural resource systems, characterised by short distances from farm to plate. Over the last ten years, indigenous foods have gained international acclaim for their ability to enhance global food security and biodiversity simultaneously. These systems are recognized for their high nutritional value and substantial potential to advance overall health and nutrition. In this paper, we would like to focus the health and socio-cultural issues associated with the use of fermented rice beverage by the Deoris.

INTRODUCTION

Researchers from various disciplines are deeply interested in the study of diverse traditional dietary practices found within all levels of human societies. Traditional Food Knowledge (TFK) encompasses the cultural tradition of sharing food, recipes, culinary skills, and the transmission of this collective wisdom across generations. Scientific investigations have confirmed the significance of food diversity in human nutrition. Traditional food knowledge empowers individuals to prepare meals that are not only nourishing and safe but also deeply rooted in their cultural context. Indigenous knowledge and scientific knowledge operate in distinct ways, each founded on unique philosophies, methods, and evaluation standards, making it challenging to apply scientific criteria to assess indigenous knowledge or vice versa.

Indigenous people have a close connection to the environment, which is evident in their songs, customs, ways of sustenance, healing practices, and rituals related to birth, marriage and death. They have maintained an enduring and profound relationship with the land, forests, rivers. In short, indigenous people around the globe maintain indigeneity with the natural environments.

Study Area

Currently, the Deoris reside in various small to medium-sized villages across seven districts in Assam, namely Tinsukia, Dibrugarh, Sibsagar, Jorhat, Sonitpur, Lakhimpur, and Dhemaji. Additionally, in Arunachal Pradesh, Deori communities can be found in the districts of Changlang, Namsai, and Lohit. This study was conducted through an extensive field survey, during which data were collected from two Deori villages Kalalowa Adarsha Deori Village and Madhupur Adarsha Deori Janajati village in the Dibrugarh district. These villages are situated in close proximity to Burhi Dihing and Brahmaputra rivers.

The People

The residents of both villages belong to the Tengaponiya division, primarily engaged in rice cultivation, making rice their staple food. They hold animist beliefs, worship multiple deities, and follow Hinduism. Their daily meals consist of three parts: morning, mid-day, and evening. Traditional Deori cuisine mainly revolves around various leafy vegetables, including tubers, leaves, and tender stems of various wild edible plants found in the nearby forests and along riverbanks. Additionally, their diet includes various types of fish, meat, fermented fish, rice beverage, and other edible insects available in their local ecosystems. They prepare a variety of delicious and nutritionally rich traditional dishes by combining wild edible leafy vegetables with dried fish and meats. Most of their food preparations are either oil-free or use minimal amounts of oil. Their preferences in daily meals often include pork prepared in various styles, goat, poultry, boiled fish, and fermented rice beverage. The use of fermented fish or chucha, dried and smoked fish in their cuisine is quite common. Fermented rice beverage or sujen, holds a sacred and traditional significance and is used in almost every ritual as an offering to their ancestors. Elderly members commonly consume it as an energy booster.

Objectives

1. To find out why the Deoris consume fermented rice beverage in their day to day life,
2. To find out the food values, medicinal benefits and risks of fermented rice beverage prepared by them,
3. To find out the cultural relevance of fermented rice beverage in their socio-cultural life.

Data Collection Methods

Standard anthropological methods were applied during data collection from the fields. Primary data were collected through – Interview method and observation methods. We also took help from other secondary sources such as books, research articles, websites, magazines, etc.

RESULT AND DISCUSSION

Fermented rice beverage plays a vital role in the socio-cultural life of the Deoris. It is an essential part in all rituals observed by the Deoris. For preparation, different types of rice (either glutinous or non-glutinous) are used, however the best beverage can be obtained from the glutinous type of rice widely cultivated by the Deori tribe.

Preparation Of Fermented Beverage Or Sujen

Initially rice is mixed with husk (tuh) and boiled and cooked in water. The cooked rice is poured over a round bamboo tray (dola) and allowed to dry. After that starter cake (mod pitha) is added with the cooked rice, mixed thoroughly with clean

hands. The mixture is then covered with banana leaves and they keep some chillies and burnt wooden coal over the covered leaves to protect the preparation from evil spirits. In addition, bihlongoni leaves are also spread over it. Then this incubated mixture is carefully shifted into a sterilised earthen pot (koloh) for fermentation. The mouth of the earthen pot is then sealed by inserting a bunch of bihlongoni and kolpat (Musa leaves) and wrapped tightly with a cloth and stored for fermentation. This preparation is kept away from all kinds of citrus plant species. It is a belief that this preparation can get spoiled when it comes into contact with citrus stuff. Approximately a week is required for full fermentation of rice beverage.

The procedure begins with the degradation of starch into sugars through microbial action, a process known as amylolysis. This is followed by the conversion of these sugars into alcohol through alcoholic fermentation carried out by yeast. Fermented rice beverage contains components like dietary fibre, nutraceuticals, and lactic acid bacteria, which can potentially alter the gut's micro-environment and generate metabolites. These metabolites may trigger the activation of the gut's neural network, transmitting information to the central regions of our brain. This, in turn, could stimulate the secretion of various neurotrophic factors, influencing the regulation of psychiatric disorders.

Table-1. The Following Table Shows Different Varieties Of Plant Products Used To Prepare Fermented Beverage (Sujen).

S/ No.	Plant name (Family)	Local name	Parts used
1.	Alpinia malaccensis Rosc. (Zingiberaceae)	Dubu-shining	Leaves
2.	Alternanthera sessilis. (Amaranthaceae)	Khutura	Leaves
3.	Allium sativum. (Liliaceae)	Nohoru	Bulb
4.	Ananas comosus. (Bromeliaceae)	Anaras	Bark
5.	Artocarpus heterophyllus. (Moraceae)	Kathal	Leaves
6.	Capsicum annuum. (Solanaceae)	Jolokia	Fruit
7.	Centella asiatica. (Apiaceae)	Mani muni	Leaves
8.	Costus speciosus. (Costaceae)	Jomlakhuti	Leaves
9.	Desmodium sp. (Papilionaceae)	Bonguti	Leaves
10.	Mussaenda roxburghii Hook.f.(Rubiaceae)	Peseka	Leaves
11.	Oryza sativa L. (Poaceae)	Dhan	Rice grains
12.	Psidium guajava L. (Myrtaceae)	Madhuri	Leaves
13.	Pteridium aquilinum. (Pteridaceae)	Bihlongoni	Fronds /roots
14.	Rubus sp. (Rosaceae)	Belipoka pat	Leaves
15.	Saccharum officinarum L. (Poaceae)	Kuhianar	Leaves
16.	Scoparia dulcis L. (Scrophulariaceae)	Bon dhonia	Leaves
17.	Solanum torvum Sw. (Solanaceae)	Bhekuri	Leaves
18.	Zanthoxylum oxyphyllum Edgw. (Rutaceae)	Tezmoi	Leaves
19.	Zingiber officinale Rosc. (Zingiberaceae)	Ada	Bulb

Socio-Cultural Importance

The Deoris possess extensive knowledge of fishing, which they view as a pastime rather than a commercial activity. Engaging in the trade of fish and fish-related products is considered culturally unacceptable among them. Their culinary traditions are characterised by the use of traditional food preservation methods and the utilisation of locally available resources, showcasing their ability to derive nutrition and express their culture from the natural environment. Their belief in the health benefits of fermented rice beverage and its potential as a remedy for various ailments may be linked to the medicinal properties of the plants used in starter cake preparation. According to Deori folklore, fermented rice beverage is thought to have health advantages such as boosting the immune system, lowering cholesterol levels, preventing gastrointestinal issues, and expelling intestinal parasites. Any celebration, whether it is a marriage or a religious ceremony or any other festival, is incomplete without fermented rice beverage among the Deoris. They also use it in their ancestor worship rituals.

The younger generation must gain access to the traditional wisdom that contains valuable insights for future generations. Consequently, there is a pressing requirement to make every possible endeavour to record, safeguard, and promote the utilisation of indigenous knowledge before it becomes too late for the well-being of humanity.

Fermented Rice Breverage And Human Health

Fermented rice beverage is prepared by fermentation of rice at the household level by the traditional methods and consumed by almost all members of the family and also offered to the friends and relatives during traditional cultural and religious festivals as well during some rituals. It is prepared by almost all tribes in Assam and other North Eastern states as well as in many states in India and all over the World. Deoris considered it as pure, good for health and wellbeing and part of their own culture. They have been consuming Fermented rice beverage since their existence and they learn the method of preparation from their ancestors. They were not aware of the scientific benefits of it.

Illegal commercialization, in many parts of Assam and other North Eastern states is getting popularity as the vendors get more earnings. They add some allopathic tablets to have more effect on the consumer. The traditional fermented rice beverage has many beneficial effects on human health when consumed in a controlled way. The unauthorised commercialised products have many harmful effects on human health. There is also risk of adulteration and contamination at the point of production and as well as during transportation. These items are sold in a very unhygienic environment. People who cannot afford branded liquor used to buy these beverages and suffer from ill health caused by the consumption of adulterated and or contaminated fermented rice beverage. Many of these ill health go unreported as these people may not visit a health care facility or even visit a health care facility and never disclose the information regarding consumption of fermented beverage from an illegal vendor.

The Mongoloid origin ethnic communities of Assam are well known for their skill in preparation of rice based beverage by the process of fermentation at household levels from the ingredients that are available at local level. The cereal based alcoholic beverages produced in different parts of the world have similarity with the rice based beverage of Assam, a North Eastern state of India (Aidoo et al. 2006). There many varieties of rice based beverage prepared by different communities / Tribes of Assam and these are – Haria (Tea Garden Communities)), Zu (Dimasa Community), Hor-olak (Karbi Community), Joubishi (Bodo Community), Apong (Mising Community), Laopani (Tiwa Community), Xaaj (Ahom Community), Sujen (Deori Community) and Choko (Rabha Community). (Deori et. al 2007). The alcohol content in fermented rice beverage varieties ranged from 9.41 to 19.33% (v/v) depending upon the preparation. The alcohol content is highest in Joubishi (19.33%).

Majority of tribal communities in the North eastern states practise their own ethnic culture. The ancient civilization used fermented foods in their diets without any kind of scientific knowledge. The fermented beverage is normally consumed during religious rites, festivals and ritual practices also as a refreshing drink after heavy manual labour. It is believed by

ethnic communities that rice based beverage contributes towards many health benefits provided it is consumed during socio-cultural events and accepted norms are followed. The mannobiose, sugar alcohol, organic acids, amino acids are starch products and beneficial compounds for the human body. Lactic acid bacillus and nutraceuticals in fermented beverage have many health benefits. The rice based alcoholic beverages have many medicinal properties (Bhuyan and Baishya, 2013). It is believed that mild consumption of fermented beverage enhances mental relaxation and many therapeutic values like - prevents anxiety, depression and stress without any reported side effects. The metabolic content of fermented beverage of Assam is – 18 saccharides, 18 organic acids, 11 sugar alcohol, 8 amino acids, 1 vitamin and many nutraceuticals (Das et al. 2019). Fermented beverage is also related to the traditional healing remedies of tribal communities. Fermented beverage and natural brews are not considered as dangerous to health.

Medicinal Benefits

Gastro intestinal infection is reduced by rice based beverage when socially accepted norms are followed (Ray et al. 2016). The antioxidant activities of fermented beverage vary from 1.94 to 4.14 mg Ascorbic Acid per millilitre of rice beverage. The free radical scavenging activities vary from beverage to beverage. The free polyphenols contribute to the antioxidant properties of rice based beverage. The Lactic acid bacillus (LAB) plays an important role in the process of fermentation and also acts as a probiotic (Amara & Shibl 2015). The higher content of probiotics in fermented beverage improves digestion. Probiotics derived from cereals have been associated with reduction of Diabetes, hypertension, coronary artery disease, overweight, gastrointestinal diseases including colon cancer (Bergert et al. 2014). The probiotic enhances the growth of beneficial bacteria in the GIT of human and the products of the beneficial bacteria prevents many diseases or condition- antibiotic associated diarrhoea, non-alcoholic fatty liver disease, colitis, constipation, hepatic encephalopathy, food borne illness, hypercholesterolemia and colorectal cancer.

It has been proven that there is a bi - directional link between intestine and brain involving neurological, metabolic, hormonal and immunological signalling pathways (Kim et al. 2014). Fermented foods help to control dyslipidaemia, Cancer, boost immunity and longevity (Sekar and Kanadev et al. 2002). The combination of prebiotics and probiotics have been shown to alleviate psychiatric diseases – Panic disorder, generalised anxiety disorder, severe depression and Irritable Bowel Syndrome (Pusceddu et al. 2018). The Organic acid present in fermented beverage such as Acetic Acid, Butyric Acid, Propionic Acid and Lactic Acids have strong antimicrobial action and also promotes the health of the Gastrointestinal Tract (Tanaka et al. 2016).

The common cells present in the GIT produce SCFAs by utilising melibiose, cellobiose, and mannobiose in the rice based beverage. SCFAs protect the GIT from different microorganisms (Gibson et al. 2016). Xylitol sugar in fermented beverage as a laxative effect (Makinen, 2016). The physovenine present in fermented beverage is Acetyl Cholinesterase (AchE) inhibitor used in treatment of Alzheimer's disease (Hostettmann et al. 2006). Fermented food products are a good source of peptides and amino acids required in cell metabolism (Mazumdar et al. 2016). Quinoxaline, carboxamide and oxazolidin available in fermented beverage are used in management of hypertension. The saccharides, Amino Acids, Vitamins and other secondary metabolites detected in fermented beverage are linked in cell metabolism.

Health Risk

As it contains alcohol ranging from 9.41 to 19.33% (v/v), when consumed beyond culturally accepted limits may contribute to health risk as associated with other forms of alcohol. Regular or Excessive or heavy drinking of fermented beverage may pose danger to human health and will contribute to all harmful effects of alcohol.

Those who consume regularly may land up in dependency. As there is no scientific system to control the amount of alcohol, the concentration of alcohol may vary from person to person. There is risk of contamination during the preparation and storage of fermented beverage and may have harmful effects on the body. Illegal production and sale of rice based beverage may bring more danger to human life.

It may contribute to all ill effects of alcohol because of misuse or abuse like- fall and injury to body parts, road traffic accidents, domestic violence, dependency, neurological disorder, liver diseases and cancer, gastro intestinal disorder, reduced physical activity, malnutrition, suicides, family disharmony, loss of job, loss of earning etc.

CONCLUSION

Fermented rice beverage holds cultural significance among the Deoris of Assam, serving as a symbol of tradition, hospitality, and social unity. Moderate consumption may offer some health benefits; while potential health risks are associated with excessive alcohol consumption. Striking a balance between preserving cultural heritage and ensuring public health is crucial for the Deori community and the wider society in Assam.

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