

## INTRODUCING *TUAK*, THE TRADITIONAL ALCOHOLIC BEVERAGE OF THE DAYAK MUARA TRIBE IN KALIMANTAN, INDONESIA: GASTRONOMY IDENTITY UNVEILED

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### KEYWORD

Tuak, Dayak Muara, gastronomy identity

### ABSTRACT

This research explores the potential of the traditional alcoholic beverage "Tuak" from the Muara Dayak Tribe in Pelindu Village, West Kalimantan, Indonesia, as a gastronomic tourism attraction. Drawing upon the Gastronomy Identity Model and qualitative descriptive methodology, the study delves into seven key components: flavor profiles, etiquette, recipes, fusion of ingredients and techniques, classic wine and food marriage, climate zones, and old and new world styles. Findings reveal that Tuak not only serves as a cultural and social symbol within the Dayak Muara community but also showcases unique production methods, knowledge transmission, and cultural essence. The study emphasizes the importance of considering Tuak as a potential culinary tourism product, contributing to the preservation of Indonesia's rich culinary heritage, and promoting sustainable livelihoods. Additionally, it highlights the challenges related to accessibility and infrastructure in the region, suggesting the need for further development to unlock Tuak's full gastronomic tourism potential.

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### INTRODUCTION

Culinary experiences are more than only about nourishment; they also represent cultural identity (Baskoro, n.d.). Indonesia is noted for its cultural richness, as it has over 1000 languages and ethnic groups. Its diverse terrain, which stretches from Sabang to Merauke, also produces a range of natural resource characteristics, enhancing the variety of people's lifestyles. Food has become one of the most popular components of cultural tourism, since it is now recognized as a means of expressing one's identity and culture (Balkin, 2017). Within Indonesian culinary culture, it represents cultural traits derived from the nation's indigenous knowledge and values (Gastronomi, 2021). Food, known as '*upaboga*' in the archipelago, is more than just nourishment; it is a type of gastronomy that includes information about food, drinks, and the creative aspects of choosing, cooking, serving, and enjoying them (Rahman, 2021).

The cuisine of the archipelago is a manifestation of regional brilliance, a legacy and the honor of our forefathers that must be preserved. As a national identity that is intrinsic to Indonesian culture, our food needs to be promoted and introduced in order to preserve this rich tradition. Through promoting independent wealth, this gastronomic development seeks to

provide Indonesians with a sustainable standard of living. Gastronomy, taken more broadly, includes the material and cultural processes that turn food and drink into consumables. It includes everything from food production and the political economy of food to food treatments, storage, transportation, processing, cooking, meal preparation, and manners. It also explores the physiology, food chemistry, digestion, and conventions and traditions related to food choices (Santich, 1996, p. 2 in (De Jong et al., 2018)).

Through a niche type of travel called "gastronomy tourism," Indonesian cuisine has the ability to enthrall people worldwide. Food-related elements are highlighted by gastronomy tourism, which includes trips to sites linked to food production and the customs of local consumption. This involves taking part in cultural activities related to the cooking process, such as cooking a special dish or tasting the many stages that go into making a particular dish (Visković & Komac, 2021). Taar (2014) and (Balkin, 2017) argue that not all foods are suitable for gastronomy tourism. Three approaches should be taken into account a) gastronomy is a heritage passed down through generations of cooks and requires meticulous preparation; b) gastronomy is the study of the physical features of foods (such as quality) in order to gain a better understanding of the processes that occur during food consumption; c) gastronomy entails explaining the history and importance of a dish.

Gastronomy tourism is a specialized type of interest-driven tourism that prioritizes tourist quality and experience in connection with diverse tourism products. There are tangible and intangible components to these items. The tourism industry is mostly a service sector, providing a wide range of enterprises and products, including accommodations (hotels), travel agencies, tour guides, and restaurants, as well as spas and tourist attractions. Attractions are vital in attracting tourists in this varied tourism landscape.

There are many different kinds of tourist attractions that offer a variety of experiences catered to the interests of visitors, such as gastronomy tourism. Gastronomy tourism, in particular, is a one-of-a-kind attraction that provides insights into a region's native foods and beverages. This type of tourism focuses on providing travelers with high-quality, immersive experiences that allow them to have a thorough understanding of the values and character inherent in traditional Indonesian cuisine. Based on Kivela and Crofts at (Putra, 2019), gastronomy encompasses culinary components such as meals and food preparation methods that focus not only on food but also on beverages supplied at a tourist destination.

*Tuak* is a representative of Indonesia's varied range of beverages, with traditional production methods still used today. *Tuak* is a popular indigenous alcoholic beverage in Indonesia, with different varieties and flavors available in each province. *Tuak* Batak in Sumatra and *tuak* in Java are two examples, with variations in Kalimantan, Bali, Sulawesi, West Nusa Tenggara, and Papua.

**Table 1**  
***Tuak in Different Locations of Indonesia (Data Analysis, 2023)***

<b>Originis</b>	<b>Description</b>
Batak Toba, North Sumatera (Fentiana, 2019)	Batak Toba's constituents include coconut or neera stem and raru yeast ( <i>Saccharomyces</i> ). Tuak Batak Toba embodies two local knowledge values: a) it provides health benefits such as improved energy and body rejuvenation, and b) it promotes communal closeness, bringing people closer together. Tuak Batak Toba is traditionally served in glasses with special drinking etiquette. It is popular among farmers and is frequently served with tambul (wild boar meat, snake, dog, and lizard either cooked in soup or fried). Drinking is a social activity that is commonly done with others and may include playing the guitar and having lively conversations. Individuals usually consume 3–4 glasses of Tuak Batak Toba in a single drinking session.
Lamongan, East Java (Natadjaja & Yuwono, 2023)	The main ingredient in this tuak is palm fruit. Sugar palm water ( <i>legen</i> ) is kept overnight and combined with babakan or juwet leaves. Tuak is served in centhak (bamboo glass) and is typically taken by males till they are drunk while dancing to Tayub dances performed by Tayub dancers, who are mainly women, following the wedding ceremony. When a man receives a scarf ( <i>ketiban sampur</i> ) from a female dancer, he will offer money to the Tayub dance, also known as saweran, and insert it into the woman's inner clothes. This tuak was consumed with bamboo ( <i>Bethek</i> , <i>Centhak</i> , and <i>Ongkek</i> ). The drinking etiquette is to drink in centhak while dancing Tayub.
Dayak Pesaguan Tribe, West Kalimantan (Pahlawan, 2022)	Ingredients of this <i>tuak</i> is Paddy, Neera, or other fruits, etc. The local wisdom value of this <i>tuak</i> are a) Ethnic symbolic to as permission from ancestor and <i>tuak</i> pour over the soil along with prayers “ <i>tuak tumpah manok mati</i> ” for the success of certain event; b) In ethnic wedding ceremony, <i>tuak</i> as the representative of brotherhood, mutual affection, helpfulness, caring one to another in the household while facing difficulties; and c) For society, <i>tuak</i> has its function as the tools for socialization (Harisan, 2020). The <i>tuak</i> was consumed with Buffalo Horn. The drinking etiquette is 4 people sit in circle and all should drink in one shot <i>tuak</i> given inside buffalo horn.
Dayak Simpaking, West Kalimantan (Ismunandar & Tindarika, 2022)	The ingredients of this <i>tuak</i> was made from glutinous rice. Ethnic Wedding Ceremony, there are 3 main rituals, Munityokng tirual, miak baya ritual and ngalu ritual. In in these rituals, <i>tuak</i> use differently. In Munityokng ritual, there is Batirok <i>Tuak</i> ritual, give the <i>tuak</i> to ancestor spirit so they will bless the wedding ceremony held for 3 days. ( <i>Setungkokng Ulok Palomak</i> (a cup filled with chicken liver, pork and <i>tuak</i> ), hang in front of the door to send the message to ancestor and god ask for blessing. In Ngalu ritual, <i>tuak</i> serve with other food as honor for bride. In <i>Ngadap Domong Daboking</i> , <i>tuak</i> and sacred water place in bowls and covered with leaf mat and covered with white fabric. There will Tari Bataja performed after rituals held.
Dayak Ngaju, Central Kalimantan (Aditya, Wulandari, & Aryani, 2023)	<i>Tuak</i> Dayak Ngaju consumed in several local parties. There are Hadar Marriage Path, 17 conditions must be fulfilled from groom to marry the bride: <i>Palaku</i> , <i>Saput</i> , <i>Clothing</i> , <i>Sinjang Entang</i> , <i>Lapik Luang</i> , <i>Tutup Uwan</i> , <i>Garantung Kuluk Pelek</i> , <i>Bulau Singah Pelek</i> , <i>Duit Lapik</i> , <i>Ruji</i> , <i>Lamiang Turus Pelek</i> , <i>Waist Pananan Pahinjean Kuman</i> , <i>Rapin Tuak</i> , <i>Timbuk Tangga</i> , <i>Duit Turus</i> , <i>Bulau Ngandun or Panginan Jandau</i> , <i>Juntung Amak</i> , and finally <i>Batu Kaja</i> . As 12 <sup>th</sup> requirements, <i>Rapin Tuak</i> is alcoholic beverage made directly by the people in Central Kalimantan. If one of the 17 condition failed to fulfill, the marriage can be cancelled.
Bali (Suwena,	Ingredients for <i>tuak</i> from Bali are Aren or Enau tree or people known it as kolang kaling tree. <i>Tuak</i> from Bali has a local wisdom value that called Metabuh. Metabuh (prayer and

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2017)	offering), given to god/Ida Sang Hyang Widhi Wasa, as compliment in mecaru ceremony (sacred offering to Bhuta kala) in order to create harmony between human and universe. This <i>tuak</i> was consumed with glass and drinking in corners or stalls in village as activity of unite the people in their social life.
South Sulawesi	This <i>tuak</i> was made from Lontar Tree Sap. It is called Ballo. Local people of South Sulawesi consume this <i>tuak</i> with bamboo.
East Nusa Tenggara	This <i>tuak</i> has ingredients from Tandan (Big stem of trees lik enau or palm, banana and others). The local wisdom value of this <i>tuak</i> is from the technique. The technique only passed down among people thet born and live in Flores. Symbol of brotherhood and honors. Called <i>Moke</i>
Papua	<i>Tuak</i> from Papua also known as Swansrai, this is mean a symbol to welcoming guest.

*Tuak* is a fermented drink made from rice and fruit that contains sugar. Aside from rice, some wine is manufactured from sap from coconut trees. *Tuak* is a traditional alcoholic drink that is consumed on a daily basis. There are those who eat it every day because it is part of the community's culture; those who sell it; and those who only serve it at traditional occasions or people's gatherings, such as Kalimantan's *Tuak* Sticky Rice, particularly the Muara Dayak Tribe. *Tuak*, a traditional beverage, in the process of creating and serving it, can be an indication of the values and character of Indonesian society due of its rich culture.

*Tuak* is a traditional alcoholic beverage that is still made using traditional ways, with a variety of production processes and local consumption patterns. It is inextricably linked to cultural events in several regions of Indonesia, symbolizing the cultural diversity of each community. This component has been highlighted as having tremendous potential to develop into a prominent culinary tourism product in Indonesia.

*Tuak's* potential is then studied and analyzed across multiple dimensions in order to promote it as a tourist attraction. These elements include attractions, facilities, and accessibility. In terms of attractions, *tuak* will be examined to better understand its production process, knowledge transmission from generation to generation, and cultural significance. This analysis serves as the framework for this research, which seeks to investigate *tuak* from the Muara Dayak Tribe as a prospective gastronomic tourism attraction in Indonesia by evaluating its attractions, facilities, and accessibility.

Gastronomic tourism in Sikka is an example of a successfully advertised and operated *tuak* gastronomy tourism attraction. On November 14, 2021, the digital media site kumparan.com stated that Sikka's *tuak* culinary tourism has successfully attracted high-quality foreign tourists. This tour provides *tuak* gastronomic tourism attractions to its customers. Participants enjoyed *Moke*, a traditional palm wine cocktail. *Moke* is the name of the characteristic Maumere palm wine produced in Habi Village, Kangae District, Sikka Regency, East Nusa Tenggara Province.

Palm trees are used to make *Moke*. This traditional alcoholic beverage represents hospitality and fellowship and is an essential aspect of local traditions. The production process is historic and has been passed down through generations. The production procedure takes about 4 hours and consists of two stages: heating and distillation. The cooking phase uses a fire stove and an earthen pot, whilst the condensation and distillation process uses a series of big bamboo containers. Adding a longer bamboo tube to the clay pot's mouth is thought to improve the quality of *Moke*.

This one-of-a-kind production technique, highlighted during *Tuak* gastronomy tourism in Sikka, has been passed down through generations and serves as a focus point for visitors. Tourists are welcome to join in the *Moke*-making process, which includes everything from collecting raw materials like sap or palm oil to distillation. The experience and cultural knowledge incorporated into *Moke* are the key gourmet draws. The local community and the location were painstakingly planned during both the preparation and execution phases. This entails educating local populations and establishing the required infrastructure and access for tourists, all while keeping the original local flavors and values that define the town.

In regard to the previous description, *tuak* stands out as one of the traditional alcoholic beverages that is still made using traditional methods, featuring a variety of production processes and local consumption patterns. It is inextricably related to cultural activities in every region of Indonesia, serving as a symbol of the cultural diversity that exists in each community. *Tuak* has been identified as a potential player in Indonesia's gastronomic tourism sector.

*Tuak's* potential as a tourist attraction is thoroughly investigated and analyzed across numerous dimensions, including attractions, amenities, and accessibility. In terms of attractiveness, *tuak* is examined to better understand its manufacturing method, knowledge transmission from generation to generation, and cultural significance. This serves as the framework for a study with the goal of investigating *tuak* from the Muara Dayak Tribe as a prospective gastronomic tourism attraction in Indonesia, focusing on the components of attractions, facilities, and access.

This study examines palm wine as a traditional alcoholic beverage from three perspectives, using a gastronomical theoretical framework. Traditional alcoholic beverages are more than just drinks with specified alcohol content; they serve a variety of functions and have cultural value in society and ethnicity, with origins dating back to antiquity. These responsibilities include participating in religious rites, cultural celebrations, and acting as symbols for everyday activities. Three unique qualities distinguish traditional alcoholic beverages from other commercially produced drinks (Serfiyani, Hariyani, & Serfiyani, 2020).

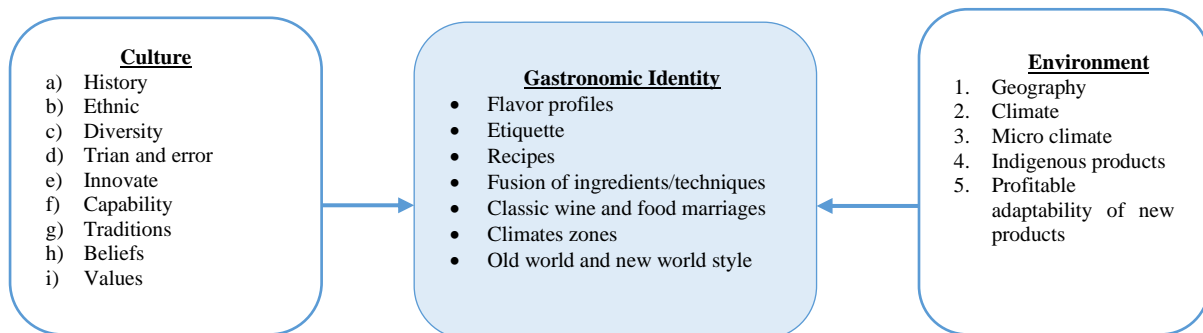
**Production Methods:** Unlike manufactured alcoholic beverages, it is not made from a blend of chemicals. It employs only natural substances and allows microorganisms to develop organically over time. There are two main production methods:

- a) Fermentation is a natural process in which microorganisms like yeast and helpful bacteria convert carbohydrates (starch and sugar) into alcohol or acid. The fermentation process for foods and beverages promotes the growth of probiotic microorganisms that are helpful to humans. The stages involve selecting raw ingredients, sterilizing, cultivating yeast, and ensuring fermentation is complete. Fermented beverages that create alcohol include barak and *tuak* from Indonesia, makgeolli from South Korea, sake from Japan, wine from France, and lower-alcohol beverages such as legen and kombucha tea. This procedure produces alcohol with a minimum of 3% and a maximum of 18%, which is lower than distillation.
- b) Distillation is a procedure used to raise the alcohol content of fermented products by isolating ethanol and increasing the alcohol concentration to between 29% and 50%. Distillation is the simplest and most economical method for beverage combinations that contain components with varying boiling points. Examples include *tuak*, *arak*, *anding*, *sopi*, and *Moke*.



- c) Knowledge of industrial methods is passed down from generation to generation among distinct groups of people in certain places. The recipe, production methods, and drinking containers are only shared by people who were born and raised in those areas, and they use locally sourced ingredients.
- d) The creation of the traditional alcoholic beverage is based on cultural essence, with all cultural values and benefits passed down from ancestors to the current generation. Values are shared among specific areas' societies and may differ from one to the next, based on the values that are most important to them. Typical shared ideals include brotherhood, harmony, surrender to the universe, and many more.

The gastronomic identity of tuak will be defined in this study using the Gastronomy Identity model presented by Harrington (2015) at (Putra, 2019). According to Harrington, the identity of cuisine in a given location is impacted by two important elements: the environment and culture, as seen in the image below (Putra, 2019).



**Figure 1**  
Gastronomy Identity Model (Harrington, 2005; (Putra, 2019))

Moreover, the concept of gastronomy tourism has evolved by embracing cultural practices and includes learning from ethical and sustainable values of a region, land, sea, local history, values and cultural heritages (UNWTO, 2017). Learning this *tuak* as gastronomy tourism will determine the quality of the tourist experience at a destination, the experiences will be the main attraction and the entertainment (Harp and Sharples in (Putra, 2019)).

## METHODOLOGY

This study uses a qualitative descriptive technique to investigate and comprehend the issues at hand (Sugiyono in Andjanie et al., 2023). Primary data were acquired directly from one of the Muara Dayak tribe's active *tuak* production communities, while secondary data were sourced from several *tuak*-related studies. Informants were chosen using a purposive sampling technique with specific criteria in mind, such as informants who have been making *tuak* for generations, still follow ancestral recipes, use the same ingredients and tools as their ancestors and parents, and can effectively answer questions.

In this study, data was collected using a variety of methods, including interviews and documentation. Interviews were done in an unstructured fashion with two informants in this study: Mrs. Angela (45 years old) and Mr. Tarsisius Tapang (44 years old). The acquired data

was then reviewed using the Miles and Huberman technique, which consisted of three stages: data reduction, data display, and conclusion generation. The highlighted themes were examined utilizing the framework and indicators from Harrington's Gastronomy Identity Model (Putra, 2019). The results of this analysis will elucidate how the identity of the traditional alcoholic beverage *tuak* from the Muara Dayak tribe serves as a gastronomy tourism attraction in Indonesia.

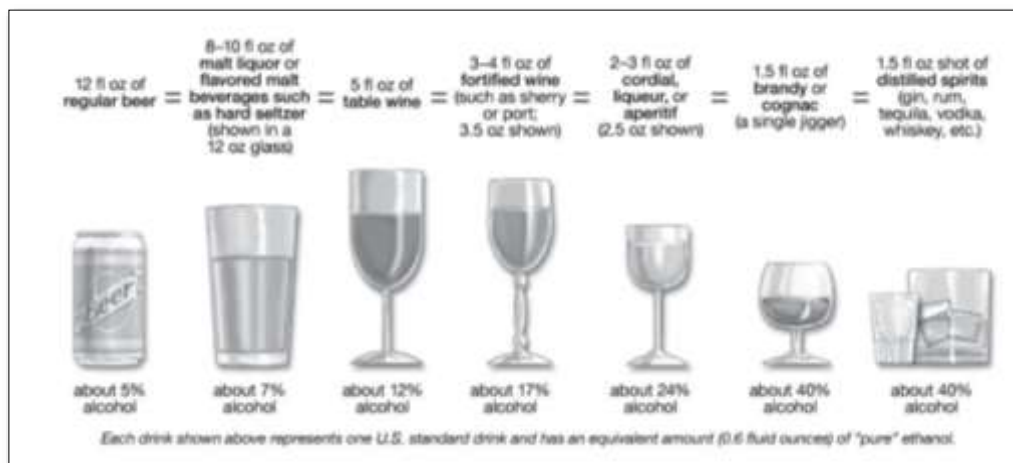
## **RESULTS AND DISCUSSION**

The findings of this research are presented in accordance with the Gastronomy Identity Model (Harrington in (Putra, 2019)) regarding the *tuak* of Dayak Muara in Pelindu Village. Located in West Kalimantan, this village can be accessed by passing through Muarallai Village, Beduai subdistrict, and Sanggau district. The village is quite challenging to reach due to its remote location. The road conditions are still unpaved and muddy. Additionally, the journey takes several hours because the roads are undeveloped. Limited public transportation is also one of the reasons for accessibility difficulties in this village, highlighting the need for serious infrastructure development.

This village is inhabited by the Dayak Muara ethnic group, which still produces palm wine using traditional methods. In examining the palm wine of this community, the Gastronomy Identity Model is employed as its framework, dividing its identity into seven components. The gastronomy identity of *Tuak* in Dayak Muara, Kalimantan, is determined by two elements: environment (geographic and climate) and culture (history and ethnicity). Based on these elements, here are the gastronomy identity examinations for *Tuak* Dayak Muara.

### **a. Flavor Profiles**

Flavor is closely associated with the five basic flavors that the human tongue could sense, which are sweet, salty, bitter, sour, and umami. Both food and beverages, including alcoholic beverages, have their own unique flavor profiles. *Tuak* is one example of an alcohol beverage that contains alcohol as the result of the fermentation of glutinous rice and yeast. *Tuak* is an alcohol beverage that contains alcohol (ethanol) and usually contains 4–20% (Hermansyah, Novia, Minetaka, & Satoshi, 2015) of alcohol. In line with the result of research from (Aryasa, Artini, & Hendrayana, 2019), *tuak* contains 4% alcohol (ethanol). Based on past research, *Tuak* has increased its alcohol content the longer it stays. It was reported that from days 1 to 5, the increases were 8,1512 %; 8, 234%; 9,117 %; 10,6214%; and 11,615% (Pradnyandari, Dhyana Putri, & Jirna, 2017); (Aryasa et al., 2019). Based on the National Institute on Alcohol Abuse and Alcoholism, *tuak* has an alcohol content between beer, wine, and liqueur.



**Figure 2**  
Alcohol Content (Niaa, 2023)

Flavor profiles of beer and wine usually follow the ingredients used in their making, besides the fermentation of malt or grapes. Carbohydrate is the main supporter for alcohol production because the main principle of fermentation is the degradation of starch components by enzymes (Sa'id, 1987; (Berlian & Aini, 2016)). According to (Berlian & Aini, 2016), the result of fermentation from ingredients containing carbohydrates such as rice, glutinous rice, corn, and cassava can be utilized as staple ingredients to make *tapai* or *tape* that contain alcohol. According to He et al. in (Xu et al., 2021), microbiological-based fermentation results in distinct flavor, rich taste, and exquisite sticky texture, and moreover, it increases the nutritional values and physiological activity of food.

Fermented food, especially fermented grains such as red mold rice, fermented glutinous rice, natto, etc., undergoes a fermentation process that improves the free amino acid content, which could have health benefits. Jui Niang in Chinese, also known as sweet fermented glutinous rice, is a very popular traditional solid-state fermented product where white glutinous rice with high amylopectin is used as the raw material. Jiu Niang and *tapai*, or *tape*, are similar products made from fermented white glutinous rice, while *tuak* is the liquid result of the fermentation of glutinous rice, and yeast, a microbial substance, or another substance also mentioned is rice leaven. Most species of yeasts are able to ferment sugar into ethanol (Barnet, 2003). Yeast evolved to better metabolize various sugars into alcohol, and Theodor Schwann, a pioneer of fermentation science, classified this organism as a sugar fungus (*Saccharomyces*) in 1836 (Smith, 2012; (Raihofer, Zarnow, Gastl, & Hutzler, 2022)). The amount of amino acid in Hong Qu glutinous wine results in various tastes such as astringent and bitter (Sakandar, Hussain, Khan, & Zhang, 2020), which, like all fermented alcohol-based beverages, some of them have a sweet or sour taste.

In Indonesia, fermented glutinous rice is a common food that results in a sour, sweet, and bitter taste and is usually consumed as a solid substance, while *tuak* is the beverage because it comes from the liquid of the fermentation result of white or red glutinous rice. The color is based on the color of glutinous rice. It fermented using the yeast available in the local area, and the ingredients were simply glutinous rice and yeast. Because of natural processes, *tuak*'s color could change to blackish, change flavors, become non-toxic, and turn



into even more sour. Once it reaches this stage, Dayak Muara people will use it as vinegar for their cooking, such as *rujak* (pickled sour vegetables or fruits).

#### **b. Etiquette**

Based on the conducted interviews, the tradition of drinking *tuak* is deeply ingrained within the Dayak Muara society. In the *tuak* consumption process, the Dayak Muara community typically reserves it for special occasions. *Tuak* is considered mandatory during these events, requiring local residents to have *tuak* available in their homes. Notably, it is customarily made for significant celebrations such as Christmas, Gawe (Paddy Party), and various other important occasions.

*Tuak* also holds a special place as an essential beverage during wedding ceremonies among the Dayak Pesaguan, as documented by (Pahlawan, 2022). In Dayak Simpaking, it is included in offering alongside the Tari Bataha performance (Yuliani, Ismunandar, & Tindarika, n.d.), and in Dayak Ngaju, it is one of the 17 conditions for a wedding ceremony (Aditya et al., 2023). *Tuak* Dayak Muara serves as a beverage during cultural events like community festivals, weddings, and other ceremonies. However, despite its association with traditional events, *tuak* is also commonly consumed in everyday life. In the context of Dayak customs, there are specific guidelines for consuming *tuak*, particularly during events like weddings and funerals.

(Pahlawan, 2022) revealed that during traditional events, *tuak* is poured onto the ground with the request for permission, accompanied by the customary phrase “*Tuak tumpah manok mati*” translating to “*tuak* spills, and the chicken dies”. This signifies a request for permission from the ancestral spirits to conduct a ritual or customary event and a plea for the smooth progression of the ceremony. Importantly, *tuak* is consumed during these events using buffalo horns instead of regular glasses.

*Tuak* Dayak Muara is made not only during important events but also during leisure time or during rainy seasons when the temperature drops. *Tuak* will be consumed together for warming body and as a tool for socialization among the people in the village (Harisan, 2020). The other way to enjoy *tuak* is that usually Dayak Muara society will drink *tuak* along with a traditional dish known as *kabas* made from extreme wild animals such as snakes, dogs, and pangolins. This eating and drinking culture can be found in the local food stall known as *amboyo*.

#### **c. Recipes**

The recipe for *tuak* in Indonesia is highly diversified, as this traditional alcoholic beverage is obtained from a variety of plants, some of which are created from rice and others from the sap of the enau tree. *Tuak* is primarily made by fermenting white or black glutinous rice, and the true origin of the Dayak people's knowledge of *tuak* fermentation technology is unknown. This procedure has evolved into a centuries-long tradition (Endika, 2014).

Specifically, the Dayak Muara community in Pelindu Village produces *tuak* from white glutinous rice rather than the enau tree. The Dayak Muara group makes *tuak* from white glutinous rice combined with yeast. According to interviews, the rice-to-yeast ratio is established by the size of the fermentation vessel rather than traditional measurements. The community frequently uses *tuak* yeast to ferment their rice.

In the Dayak Muara community, clas jars are often used to ferment rice. The traditional way of measuring yeast is to gradually sieve it onto layers of sticky rice in the jar. The rice

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is added gradually, layer by layer, to the jar, and the yeast is sifted until it completely covers the rice. This process will continue until all of the glutinous rice is used. Menstruating women are not supposed to contact *Tuak* during the manufacturing process. According to their tradition, if a menstrual woman touches *tuak* during the production process, it may fail to ferment or acquire a disagreeable taste.

**d. Fusion of Ingredients/Techniques**

*Tuak* Dayak Muara uses traditional methods and tools. *Tuak* found on Kalimantan Island, including *tuak* Dayak Muara, are made from the same main ingredient, which is glutinous rice. There are two kinds of glutinous rice: white and red. White *tuak* is made from white glutinous rice, while red *tuak* is made from red glutinous rice and has a slight reddish color. Here is the traditional practice of *tuak* Dayak Muara making: [1] cleaning; [2] *aron*; [3] cooling; [4] yeast sprinkle and layering; [5] fermentation; [6] extracting, based on the figure below.



**Figure 3**

Cleaning The Rice in The River (Personal Documentation, 2023)

River in Pelindu Village is the place to clean the glutinous rice as the main ingredient of *tuak* Dayak Muara.



**Figure 4**

*Aron* (Personal Documentation, 2023)

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Cleaned glutinous rice inside the pot made from heavy materials, cooked in water, and stirred (*aron*) the rice until the water was absorbed. Cook over the traditional pot over firewood.



**Figure 5**

Natural Yeast Sprinkle and Layering; Fermentation (Personal Documentation, 2023)

Pour the hot sticky rice on the banana leaf and let it cool. After the sticky rice cools down, put one layer of sticky rice into a traditional vessel called a *tempayan*, sprinkle natural yeast (from cassava, *tapai*, or *tuak*), and put another layer of sticky rice in. Repeat the process until all the batches are finished. Then close the *tempayang*.



**Figure 6**

Extracting; Fermentation (Personal Documentation, 2023)

The fermentation process to create alcohol content inside *tuak* will last a minimum of 2 weeks to 1 month. The next process is to squeeze the fermented sticky rice inside the tools called *anual*, which are made into carpet by weaving the wood fiber taken from the surrounding forest and *apiat* (the wood above).

Fermentation is not a new technique in the world of beverage making. Fermentation occurs naturally in the ripeness of fallen fruit and is a controlled process that turns malt into alcohol. The development of a more controlled fermentation process driven by the reliable supply of suitable grains approximately began between 9.500 and 6.00 BC, during the time humans founded the greater place to settle in the fertile crescent in the Middle East area,

along the Nile River in Africa, and in the flood plains of the Yellow and Yangtze Rivers on the Chinese mainland (Raihofer et al., 2022). According to Supriyadi in (Lestari, Bahri, & Purmintasari, 2019), the existence of gold was one of the major reasons for the main migration of Chinese people to West Kalimantan at the end of the 18<sup>th</sup> century. Besides the knowledge of cropping known by the local Dayak people, who are the descendants of the Weddoid and Negrito tribes and have occupied Kalimantan since 8.000 BC. While their main occupation at that time was hunting, it shifted slowly into cropping, and Chinese people who migrate there have also shifted from traders into paddy, vegetable, and pig farmers since the 1820s.

The interaction between Dayak and Chinese people inherited many cultures and knowledges, including the alcohol tradition, especially wine. Wine is part of Chinese culture because there are many stories about the drunken god or wine used to make Chinese traditional medicine called *tajok* or *pujok*. *Tuak* is also one of the fusion results of techniques using local ingredients such as white glutinous rice as the source of local crops, the usage of local traditional tools such as traditional pot, *tempayan*, *annual*, and *apiat*, and the knowledge of techniques from China about fermentation using microorganisms called yeast to create a fermentation-based beverage that contains alcohol.

#### **e. Classic Wine and Food Marriage**

*Tuak* is a kind of alcohol beverage made from fermenting white or red glutinous rice. The more it fermented, the stronger and more bitter the taste. Since *Tuak* Dayak Muara is still made in a traditional way, the taste, smell, and color change over time. The leftover *tuak* was usually kept, which can be used as the yeast starter for another *tuak* or it can be used as vinegar if *tuak* is kept for months and the quality degrades and turns the color a bit darker. This *tuak* vinegar can be used to make local mixed fruit or vegetables known as *rujak*. *Tuak* is made not only during important events but also during leisure time or during rainy seasons when the temperature drops.

There is a concept of food pairing, when two foods or food and beverage are consumed together, creating a better sensory experience than when consumed alone (Lahne in (Raihofer et al., 2022)). The food pairing concept is currently common for wine, beer, coffee, and tea. Food pairing with wine represents social status, while food pairing with tea or coffee happens on a daily basis. *Tuak* Dayak Muara as alcoholic beverage is the tool for socialization, it will be consumed together for warming body and as a tool for socialization among the people in the village (Harisan, 2020). The other way to enjoy *tuak* in Muara, usually Dayak Muara society will drink *tuak* along with a traditional dish known as *kabas* made from extreme wild animals such as snakes, dogs, and pangolins. This eating and drinking culture can be found in the local food stall known as *amboyo*.

#### **f. Climates Zones**

Based on wine cultivation, it is more efficient in warmer regions and during warmer periods of the year because the sugar content of the grapes increases with a warmer climate. While brewing beer in a warm climate is more difficult because fermentation proceeds faster and is uncontrollable, the risk of spoilage increases and shelf life decreases. Brewing in ancient times relied on climate and temperature and also spontaneous fermentation before the centralization of brewing and cooling strategies (Raihofer et al., 2022).

*Tuak* in Dayak Muara still made in traditional way, which adapt the similar pattern as the ancient method which still depend on the current climate and temperature. West Kalimantan as a whole, located on the equator has relatively hot temperatures and high humidity because of the dense rainforest on the most of the island. Based on the report on 2023, the average highest temperature in all region in West Kalimantan is 33,28 oC, and the lowest average temperature is 22,51 °C (Helda & Wijayanto, 2023). Most *tuak* in Indonesia is still made in traditional ways, which means *tuak* is fermented at room temperature according to the temperature on the day it is made. Unlike the factory, where the temperature can be controlled and conditioned, (Pradnyandari et al., 2017) stated in their research that the room temperature is 24–30%, which was used as the condition for the sample of *tuak* from the palm.

#### **g. Old World and New World Style**

The use of this traditional alcoholic beverage in ancient times provides insight into the ‘Old World’. The consumption of palm wine (*tuak*) in Indonesia dates back to the reign of Kertanagara in 1293. According to Kertanegara, King Singasari died after drinking '*tuak*,' which is a ritual rite in Tantric Buddhism. This notion is related to obtaining the ultimate objective of Tantric Buddhism teachings, which is to gain Sunyapramandha, or the level of life as the immortal Adibuddha, or the highest happiness (paramananda), through the ingestion of '*tuak*' (Prodjosantoso et al., n.d.).

During the Dyah Balitung era, *tuak* was represented in *wayang* or mask performances. Many kingdoms detailed how individuals in that era distilled '*tuak*' from hanging coconut flowers, with the resulting liquor described as pleasant and intoxicating (Prodjosantoso et al., n.d.). Drinking '*tuak*' in the archipelago has a long history, stretching back hundreds of years, and may be found among the Batak Toba, traditional communities in Bali, Minahasa (Prodjosantoso et al., n.d.) and, of course, among the Dayak people. The technique of consuming '*tuak*,' whether among the Dayak Muara or in other locations, is essentially the same: as a beverage provided during traditional or specific events for varied objectives.

On the other side, the ‘New World’ of *tuak* represents a shift and modernization in how society today enjoys the beverage. The Dayak Muara community now enjoys '*tuak*' not only on special occasions but also in their daily lives. According to one report, in Pelindu Village, there is a particular kiosk that serves '*tuak*' alongside other local foods. In North Tapanuli, the lifestyle consists of gathering at 'lapo' (a '*tuak*' stand) for talking, playing games like karu, singing, and consuming '*tuak*' every afternoon, frequently combined with meals such as fish or meat, locally called 'tambul'. The Batak Toba community believes that creating and consuming '*tuak*' brings health benefits that are related to the chilly climate of the North Tapanuli region, driving people to drink '*tuak*' to warm their bodies. They also feel that '*tuak*' is beneficial to new moms and those nursing (Firmando, 2020).

## **CONCLUSION**

Finally, this study focuses on the gastronomic character of *tuak*, a traditional Dayak Muara wine from Pelindu Village in West Kalimantan, Indonesia. The Gastronomy Identity Model is used in the study to investigate seven aspects of *tuak* Dayak Muara’s identity: flavor profiles, etiquette, recipes, ingredient/technique fusion, classic wine and food marriage, climate zones, and old and new world styles.



In the flavor profiles, *tuak's* flavor characteristics are modified by the fermentation of glutinous rice and yeast, which results in alcohol concentrations varying from 4 to 20%. The longer the fermentation, the greater the alcohol content. *Tuak's* flavor is determined by the ingredients used, and its color varies depending on the type of glutinous rice and the fermentation procedure. Then in the etiquette, drinking *tuak* is firmly established in Dayak Muara culture, especially at weddings, festivals, and key rituals. There are precise instructions for *tuak* consumption at events, such as pouring *tuak* upon the ground with a customary word to request permission from ancestral spirits.

Then, for the recipes is *tuak* recipes differ, but traditional methods involve the fermentation of glutinous rice and yeast. The Dayak Muara community in Pelindu Village makes use of white glutinous rice and *tuak* yeast. The method involves gradually layering clay jars and avoiding contact with menstrual women throughout manufacture. Then, for the fusion of ingredients and techniques; *Tuak* Dayak Muara uses traditional methods and equipment, such as clay jars, in its fermenting process. The process of fusion entails creating a new beverage by combining local components like white glutinous rice, traditional tools, and Chinese fermenting skills.

After that is about classic wine and food marriage; *tuak* is eaten not only during special celebrations but also in daily life, commonly combined with traditional meals. The leftovers can be used as a yeast starter or made into vinegar for use in recipes such as rujak (pickled sour vegetables or fruits). Then the climate zones, Dayak Muara produces *tuak* using traditional methods affected by the climate. Warm temperatures and heavy humidity in West Kalimantan have an impact on *tuak* fermentation, which takes place at room temperature. The last is about old world and new world style, *tuak* has a lengthy history in the 'Old World,' stretching back to ancient Indonesian dynasties. *Tuak* consumption, previously connected with rites and performances, has transformed in the 'New World,' with communities now enjoying it not only on special occasions but also on a daily basis.

In conclusion, the study offers a thorough examination of *Tuak* Dayak Muara's gastronomic identity, emphasizing its many flavors, cultural value, traditional production methods, and adaptation to both ancient and modern situations.

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