

# CHAPTER I INTRODUCTION

## A. Background

Increasing consumption in alcohol within Southeast Asia region which includes Indonesia according to World Health Organization (WHO) in 2018, prompted this product development:

Alcohol consumption among drinkers shows a slightly different picture than that in the total population. As the percentage of drinkers decreased worldwide, and total per capita consumption in the total population increased only slightly due to increases in the Western Pacific Region and the Southeast Asia Region, total per capita consumption among drinkers has increased since 2000 in almost all regions except the WHO European Region. This can indicate that drinkers, although fewer in numbers, have increased their per capita consumption in most parts of the world.

**TABLE 1**  
Alcohol Consumption Projection in Southeast Asia Region

Southeast Asia Region				Total alcohol consumption	
	% Beer	% Wine	% Spirits	2010	2016
Bangladesh	—	—	—	0.2	0.0
Bhutan	46	4	50	1.2	0.6
India	8	1	92	4.3	5.7
Indonesia	18	76	5	0.7	0.8
Maldives	31	37	32	1.9	2.7
Myanmar	22	10	68	2.9	4.8
Nepal	31	49	20	2.1	2.0
Sri Lanka	13	1	85	4.0	4.3
Thailand	28	3	69	7.6	8.3
Timor–Leste	68	32	0.0	0.7	2.1

Source: WHO, 2018

Therefore, the product research is to popularize and provide comprehension for Indonesian about making traditional fermented beverages that are made with various Indonesian rice and then added with tropical fruits to enhance its flavor and characteristic to compete with the global fermented beverages and as our country's heritage and culture. Traditional fermented drinks, alcoholic beverages, distilled alcoholic drinks to wine and beer are accounted for alcoholic beverages (Prabhjot, Gargi, & Uttam, 2019). Fermented beverages, sometimes double as alcoholic drinks, are culturally and socially accepted for consumption, amusement, societal practices, and clerical purposes especially when consumed with moderation (Lestari, 2016). Asian tribal communities' religious ceremonies and collective gatherings occasionally acquire them to consume alcohol within the provisioned and substantial quantities. Asian alcohol brewing practice and production are mostly micro-scale industries where their skills were developed and passed on from one generation to the next (Tamang, Holzapfel, Shin, & Felis, 2017). Newer and younger generation of Indonesian has long forgotten the identity and pride of local fermented beverage and especially the method of making them and instead relying on and consuming modern and westernized fermented beverage, such as beer, which is why the authors would like to propel and ignite local fermented beverage industry by using local ingredients to be competitive in Indonesian market and abroad. In Indonesia and elsewhere, choosing whether or not to consume

alcoholic beverages depends on the person's choice and similar to all food and beverage, everything should be consumed in moderation. Despite being a niche market and contrary to popular belief, Indonesian who consumed alcohol are projected to continuously increase year over year and authors would like those who consume to choose alcoholic drinks which originated from Indonesia to show the love and patriotism for the country.

Rice wine, commonly known as *arak beras* in Indonesia, stands out in numerous Asian countries compared to fermented beverages made with other ingredients such as palm trees, thanks to the abundance of rice within the region and especially in Indonesia where rice is the most consumed carbohydrates (Silalahi et al, 2019). Steamed rice, when added with yeast, started to have chemical reactions known as fermentation which is the method of producing rice wine. Jenis bahan, macam mikroorganismenya, kondisi lingkungan dapat mempengaruhi proses fermentasi. *Saccharomyces cerevisiae* merupakan mikroorganismenya yang biasa digunakan dalam proses fermentasi alkohol (Widyaningrum, 2009).

According to Surono (2016) in *Ethnic Fermented Foods and Alcoholic Beverages of Asia*, *Brem* could be a conventional aged nourishment or refreshment, a non-distilled ethnic alcoholic drink from Indonesia derived from glutinous rice. They are consumed while thinking that it stimulates the blood system. It is additionally known to avoid dermatitis, likely due to the noteworthy sums of B vitamins created by

the microorganism. All three sorts of brem are made from the liquid portions of *tape ketan* (fermented glutinous rice). The glutinous rice is steamed and spread on the trays lined by banana leaves out to cool, after that 0.2% powdered ragi (inoculum) is added to the cooled rice and mixed inside and out, brooded at room temperature (30°C) for 1 week, the delightful rice called tape is pressed out and transferred to the fermenting containers, letting it rest at room temperature for 4-6 weeks. After fermentation, the juice is strained and put in a cool room for development around 8-12 months. *Brem* is a traditional rice wine of Bali island. The method of brem making includes a solid-state aging of steamed glutinous rice by a conventional inoculum (*Ragi*), extraction of the alcohol, and further liquid state aging without extra immunization. The quality of this product is conflicting due to the irregularity of the microorganisms in ragi as a result of unconstrained maturation. The liquid of *tape ketan* is matured for 7 months, which solids accelerate, leaving a clarified brem, known as *brem* Bali, and is tapped and bottled.

According to Prabhjot, Gargi, and Uttam (2019) in *Traditional Bio-Preservation in Beverages: Fermented Beverages*, *brem* Bali refreshment can be either white or red depending on the portions of white and black glutinous rice used, it is exceptionally sweet to semisweet, however acidic, and contains liquor with shifting degrees, ordinarily from 5%-14%. Liquid *brem* is made from aged squash of black or white glutinous rice employing a dry starter. The sugar substance of *brem*

diminished amid the maturation, due to the deterioration of basic sugars into ethanol and carbon dioxide by the yeast's chemical action through Embden-Meyerhof-Parnas. In the midst of maturing of *brem*, the pH decreased, which can be due to more production of many common acids at longer development time. After 10 weeks the pH came to 4.0 and contained 3% decreasing sugar, 6% ethanol, and 0.6% including up to corrosiveness (as acidic destructive), due to the oxidation of ethanol to acetic destructive by the activity of *Acetobacter* acidic. Soak and drain the glutinous rice, steam for an hour and let it cool down. The cooked glutinous rice is mixed with *ragi tapai* and amylolysis begins. A honey-like rice syrup settles inside the foot to the starch to sugar, yeast culture is included and alcoholic development begins. Alcoholic fermentation frequently goes on for 2 weeks.

Within numerous parts of Asia, most countries came up with their own style and take on rice wine, and differentiated by the type of rice and activators. Rice wine examples are *Shaosinjiu* from China, *Makgeolli* from Korea and *Sake* from Japan. Even though rice wine has been continuously developed from time to time and spread across many nations through globalization, scientists among exporting countries alike still pursue its attribute and health benefits. (Endo, Irisawa, Dicks, & Tanasupawat, 2014)

In comparison to traditional wine (made from grapes or alternative fruits) and beer, wine made of rice contains alcohol within the

range of 7% to 15% compared to traditional wine that contains 10% to 20%, and beer ranges from 4% to 8% of alcohol.

Types of alcoholic drinks that are often found in Indonesia are traditional liqueur, such as *arak brem*, *lapen*, and *ciu*, while liquor is usually found in customary rituals. Customary ritual encourages members of the public to consume traditional liquor. *Tuak* is a liquor in Indonesia made with fermented rice, molasses, or fruit that contains high sugar. Raw materials commonly used are: rice or sap taken from plants like coconut trees or *enau nira*, or *nipah* trees. *Tuak* alcohol content differs from one community to the other and the one made out of rice originated from the *Iban* community in Borneo. Birdlime rice or glutinous rice is mostly used as the main ingredient in making rice-based alcohol. After washing the rice, it is then submerged in water in a crock can called *tajau*. This process will take at least two days and in that time period, fermentation happens and resulted as *tapai*, which later on can be strained and consumed. *Tuak* presented in celebrations such as *Gawai Dayak* and *Gawai Kenyalang*. Beside the *Iban* tribe, other tribes such as the *Bidayuh* and the *Ulu* also make this type of alcohol in their own way.

Most wines are made of grapes which makes up the most iconic fermented beverage in the world. Wine, along with liquors like cherry kirsch or apple cider, have long been a staple in Europe and other Western countries.

Indonesians might be more familiar with *tapai* or fermented cassava or glutinous rice as well as arrack or fermented coconut and sugarcane. Regardless of the ingredients, the process remains the same, namely turning carbohydrates into ethanol and carbon dioxide by fermentation with yeast, bacteria or fungi.

Alcoholic beverages could be fused with one another to strengthen the characteristics of the beverage while adding body and flavor to the combination such as fortified wine where brandy mixed together with wine. Besides widely available alcohol products in supermarkets, shopping malls, and other alcohol suppliers, developing countries such as Indonesia has several types of local-produced alcoholic beverages such as rice wine, palm wine or sugarcane spirits (IARC Working Group, 2012). Alcoholic beverages produced by locals including Indonesian are uncomplicated to produce since they use the old-fashioned method by fermenting seeds, grains, fruits, vegetables or parts of palm trees, then added activators depending on one ingredient to another.

Adding to the previous point of how unaware Indonesian of their own alcoholic beverage, modern Indonesians are mostly oblivious as well to the potential of this country's rich diversity of fruits and its' health benefit which could be added into various types of fermented beverages and this is reflected to low consumption of fruit nationwide, only two point nine percent of the population reached the recommended

daily intake (Hermina, 2016). To date, fruits are mostly processed to make *dodol* (Indonesian snacks made of glutinous rice, palm sugar and coconut milk) or *manisan* (sweetened fruits).

Limitations of research are the “5W+1H” of the research environment, no lab testing and it focuses only on the taste aspect of the product. Another thing is the quantitative statistics with the four panelists deemed unsuitable method of data processing.

## **B. Objectives**

The objectives of making Indonesian fermented beverage made of various Indonesian rice and exotic fruits has three objectives. These are as follows:

1. Provide information about how Indonesian fermented beverages could be enhanced with different types of rice and tropical fruits.
2. Provide methods for making traditional Indonesian fermented beverages as part of our country’s culture and heritage.
3. Raising public awareness about traditional Indonesian fermented beverages and their benefits since most Indonesian have chosen to consume foreign fermented beverages.