CHAPTER I
INTRODUCTION

1.1 Background of Study

The red guava fruit is one of the best fruits that can be consumed daily because it is very rich in vitamin C. The local names for this guava include Glima breueh (Aceh), galiman (Sumatra), jambu klutuk (Java), jambu batu (Sunda), jambu bender (Madura), gojawas (Manado), libu (Kalimantan), kojabas (Nusa Tenggara), and kayawese (Maluku) (Putra, 2013). The red guava fruit has been proven to treat diarrhea, dysentery, dengue fever, swollen gums, canker sores, heart conditions, and diabetes. Red guava fruit contains quite a high amount of vitamin C.

Vitamin C is very good as an antioxidant. The nutritional content in 100 grams of red guava fruit includes 51 kcal of energy; 11.88 g of carbohydrates; 0.82 g of protein; 0.6 g of fat, and 183.5 mg of vitamin C, with an edible portion of 82%. Most of the vitamin C in guava is concentrated in the skin and the soft, thick outer flesh, and the vitamin C content in guava peaks just before it ripens. The vitamin C requirement for children aged 13-20 years is 80-100 mg, and for adults, it is 70-75 mg. This high vitamin C content is beneficial as an antioxidant that functions to boost the immune system, speed up wound healing, and play a role in the formation of intracellular collagen in the body (Ramayulis 2013).

Despite facing severe losses and disruption from wildfires and pandemic lock downs, the wine industry has been surprisingly resilient. According to a Silicon Valley Bank survey, 33 percent of winery owners identified the year 2020 as one of the most challenging years in their history. By the end of the year 2021, it was evident that a large segment of the industry had adapted to the new industry environment, as 29 percent of winery owners reported that 2021 was their best year ever, marking a reversal in perceived conditions

relative to the prior year. The ability of the wine industry to innovate and adapt in recent years is proof of its ability to lead through innovation in the face of increasingly volatile and hostile external conditions. Given the importance and ubiquity of innovation in the wine industry, a large stream of research has attempted to analyze the types of innovation that exist (Gault, 2018). In a pioneering effort to take stock of the existing literature on wine industry innovation, identified 76 research studies through a systematic search in academic journals and research databases.

Fermentation of food from raw materials is a process found across the globe and is integral to many human cultures. One of the many products of fermentation is wine, which is produced from the fermentation of grape juice or "must." The conversion of grape must into wine is a biotechnological tradition that dates back to ancient times, making it one of the oldest biotechnological products in existence. Over the centuries, numerous wine-making technologies and strategies have evolved, resulting in a diverse array of wine products available in the market today. Wine is an alcoholic fermented beverage with grapes as the primary ingredient. Generally, the initial step in the wine-making process involves selecting grapes and crushing them to form grape must. Once the must is transferred into a tank or barrel, fermentation can begin either naturally or with the addition of a starter culture. Wine fermentations typically last for about one to two weeks. Following alcoholic fermentation, the process can continue into malolactic fermentation either spontaneously or intentionally with lactic acid bacteria. The fermentation conditions for wine are as follows: a pH range of approximately 3.0-3.5, a temperature range of about 20-30°C (with an optimum temperature of 32.3°C for Saccharomyces cerevisiae inoculum), and it can be carried out using batch fermentation and liquid state fermentation methods. (Yurista and Aditiawati, 2021).

The advantages of guava wine include its high nutritional value and vitamin C content, as well as its various health benefits, such as promoting

heart health, improving digestion, controlling blood sugar levels, and being rich in minerals and vitamins. Guava wine is one of the rarest wine products and has a unique taste.

1.2 Objective of Study

The objective of study are following below:

1. **Exploration of Red Guava as a Fermentation Substrate**: To investigate the suitability of red guava for winemaking, given its unique flavor profile and potential health benefits.
2. **Fermentation Process Evaluation**: To monitor and evaluate the fermentation of red guava over a four-week period, assessing factors such as pH, sugar content, and yeast activity to understand how these variables influence the quality and characteristics of the wine.