CHAPTER I
INTRODUCTION

1.1 Background of the Study

In response to increasing consumer demand for plant-based and functional beverages, almond milk has emerged as one of the most popular dairy alternatives globally. Traditionally, almond milk is produced by boiling raw almonds in water, blending the softened nuts, and filtering out the solids to yield a creamy, milk-like beverage. This method differs from industrial processes that utilize almond powder, offering potential advantages in texture, flavour, and nutrient retention (Torna et al., 2020). After blending, the mixture is typically homogenized to produce a smooth consistency similar to that of cow's milk.

To ensure microbiological safety and extend shelf life, almond milk undergoes thermal processing, most commonly ultra-high temperature (UHT) treatment or pasteurization. UHT processing enables the product to be shelf-stable without refrigeration, whereas pasteurized almond milk requires cold storage and has a shorter lifespan. Despite these benefits, both methods may result in degradation of certain heat-sensitive nutrients, such as some vitamins and antioxidants (Sethi et al., 2016).

Soursop (*Annona muricata Lin*.), a tropical fruit from the Annonaceae family, is widely recognized for its applications in traditional medicine. The fruit exhibits a broad spectrum of pharmacological activities, including anticancer, antidiabetic, antiulcer, and antimicrobial properties. These effects are attributed to its rich profile of bioactive compounds, such as acetogenins, alkaloids, flavonoids (e.g., quercetin), and vitamins, particularly vitamin C, vitamin A, and B-complex vitamins (e.g., B1 and B2) (Mutakin et al., 2022; Afzaal et al., 2022). In addition to its medicinal uses, soursop is a versatile fruit that is commonly consumed fresh, or processed into juices, desserts, and other culinary applications (Leal & Paull, 2022).

The innovation of carbonated almond milk infused with soursop presents a novel functional beverage that not only addresses dietary restrictions—such

as lactose intolerance—but also enhances nutritional intake. The combination of almond milk and soursop provides a drink that is low in cholesterol and high in dietary fiber, potassium, vitamin C, vitamin E, and calcium. By incorporating carbonation through the infusion of CO2 gas, the beverage gains a fizzy texture and refreshing taste that increases its appeal, particularly among younger consumers who are more inclined toward soda-like drinks than traditional health beverages.

The preparation process involves boiling raw almonds for approximately 2 to 3 hours to soften them, followed by blending with water and straining to extract the almond milk. Simultaneously, fresh soursop pulp is separated from the skin and seeds, blended with water, and sweetened as needed. The almond milk and soursop juice are then mixed and placed into a soda maker, where carbonation is applied to infuse the drink with bubbles. The result is a refreshing, nutrient-rich, carbonated beverage that merges health benefits with sensory enjoyment, offering a promising alternative in the growing functional drinks market.

1.2 Objectives of the Study

The objectives of this study are following below:

1. Introducing the benefits of carbonated almond milk with soursop for the content of carbonated drinks, as well as the comparison of almond milk and cow milk in terms of health, and becoming a culinary choice
2. Determine the facts of nutrition, food safety and packaging, as well as the financial aspects of Carbonated almond milk with soursop fruit innovation.