CHAPTER I
INTRODUCTION

1.1 Background of the Study

In recent years, consumer demand for functional beverages has increased significantly as people seek products that are not only refreshing but also beneficial for health. Among these beverages, kombucha a fermented drink made from sweetened tea and a *symbiotic culture of bacteria and yeast* (SCOBY) has gained worldwide attention. Kombucha is known to contain organic acids, vitamins, and probiotics that can promote gut health, enhance immunity, and improve metabolic function (Zubaidah et al., 2022). Moreover, fermentation enhances the bioavailability of bioactive compounds such as polyphenols and flavonoids, contributing to its antioxidant capacity (Villarreal-Soto et al., 2021).

To innovate within the kombucha category, the use of natural herbal and fruit ingredients offers not only improved sensory quality but also increased nutritional and functional value. One promising ingredient is butterfly pea flower (*Clitoria ternatea*), a vibrant blue flower rich in anthocyanins and flavonoids. Recent studies have shown that *Clitoria ternatea* exhibits strong antioxidant, anti-inflammatory, and antimicrobial properties (Sutanto et al., 2023; Dewi et al., 2024). The anthocyanins present in the flower are also highly sensitive to pH changes, making it visually appealing during the kombucha fermentation process as the color transitions from blue to purple. Meanwhile, lychee (*Litchi chinensis*) is a tropical fruit widely appreciated for its sweet, aromatic flavor and high vitamin C content. It also contains polyphenolic compounds such as catechins and gallic acid derivatives that exhibit antioxidant and anti-inflammatory activities (Huang et al., 2024). Incorporating lychee into kombucha not only enriches its sensory characteristics offering a natural sweetness and fruity aroma but also

contributes additional bioactive compounds that enhance the drink's functional properties.

Combining butterfly pea tea and lychee in kombucha fermentation is therefore a novel approach that integrates health benefits with appealing sensory qualities. The fermentation process may further increase antioxidant activity and produce organic acids that contribute to flavor balance, while the combination of floral and fruity notes provides a refreshing taste profile. However, limited studies have investigated the effects of using butterfly pea flower and lychee together in kombucha production, particularly in relation to antioxidant potential, probiotic development, and consumer acceptance. This research thus aims to fill that gap by developing and evaluating Butterfly Pea and Lychee Kombucha as a functional beverage innovation that promotes both health and enjoyment.

1.2 Objectives of the Study

1. To develop and formulate a kombucha product using butterfly pea tea and lychee a natural base ingredients, creating a functional beverage with enhanced sensory and health value.
2. To analyze the physical, sensory, and nutritional characteristics of butterfly pea and lychee kombucha, including color, aroma, taste, total phenolic content, and antioxidant activity.
3. To observe the shelf life and evaluate the market potential of butterfly pea and lychee kombucha in terms of stability, safety, and estimated selling value as a commercial product.