

I. INTRODUCTION

1.1 Background

In recent years, both the food industry and the consumers have been paying attention to the type of foods they consume that could affect their health and well-being. Foods are an essential part of human life and consuming healthier and functional foods could improve the cardiovascular, gut, and bone health as well as acting as an anti-aging. The global food market has shown that functional foods are rising in numbers and one of the most prominent sectors of the functional food market is the functional beverages sector which accounts for 12.5% of the world market making the sector a profitable sector and a field where functional beverages could continue to innovate. One of the most popular types of functional drink in recent years is collagen fruit juice (Bilek & Bayram, 2015; Hashim et al., 2015)

Collagen fruit juice is a type of beauty drink that provides a “beauty function” for the consumer. The “beauty function” refers to the anti-aging properties of the drink which means making the skin more radiant, minimizing the appearance of acne, scars, and pigmentation on the skin, and improving joint health. This “beauty function” is capable of being done due to the main component of the drink itself which is collagen. Collagen is very essential as it contains 8 out of the 9 essential amino acids and glycine. In addition to that, the proline concentration inside a collagen is said to be 20 times higher than foods that are rich in proteins making it a healthier alternative for people that want to consume less calories in a day. A number of clinical studies have also shown that consuming 10 g of hydrolyzed collagen daily could help to decrease joint pain, reduce skin wrinkles, and improve skin properties (Bilek & Bayram, 2015; Hashim et al., 2015).

In the rising trend of functional foods, a number of innovations need to be done in order to be able to compete in the market share especially in the collagen fruit juice sector. A great number of flavor variants and alternative ingredients have been launched over the last couple of years by various

companies but so far none of them have incorporated rambutan fruit into their list of ingredients. Thus in this project, rambutan would be used as a main ingredient to produce the collagen fruit juice. Rambutan is chosen as one of the main ingredient because rambutan itself is known to have a jelly-like structure, a watery flesh, a fresh flavor, and a sweetness that is akin to that of strawberries which would prove to be a worthwhile attempt to create the new flavor variant. Rambutan is known to contain a high amount of minerals such as manganese and copper that are known to contain polyphenols that might improve human health by lowering the risk of diabetes, prevent cancers and kidney stones, and support bone and cardiovascular health. In addition to that, the specific rambutan that would be used for this project is the GI (Geographical Index) rambutan that is produced in the Thong Pha Phum district of the Kanchanaburi Province of Thailand. This specific rambutan is used because it is locally grown in Thailand and by doing this research, it is hoped that the local business could also benefit from it by using the formulation and methods to produce a collagen fruit juice based on their local ingredients (Hernández-Hernández et al., 2019). Therefore, in this study, collagen fruit juice utilizing rambutan as a main ingredient will be developed and the study will analyze the effects of different concentrations of xylitol and rambutan on the final properties of the rambutan collagen drink.

1.2 Objectives

The objective of this research is to produce a functional drink in the form of a rambutan collagen drink using a locally grown rambutan from Kanchanaburi province. In addition to that, the research also aims to present and transfer the final product and any form of knowledge and information obtained from conducting the research to the local business in Kanchanaburi province. Finally, this research aims to evaluate the effects of different concentrations of rambutan and xylitol on the sensorial and physicochemical properties of the rambutan collagen drink.

1.3 Research Scopes

This study aims to produce a form of collagen beauty drink utilizing rambutan as one of the main ingredients. The drink would be made with rambutan, xylitol, xanthan gum, chrysanthemum infused water, and collagen. In addition to that, the rambutan and xylitol content would be varied in order to find out which formulation is the most preferred to be sold in the market. In order to determine the most suitable formulation, sensory analysis which includes a 9-point hedonic scale, consumer acceptance and purchase intention test. Following that, the physical analysis which include the analysis of color, viscosity, and total soluble solid (brix^o) and the chemical analysis which includes analysis of pH, crude fiber, titratable acid, protein, fat, ash, moisture, and total phenolic content would also be conducted to see the properties of each formulation of rambutan collagen drink.

1.4 Hypothesis

- *H₀ (null hypothesis)*: There is no significant difference in the physical properties such as color, viscosity, and brix as well as in chemical analysis such as pH, crude fiber, protein, fat, ash, moisture, titratable acid, and total phenolic compound of rambutan collagen drink among the different concentrations of rambutan and xylitol.
- *H₁ (research hypothesis)*: There is a significant difference in the physical properties such as color, viscosity, and brix as well as in chemical analysis such as pH, crude fiber, protein, fat, ash, moisture, titratable acid, and total phenolic compound of rambutan collagen drink among the different concentrations of rambutan and xylitol.
- *H₀ (null hypothesis)*: There is no significant difference in the sensorial properties of rambutan collagen drink among the different concentrations of rambutan and xylitol.
- *H₁ (research hypothesis)*: There is a significant difference in the sensorial properties of rambutan collagen drink among the different concentrations of rambutan and xylitol.