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TOTAL PHENOLIC CONTENT, FLAVONOID CONTENT, ANTHOCYANIN CONTENT, AND ANTIOXIDANT ACTIVITY OF NATURALLY FERMENTED *GARCINIA MANGOSTANA* PERICARP BROTH

SYAFI'AH NADIAH BINTI MOHD SA'ID

Bachelor Eng. (Hons) Chemical and Bioprocess
Faculty of Chemical Engineering

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ABSTRACT

The objectives of this research are to extract phenolic compound from spontaneously fermented *Garcinia mangostana* pericarp broth, to analyse the phenolic content and to quantify the antioxidant activity of spontaneously fermented *Garcinia mangostana* pericarp extract. In this research, there are four analysis that were done which are determination of total phenolic content, total flavonoid content, total anthocyanin content and the antioxidant properties of the sample extract. Folin-Ciocalteu's reagent is used in determining the total phenolic content, aluminium chloride method is used in determining the flavonoid content, vanillin assay is used in determining the total anthocyanin content and lastly, DPPH scavenging assay is used in determining the antioxidant properties. The results of this research show that there is increasing pattern across the time. As the fermentation time of the pericarp of Garcinia mangostana increase, the total phenolic content, total flavonoid content, total anthocyanin content and the antioxidant properties of the sample extract are also increasing. The highest content of phenolic is on day 100 which is 47.44±0.33 mg GAE/ g, highest content of flavonoid is on day 90 which is 23.53±1.22 mg QE/ g, highest content of anthocyanin is on day 100 which is 7.76±0.05 mg CE/ g, and the DPPH scavenging also increased across the time, from 12.54%±0.34 in day 1 to 46.19%±0.92 in day 100. The highest DPPH scavenging occurred on day 90 which is 47.05%±0.07. Thus, it could be concluded that, as fermentation time of the pericarp increase, the metabolic component in the naturally fermented pericarp broth increase.

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

Garcinia mangostana also known simply as mangosteen is called the queen of fruits. Mangosteen could be found mainly in the south east asia. This fruit has a comparatively small edible portion (pulp) which makes up only 30% of the total fruit and the pericarp and seed often regarded as waste (Lim et al, 2013). Nowadays, there are many researches on the compounds that are present in every part of the mangosteen which are the pericarp (rind), pulp and seed. Figure 1.1 below shows the part of the mangosteen. Numerous scientific studies indicated that the total phenolic compound in the pericarp (peel or rind) of mangosteen were significantly higher than in the pulp (Cheok et al., 2016). Even though the pericarp is said to contain many xanthones that is beneficial to the health, there are no people that would eat the pericarp as it is due to the bitterness of the pericarp. Thus, nowadays, there are many products of mangosteen that were sold in a pill shape in order for us to get the beneficial antioxidant for our health. Other than that, most of the research on the present of metabolic component in mangosteen used the mangosteen as it is and convert the mangosteen to a fine powder by lyophilised the pericarp first before crushing them.

Figure 1.1: Part of the mangosteen