UNIVERSITI TEKNOLOGI MARA

PRELIMINARY STUDY ON QUANTITATIVE ANALYSIS OF ANNONACIN FROM *ANNONA MURICATA* PLANT PARTS VIA HPLC

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ABSTRACT

Annona muricata is an important anticancer drug substitute belongs to Annonaceae family. The anticancer effect of the species is contributed by annonacin, the main graviola acetogenin. This study was performed to determine the best solvent system in extracting annonacin and to determine the presence and the volume of annonacin in every part *Annona muricata* plant using High Performance Liquid Chromatography (HPLC) techniques. Chemical extraction from seeds, stems, roots, leaves and fruits were carried out using three different extractions solvents, namely acetone, ethanol and water. Detected annonacin from every sample was quantitatively analysed by using High Performance Liquid Chromatography (HPLC) method. From the study, linearity of the detector response to the annonacin standard was determined as means of linear regression, expressed in linear model, y=12508x+25703 with coefficient correlation curve, (r^2)=0.897. The retention time of annonacin observed was at 13.5 minutes. The data was analysed with ANOVA (factorial) and expressed as means ± stand deviation (S.D.). The results showed that plant parts have no significant effect on annonacin concentration as the sample's F critical value (2.68) was higher than F value (2.12). It also showed that the type of solvent has no significant effect on annonacin concentration as the column's F critical value (3.31) was higher than F value (2.26). However, the F critical value of the interaction between type of solvent and plant parts was lower (2.26) than its F value (3.83). This showed that the interaction between type of solvent and plant part has significant effect on annonacin concentration. Based on the results, it showed that acetone extract derived from seed sample gave the highest concentration of annonacin with the value of 0.61 ± 0.35 mg/ml. Therefore, it might be concluded that acetone was the best solvent in extracting annonacin and seed contained the highest amount of annoacin.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Annona muricata L, known as soursop or graviola (Brazil) belongs to the family of *Annonaceae*. The *Annonaceae* includes around 50 genera and only three genera *(Annona, Rollinia* and *Asimina)* produce succulent fruits (Rasai et al., 1995). According to Luna (2006), this species is also known as Guyabano (Philippines) and it is a well-known medicinal tree. *Annona muricata* holds many medicinal properties such as antibacterial, antiviral and antifungal. Latest studies showed that the extracts of the plant also have potential anti-carcinogenic activity (Luna et al., 2006).

Annonaceous acetogenins (ACGs) is a wide group of fatty acid-derived natural products with unique structures. Most of the members in this universal group have a broad spectrum of biological activities and the most potent is anticancer effects (Liu et al., 2007). One of the compounds is annonacin. According to Potts et al. (2012), annonacin is naturally abundant compound in *A. muricata* that has biological activities such as inhibition of mitochondrial complex I of the electron transport chain. This compound mostly extracted from fruit, bark and leaves of the plant. Therefore, this study was proposed to discover any potential of targeted compound present in other parts of the plant, since the compound has so many beneficial medical properties, especially anticancer property (Potts et al., 2012).