THE IDENTIFICATION OF METABOLITES FROM SPONTANEOUS FERMENTATION OF MANGOSTEEN PERICARP

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ABSTRACT

In this study, the compounds inside mangosteen pericarp that has been spontaneously fermented for 90 days were being identified by using Chromatographic method, UHPLC and online database "MetFrag". The results from the identification process were compared with findings from various researches. (S)-Cheilanthifoline, Sulfolene, Primaquine (anti-malarial), (+)-Cassythicine, 2-Heptyl-4-hydroxyquinoline-N-oxide, 2-Heptyl-3-hydroxy-quinolone, Lycoricidine, Netilmicin (anti-bacterial), Sulbenicillin, Pyrithiamine, Progeldanamycin, 10-Deoxymethymycin (antibiotics), Tubulosine (anti-tumor) and Curacin A (anti-inflammatory), mostly alkaloids, were examples of compounds that have been discovered from this research. These compounds could be a possibility that the compounds are derived from the major xanthones, possibly evolved due to spontaneous fermentation process. Further investigation are needed to gather more evidence as to support research.

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TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

Garcinia mangostana Linn or universally known as mangosteen fruit, is a tropical fruit that has been scientifically proven to have medicinal uses and has been used by most pharmaceutical industries (Zarena & Sankar, 2012). Mangosteen is said to be rich in all sorts of phytochemicals, especially in the hull or pericarp of the mangosteen (Khaw *et al.*, 2014). In pharmaceutical industries, the hull of a mangosteen is to be fermented beforehand to improve the nutritional values. The study performed is to isolate the phytochemicals from spontaneous fermentation of mangosteen pericarps, and the phytochemicals.

Investigation on the hull of *G. mangostana* Linn has found that the content is rich in mangostin, tannin, xanthone, isoflavone, flavone and other bioactive compounds (Yu *et al.*, 2007). Mangosteen pericarp is believed to contain the highest concentration of xanthones, especially in the yellow pigment. The xanthones are known for its benefits, mainly for antioxidant (Zarena & Sankar, 2011), antifungal (Ohno *et al.*, 2015), antibacterial (S, Periodontics, & Ph, 2007), anti-inflammatory (Chen *et al.*, 2008), and other characteristic. Natural antioxidant can be obtained from the methanol extracted from the hull of the mangosteen. A study conducted by Jung *et al.* (2006) has made a discovery that a significant of antioxidant activity in peroxynitrite-scavenging bioassays from the dichloromethane-soluble partition of methanol extract of the mangosteen hull. A research that has been done by (Sufian *et al,* n.d.) claimed that the fermented extract of the mangosteen plants displayed an increment of bioactivities in the sense that there are higher oxidant activity upon various *in vitro* and *ex vivo* bioassays. Similar to the previous study that has been carried out, this research is to further the study on mangosteen pericarp and evaluate the antioxidant activity.

1.2 Problem statement

Despite having various types of researches conducted on mangosteen pericarp, there are still less evidence on what would to happen to the content of the mangosteen pericarp that has