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Lansium domesticum COMPONENTS PROFILING BY USING LIQUID CHROMATOGRAPHY – MASS SPECTROMETRY

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ABSTRACT

Lansium domesticum, locally known as "Dokong", found in the tropics regions of the world, predominantly in Thailand, Malaysia, Indonesia, Philippines and Vietnam. It is also used to alleviate some medial conditions as it possess antidiarrheal, antispasmodic, antipyretic, antimalarial and anti-inflammatory properties. In 2015, Agensi Antidadah Kebangsaan (AADK) Perlis discovered that the "Ketum" addicts are taking *Lansium domesticum* leaves extract as an alternative to "Ketum" extract due to "Ketum" scarcity after it is banned because of misuse and abuse. "Ketum" addicts claimed that both of the extracts have similar euphoric effect. However, there is insufficient information regarding compounds that may contribute to the euphoric effect in *Lansium domesticum* leaves extract. The objective of this study is to detect presence of mitragynine in *Lansium domesticum* leaves extract. *Lansium domesticum* leaves was extracted by using ethanol solvent (95% ethanol) and aqueous solvent (distilled water). Extracts were prepared using condensation method by rotary evaporator for ethanol extraction and lyophilisation method for aqueous extraction. Both extracts undergone chromatographic analysis by Liquid Chromatography – Mass Spectrometry Quadrupole – Time of Flight (LC-MS QTOF) system. The parameters tested were retention time, m/z value (mass-to-charge ratio) and predicted structure. The results were compared with *Mitragyna speciosa* chromatographic analysis result. The results showed that mitragynine was absent in *Lansium domesticum* leaves extracts. The euphoric effect claimed may be due to other compounds present in the leaves extract.

Keywords : *Lansium domesticum, Mitragyna speciosa,* mitragynine, euphoric effect, misuse and abuse, Ketum, Dokong, Liquid Chromatography – Mass Spectrometry Quadrupole – Time of Flight (LC-MS QTOF) system.

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Addiction is a medical condition of uncontrollable and irresistible engagement to stimuli although there are unfavourable after-effects (Nestler, 2013). It is due to intake of licit (e.g. alcohol) and illicit drugs (e.g. marijuana). In a study done in United States, 73% of drug users were employed, with highest licit drugs usage in construction, entertainment and recreation, while highest illicit drugs usage are in food services and construction (Hanson, Venturelli & Fleckenstein, 2012). People abuse drug usually because they want to deal with spiritual, psychological, physical destruction or just for pleasure-seeking purpose (Koob & Moal, 2001). In Malaysia, substance abuse of herbal medicine is increasing (Aziz & Tey, 2009). *Mitragyna speciosa*, also known as "Ketum", is used in treating diabetes, to increase endurance in strenuous activities and many more. However, its' usage has been banned by the government because of misuse and abuse (Chan, Pakiam & Rahim, 2005). The "Ketum" addicts successfully discovered that "Dokong" leaves extract can replace "Ketum", and claimed to have similar sedative effect as "Ketum" extract (Rahim, 2015). *Lansium domesticum*, or "Dokong", have some useful uses. Its' resin have anti-spasmolytic properties, and used to treat intestinal spasms and diarrhoea. The product of *Lansium domesticum*'s bark decoction has been used as anti-malarial (Omar, 2003) and to deal with dysentery. Its' leaves juice is able to eliminate