UNIVERSITI TEKNOLOGI MARA

TARGETING CURCUMINOIDS FROM *CURCUMA* SPECIES

ZULMUHSHAR BIN ABDUL ZAHAR

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ABSTRACT

This study is to introduce one of the famous herbal plant called *Curcuma longa* L. of Zingiberaceae family or also known as turmeric. *C. longa* provides a lot of uses and benefits to human in various ways. The medicinal property of *C. longa* was reported as anti-obesity, anti-inflammatory, anti-microbial, and wound healing. However, the possibility of differences in the phytochemical compositions of turmeric from different samples such as the local and India sample might be explored. The main objectives in this research are to extract and isolate curcuminoids from *C. longa*. Another objective of this research is to study the pharmacological activities of *C. longa* through several literature reviews such as journals, articles, and books. In this study, two samples of turmeric which are from local and India sample were extracted through solvent extraction and sonication followed by screening via Thin-Layer Chromatography (TLC) and Nuclear Magnetic Resonance (NMR) spectroscopy. From this study the findings include that both samples of *C. longa* were made up of curcuminoids. There are no significant difference in the TLC profile between both samples. Moreover, the pharmacological actions of *C. longa* as anti-inflammatory, anti-obesity and in oral and dental care were also learnt. As a recommendation, hopefully other pharmacological actions of turmeric such as anti-cancer, anti-oxidant, and anti-diabetic could be studied in the future. Besides that, the phytochemical studies of other *Curcuma* species such as *C. leucorrhiza, C. loerzingii,* and *C. longispica* could also be conducted in the future.

CHAPTER 1

INTRODUCTION

1.1 Introduction to turmeric (*C. longa*)

Turmeric or also known as *C. longa* (*Curcuma longa* L.*)* is one of the famous traditional spices that are commonly used widely in India as a medicinal plant. *Curcuma* is the genus name of turmeric while (*Curcuma longa* L.) is the species name for turmeric (Chattopadhyay, Biswas, Bandyopadhyay, & Banerjee, 2004). The word *Curcuma* was said to be originated form the Arabic word "kurkum" which originally meant "saffron," but is now used for turmeric only (Ravindran, Babu, & Sivaraman, 2007). Besides India, turmeric is also Philippines (Ravindran et al., 2007). Turmeric is a rhizomatous herbaceous perennial plant of the ginger family, Zingiberaceae. Other than its uses in medicinal plant, turmeric is also used in food. The main component of turmeric is known as curcuminoids which contain curcumin (Ravindran et al., 2007). Curcumin has various health benefits as it can be used to fight off obesity, inflammation, cancer, diabetes, and even arthritis (Polonica, Grynkiewicz, & Farmaceutyczny, 2015). The value of turmeric or turmeric products is based on their curcuminoids content (Revathy, Elumalai, Benny, & Antony, 2011). Curcumin which act as colouring agent and two other related compounds demethoxycurcumin (DMC) and bisdemethoxycurcumin (BDMC) are all together known as curcuminoids (Revathy et al., 2011). Curcuminoids indicate a group of compounds such as curcumin, demethoxycurcumin (DMC), and bis-demethoxycurcumin (BDMC), and also cyclic