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CO-CRYSTALLIZATION OF ACETAMINOPHEN WITH PHENOLIC CONSTITUENTS OF KACIP FATIMAH (FLAVONOIDS)

IZZATI AFIQAH BINTI JAILANI

2012626458

SUPERVISOR:

DR. HUMERA NAZ

CO-SUPERVISOR:

DR. HAMIZAH M. ZAKI

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ABSTRACT

Co-crystallization is a process of combining two or more chemical compounds in a specific stoichiometric ratio. Previous studies of co-crystallization of acetaminophen with other chemicals have improved its mechanical and physical properties. *Labisia pumila* contains many phytochemicals and flavonoid is one of the class present in this plant. Co-crystallization of acetaminophen and flavonoids is undertaken to study the interaction feasibility between both compounds, either the interaction causes formation of new compound or the interaction causes changes in the unit cell properties of the compound which may be an important parameter in drug formulation. The co-crystallization of acetaminophen with flavonoids involves preliminary characterization, co-crystal formation and co-crystal characterization. The results showed that there is no crystal formation between acetaminophen with quercetin and rutin hydrate. Only the combination of acetaminophen:naringenin (1:2 molar ratio) showed good crystals.

CHAPTER 1

INTRODUCTION

Acetaminophen is regularly used by people in all over the world as a pain reliever and treatment for fever. In Malaysia, it is commonly known as paracetamol. Acetaminophen is available as solid dosage form (tablet) and liquid dosage form (suspension) which is commonly prescribed as over-the-counter (OTC) medication. Studies about co-crystallization of acetaminophen with other chemicals (phenazine, 4,4′-bipyridine and oxalic acid) has been made to improve its mechanical properties (Henry et al., 2010). According to Pathak et al. (2013), the co-crystal of acetaminophen together with indomethacin and mefenamic acid was done in order to improve physical properties of the molecule especially its solubility.

Labisia pumila or commonly known as Kacip Fatimah is a traditional herb which is available in Malaysia. It is widely used by Malay women as postpartum medication after child birth, to regain their body strength, alleviate menopausal symptoms and regulate menstrual cycle (Chua, Latiff et al., 2011). Traditionally, Kacip Fatimah is boiled to take as a drink or a paste is used externally, usually to alleviate stomach discomfort. Nowadays, Kacip Fatimah is commercially available as capsule, tea, coffee and canned beverage.