ANTINOCICEPTIVE ACTIVITIES OF AQUEOUS EXTRACT OF Ficus *deltoideae* LEAVES IN RATS AND MICE.

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ABSTRACT

ANTINOCICEPTIVE ACTIVITIES OF AQUEOUS EXTRACT OF *Ficus deltoideae* LEAVES IN RATS AND MICE

Ficus deltoideae or "mas cotek" has been widely used in traditional medicine because of its beneficial and nutritious. The aqueous extract of Ficus deltoideae leaves was investigated for its antinociceptive activity in several *in vivo* experimental models. In this study we investigation on antinociceptive activity in mice and rats at doses of 100, 300, and 1000mg/kg subcutaneously using acetic acid-induced abdominal writhing, formalin and hot plate test to evaluate its analgesic activities. The result showed that intraperitoneal administration of *Ficus deltoideae* leaves aqueous extracts at all doses used which indicated the present of both peripherally and central mediated activities. In the acetic acid-induced writhing test, the result showed that the 300 and 1000mg/kg dose of extract exhibited significant ($P<0.05$) antinociceptive activity in a dose-dependent manner and both extract had 60.2% inhibition respectively compared to the control animals. Moreover, only the 1000mg/kg dose of AEFD in hot plate test exhibited significantly ($P<0.05$) increases the response latency time to the heat stimulus. In the formalin test, the extract produced a significantly ($P<0.05$) reduced paw licking of formalin-induced pain with early phase showed the highest 61.4% inhibition at 300mg/kg and late phase demonstrated highest 71.1% inhibition at 100mg/kg. The results demonstrate that *Ficus deltoideae* presents antinociceptive activity in mice and rats, which support its folkoric use as an analgesic.

ABSTRAK

AKTIVITI ANTINOSISEPTIF ESTRAK AKUEUS DAUN *Ficus deltoideae* PADA TIKUS DAN MENCIT

Ficus deltoideae atau "mas cotek" telah banyak digunakan di dalam perubatan tradisional oleh masyarakat melayu kerana sangat berkhasiat dan baik untuk kesihatan. Kajian telah dilakukan kepada ekstrak ekueus daripada daun *Ficus deltoideae* untuk menentukan aktiviti antinosiseptif secara *vivo*. Kajian tentang aktiviti antinosiseptif terhadap mencit dan tikus telah dinilaikan berdasarkan kadar kepekatan 100, 300, and 1000mg/kg yang disuntik dibawah kulit. Tiga ujian antinosiseptif telah dilakukan bagi menilai aktiviti analgesik iaitu ujian asid asetik yang merangsang pencerutan abdomen, ujian plat panas and ujian formalin telah memberikan kesan yang positif kepada kedua-dua aktiviti iaitu secara peripheral dan pusat. Bagi penilaian asid asetik yang merangsang pencerutan abdomen, kepekatan 300 dan 1000mg/kg daripada ekstrak telah menunjukkan aktiviti bermakna ($P<0.05$) bagi kesan antinosiseptif yang bergantung kepada kepekatan dan kedua-dua ekstrak mempunyai 60.2% perencatan apabila dibandingkan dengan kawalan. Hanya kepekatan 1000mg/kg di dalam penilaian plat panas menunjukkan keputusan yang bermakna ($P<0.05$) apabila kadar kekakuan yang didorong oleh haba meningkat. Bagi ujian formalin, ekstrak daun menunjukkan aktiviti bermakna ($P<0.05$) apabila kadar penjilatan tapak kaki yang mana kesakitan dirangsang oleh formalin berkurangan dan 61.4% perencatan pada fasa awal dalam kepekatan 300mg/kg serta 71.1% perencatan pada fasa terakhir dalam kepekatan 100mg/kg. Keputusan daripada *Ficus deltoideae* mempamerkan aktiviti antinosiseptive dalam mencit dan tikus, sekaligus menyokong perubatan tradisional yang diguna sebagai analgesik (ubat tahan sakit).

CHAPTER 1

INTRODUCTION

1.1 Natural products

The term natural products refer to herbs, herbal concoctions, dietary supplements, traditional Chinese medicine, or alternative medicine that using source come from natural resources. Natural products are generally either of prebiotic origin or originate from microbes, plants, or animal sources. As chemicals, natural products include such classes of compounds as alkaloids, steroids, terpenoids, polyketides, amino acids, peptides, proteins, carbohydrates, lipids, nucleic acid bases, ribonucleic acid (RNA), deoxyribonucleic acid (DNA), and so forth (Spainhour, 2005).

Plants used as natural products contain numerous classes of chemical constituents. Strong antioxidant properties have been associated with natural products. In fact, antioxidant-rich dietary supplements are often recommended to preserve or regain good health. As a result, high dosages of natural products are consumed by extensive populations to handle or prevent many oxidative stress-related diseases. Consequently, drug interactions can occur when herbal or natural products containing such molecules are used concomitantly with conventional drugs, leading undesired effects such as impaired bioavailability of drugs with narrow therapeutic indices, altered plasma/tissue levels, and an enhanced bioactivation of drugs to reactive intermediates or toxic metabolites. Moreover, certain components of herbal complex mixtures may be metabolized to reactive metabolites, which could induce important adverse effects and clinical consequences (Rodeiro et al., 2007).