PROCEEDING

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The editing of this proceeding has been carried out by **B. Kuswandi** with assisted by the Scientific Committee of **HALALSTECH+ 2012.**

Preface

The **HALALSTECH+ 2012,** `International Conference On Halal Science & Technology: Current issues on Food, Pharmaceutical & Health Products 2012' took place in Sanur Paradise Plasa Hotel, Denpasar Bali Indonesia on 4-6 July 2012. This conference has been hosted by the Faculty of Pharmacy, University of Jember (UNEJ), Indonesia, in collaboration with the Faculty of Science & Technology Universiti Kebangsaan Malaysia (UKM), and the Faculty of Science & Technology, Universiti Sains Islam Malalaysia (USIM).

This proceeding contains papers that have been presented at the **HALALSTECH+ 2012** as plenary lectures, keynote, oral and poster presentations. About 100 participants attended the conference, with 11 plenary lectures, 1 keynote lectures and 22 oral and 14 poster presentations. The proceeding of **HALALSTECH+ 2012** has been published in electronic form as *.pdf file for simple and easy publication and to avoid heavy book of proceeding. We hope that this publication can be easily read, handled and transferred to other form. Furthermore, this paperless proceeding can be fruitful for all participants of the conference.

My sincerely thanks go to all the members of Scientific Committee for their valuable help in the review of the submitted papers, and also to the authors for their collaborative attitude. A special mention must go to our organizing committee, who has put in a terrific amount of effort not only in general conference matter but also in the assembly of the papers for this proceeding. Finally, I congratulate the authors of all papers for producing the new and novel idea in areas of food, pharmaceutical and health products related to halal issues as well as other related fields.

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Jember, July 2012

B. Kuswandi
Editor
HALALSTECH+ 2012 Proceeding

In Vivo Antimalarial Activity of Terpenoid-Rich Fraction of Ethanolic Extract of *Tithonia diversifolia* (Hemsley) A. Gray Leaves

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Abstract

Tithonia diversifolia (Hemsley) A. Gray has been used traditionally to treat malaria. The results of previous study showed that ethanolic extract of this leaves had antimalarial activity in vivo with ED_{50} of 113.39 mg/kg. This study aims to fractionated of crude ethanolic extract of T. *diversifolia* leaves to obtaine terpenoide-rich fraction and to assay it's antimalarial activity in mice that infected with *Plasmodium berghei*. Fractionation was conducted by vacuum liquid chromatography using silica gel 60 as stationary phase, and n-hexane, chloroform, methanol as mobile phase. The Antimalarial activity assay carried out using 4-day suppression test. Antimalarial activity assay results indicate that the terpenoide-rich fraction could inhibit the growth of *P. berghei* ED50 of 5.058 mg/kgBW .

Keywords: *Tithonia diversifolia*, terpenoide-rich fraction, malaria

Introduction

Malaria is one disease that became the focus of world attention globally, considering malaria in the world to reach 300-500 million people (Chowdurry and Bagasra, 2007) with a death rate 2-3 million people per year (Dua *et al*., 2004). There are an estimated 30 million cases of malaria each year in Indonesia and approximately only 10% are getting treatment at health facilities. *Tithonia diversifolia* (Hemsley) A. Gray has long been used empirically by Guatemalan society, Taiwan, Mexico and Nigeria for the treatment of malaria (Calzada & Ciccio, 1995). Afiyah (2007) states that the ether fraction of methanolic extract of leaves of *T. diversifolia* has antiplasmodium activity against *P. falciparum* strain FCR-3 in vitro by inhibiting the polymerization of heme. Goffin et al. (2002) reported that the *T. diversifolia* extracts in vitro is able to inhibit three strains of *P. falcifarum*. The ether fraction containing seskuiterpen lactone tagitinin C which is the active compound against Plasmodium (IC_{50} = 0.33 µg/mL).

Materials and Methods

Plant material

Leaves of *T. diversifolia* were collected from wild plant growing on Jember University and identified in the Herbarium Jemberiense Department of Biology, Faculty of Mathematics and Science, University of Jember.

Animals and Rodent parasite

Adult male Balb-C mice (20 - 25g) were obtained from the animal laboratory, Faculty of Pharmacy, Airlangga University. The animals were observed under light/dark cycle in metabolic cages in well ventilated rodent cubicle. They were fed with mice pellet diet and water *ad libitum*. *Plasmodium berghei* (ANKA