

SHORT COMMUNICATION

The Oils from Stems, Leaves and Roots of *Elephantopus scaber* Linn.

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ABSTRACT

The oil from stems, leaves and roots of *Elephantopus scaber* Linn. were extracted by solvent maceration technique. The percentage yield oil from stems, leaves and roots are 0.001%, 0.003% and 0.04%, respectively. The stem oil gives major constituents of pentacosane (12.3%), lupenyl acetate (11.7%) and fern-7-en-3 β -ol (11.0%), while the leaf oil contains isooctyl phthalate (19.2%), hexadecanoic acid (15.0%) and α -linolenic acid (5.0%) as the major components. The major constituents identified in the root oil are hemellitol (11.6%), octyl phthalate (6.0%), 1-nonadecanol (5.6%) and 1-octadecanol (5.5%). There were only three compounds detected and identified in all three parts of the plant, namely decanedioic acid, bis-(2-ethylhexyl)ester, dotriacontane and pentacosane. The oils were analysed by gas chromatography-mass spectrometer and the compounds were identified by comparison with the mass spectral fragmentation pattern database.

Keywords: Compositae, *Elephantopus scaber*, essential oil, herbs, GC-MS

E. scaber is a small herb plant which belongs to the Compositae family (Ho *et al.*, 2012). This plant can be found in the Neotropics, Europe, Asia, Africa and Australia (Hiradeve & Rangari, 2014). In Malaysia, it is known as *Tapak Liman* or *Tutup Bumi*. There are about 30 species of *Elephantopus* species have been identified (Wang *et al.*, 2004). *E. scaber* is one of herbal plant that is used traditionally as medicine to treat many types of diseases. Its parts are boiled with water to cure diseases such as fever. It can be found at road sides, grass fields and forest border. This herbal plant can grow and reach the height of 50 cm. It has been used as traditional medicines in many countries to treat various diseases such as fever, edema, stomach-ache and used as an antidote for snake bites.

There are a lot of compounds had been isolated and identified from this species. Studies done by Geetha *et al.* (2012) had successfully isolated isodeoxyelephantopin and deoxyelephantopin from the chloroform crude extract of *E. scaber*. The extensive studies on this plant also had shown numerous biological activities. The crude extracts of *E. scaber* shows its potential as hepatoprotective, anti diarrhea, cardiotoxic, antihyperglycemic

and many more (Daisy *et al.*, 2009; Ho *et al.*, 2012; Muthumani *et al.*, 2010). Besides the studies on the extracts of the plant, the essential oil also had been extracted and studied by Wang *et al.* (2004). The group reported the chemical constituents of *E. scaber* essential oil consists of few major components identified as hexadecanoic acid, isopropyl dimethyl tetrahydronaphthalenol, β -sesquiphellandrene, octadecadienoic acid and phytol with content percentage of 42.3%, 14.1%, 8.3%, 5.5% and 5.2%, respectively. However, the report only referred to the essential oil of the whole plant and the sample was taken from Southern China. In this study, it focused on the essential oil constituents of the leaves, stems and root oils of *E. scaber* which was collected from Sarawak, Malaysia.

The sample *E. scaber* was collected from the area around Kuching, Sarawak, Malaysia. The fresh samples were separated into leaves, stems and roots, and were cut into smaller size (~5 mm) prior to extraction. Rotary evaporator BUCHI model R-II was used in order to remove solvent from all extracts. Mass spectra were recorded on gas chromatography-mass spectrometer using Shimadzu QP GC-2010 plus.

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