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Antimicrobial Terpenoids from *Erigeron sumatrensis*

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ABSTRACT

The leaves of *Erigeron sumatrensis* Retz is reported to exhibit antimicrobial properties. The study was conducted to isolate the dichloromethane soluble constituents of the plant which may contribute to this activity. The dichloromethane extract of the air-dried leaves of *E. sumatrensis* afforded (E)-β-farnesene 1, neophytadiene 2, spathulenol 3, and spinasterol 4. The structures of 1 and 2 were elucidated by extensive 1D and 2D NMR spectroscopy, while the structures of 3 and 4 were deduced by comparison of their ^{1}H and ^{13}C NMR spectra with those found in the literature. Compound **1** indicated moderate antifungal activity against *C. albicans* and low activity against *E. coli, P. aeruginosa,* and *T. mentagrophytes.* It was inactive against *S. aureus, B. subtilis,* and *A. niger.* Compound **2** exhibited moderate antifungal activity against *C. albicans,* low activity against *A. niger, T. mentagrophytes, E. coli,* and *P. aeruginosa,* and was found inactive against *S. aureus* and *B. subtilis.* Compounds **3** and **4** exhibited low activity against *E. coli, P. aeruginosa, S. aureus, C. albicans,* and *T. mentagrophytes.* They were inactive against *B. subtilis* and *A. niger.*

Keywords: *Erigeron sumatrensis, Compositae,* β-farnesene, neophytadiene, spathulenol, spinasterol, antimicrobial

INTRODUCTION

Erigeron sumatrensis Retz is a weed found throughout the Philippines. The plant is used in the treatment of skin disease, influenza, and headache (Flores *et al.*, 1981). An earlier study reported that the 70% ethanol extract of the air-dried leaves of *E. sumatrensis* exhibited strong antibacterial activity against *S. aureus* and *E. coli* and moderate activity against *C. albicans* (Hansel & Lagare, 2005). Previous studies on the aerial part of *E. sumatrensis* Retz. reported the isolation of (7R)-opposite-4(15)-ene-1β,7-diol, 15-methoxyisodauc-3-ene-1β,5α-diol, eudesm-4(15)-ene-1β,6α-diol, 6α-methoxy eudesm-4(15)-ene-1β-ol, 4α,15-epoxyeudesmane-1β-6α-diol, 1α-hydroxy isodauc- 4-en-15-al, aromadendrane-4β,10β-diol, and (5E)-germacra-5,10(14)-dien-1β,4β-diol (Iijima *et al.,* 2003a), and a new cyclopentenone derivative, erigerenone B (Iijima *et al.,* 2003b). Another study also reported the isolation of triterpenoids and sterols from plants of the genus *Erigeron* (Iijima *et al.,* 2002).

We report here the isolation and antimicrobial activities of (E)-β-farnesene **1,** neophytadiene **2,** spathulenol **3,** and spinasterol **4** from the dichloromethane extract of the air-dried leaves of *Erigeron sumatrensis* Retz (Figure 1). To the best of our knowledge this is the first report on the isolation of these compounds from *E. sumatrensis.*