NRCP RESEARCH JOURNAL (2009) 10 (1) : 17 - 26

Terpenoids from *Taraxacum officinale*

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ABSTRACT

Taraxacum officinale, commonly known as dandelion is reported to exhibit antimicrobial properties. The study was conducted to isolate the dichloromethane soluble constituents of the plant which may contribute to this property. The dichloromethane extract of the leaves of *Taraxacum officinale* afforded taraxasteryl acetate (**1a**), lupeol acetate (**1b**), taraxinic acid (**2a**), 11,13-dihydrotaraxinic acid (**2b**), phytyl fatty acid ester (**3**), and squalene (**4**). The structures of **2a** and **2b** were elucidated by extensive 1D and 2D NMR spectroscopy, while **1a**, **1b**, **3**, and **4** were identified by comparison of their ^{1}H and ^{13}C NMR data with those found in the literature. The mixture of **1a** and **1b** indicated low activities against the bacteria: *E. coli, S. aureus, P. aeruginosa* and fungi: *C. albicans* and *T. mentagrophytes.* It was inactive against *B. subtilis* and *A. Niger.*

Keywords: *Taraxacum officinale,* Asteraceae, taraxasteryl acetate, lupeol acetate, taraxinic acid, 11,13-dihydrotaraxinic acid, squalene, phytyl fatty acid ester

INTRODUCTION

Taraxacum officinale, commonly known as dandelion is found only in Benguet. The leaves are used for fomentations and as bitter depurant. The pounded leaves are used for poulticing and applied to remove warts (Quisumbing, 1978). A current study reported that the methanol extract of *T. officinale* exhibited antimicrobial activity against eleven out of the thirty-two tested microorganisms (Sengul *et al.*, 2009). A previous study on the roots of *T. officinale* reported the isolation of 14-O-β-D glucopyranosyl-11,13-dihydro-taraxinic acid and 14-O-β-D glucopyranosyl-taraxinic acid which were obtained from the extract that exhibited inhibitory activity on the formation of leukotriene B4 from activated human neutrophils (Yoshiki, *et al.,* 2001). Other studies on the roots reported the isolation of a new triterpene, 3β-hydroxylup-18(19)-ene-21-one (Kisiel, *et al.,* 2000) and a new γ-butyrolactone glycoside, taraxacoside Rauwald and Huang, 1985). The leaves afforded a sesquiterpene, lettucenin A which was found to be a fungitoxin (Tahara, *et al.,* 1988). The aerial part of the plant afforded scopoletin and esculetin (Komissarenko and Derkach, 1981). *T. officinale* also afforded flavoxanthin and chrysanthemaxanthin (Cadosh, *et al.,* 1978).