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# Components and antimicrobial activity of Oe*nanthe globulosa* L. from Algeria

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## ABSTRACT

*A flavonoid glycoside and panaxydiol were isolated for the first time from the aerial parts of Oenanthe globulosa (Asteraceae). The ethyl acetate extract is found to posse's antibacterial activity against Staphylococcus aureus ATCC 25923, and Escherichia coli ATCC 25922. The structures of these compounds were determined on the basis of spectral data.*

**Key words:** Oe*nanthe globulosa* **L.**, constituents, antimicrobial activity.

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## INTRODUCTION

The Apiaceae family contains more than 3000 species [1]. It is represented by 55 genuses in Algeria [2]. To the best of our knowledge, this plant species has not been investigated for its phytochemical characterization so far [3].

In continuation of our previous investigations of Algerian Asteraceaeous species [4-9], we embarked upon a phytochemical study of Oe*nanthe globulosa* L. here we are reporting the isolation and characterization of flavonol glucoside and panaxydiol from ethyl acetate extract of the aerial parts of *Oenanthe globulosa* L. There is no report on previous phytochemical study of *O. globulosa* L.

## MATERIALS AND METHODS

### Plant material

The aerial parts of Oe*nanthe globulosa* L were collected in May 2002 (flowering stage) from El Kala, Algeria. The plant was identified by Pr. Hocine Laouer from the Department of Biology

(University of Setif, Algeria).. A voucher specimen was deposited at the chemistry Department University of Mentouri-Constantine under the code number OG 10.

**Extraction**

Air –dried and powered aerial parts (600 g) were soaked in MeOH (3x1000 ml), the MeOH extract was concentrated and the residue dissolved in $H_2O$ (500 ml). The filtrated was successively treated with dichloromethane (3x250 ml) and ethyl acetate (3x250 ml). The solvents were removed to afford dichloromethane (600 mg) and ethyl acetate (1g). The dichloromethane extract was concentrated under reduced pressure and column chromatographed on silica gel (200-400 mesh) with a gradient of n-hexane – ethyl acetate with increasing polarity. Fraction $F_5$ was chromatographed on silica gel preparative TLC plates eluted with the system n-hexane – ethyl acetate (1:1), affording compound **1**. The ethyl acetate fraction was subjected to preparative TLC on polyamide DC6 using $H_2O$ – MeOH – Methylethylcetone - Acethylacetone (13:3:3:1) to yielded compound **2.** The structure of these compounds was elucidated by UV, $^1$HNMR, $^{13}$CNMR analyses and comparisons with literature data [10-14].

**Identification of components**

**Compound 1 9,10-epoxy-1-heptadecen-4,6-diyn-3,8-diol (panaxydiol) :** yellow oil, $^1$HNMR ($CDCl_3$,δ, ppm, J/Hz): 5.48 (1H, d, J = 17.0, H-1a), 5.27 (1H, d, J = 10.1, H-1b, 5.94 (1H, ddd, J = 17.0, 10.1, 5.2, H-2), 4.94 (1H, d, J = 5.2, H-3), 4.34 ( 1H, d, J = 7.3, H-8), 3.15 (1H, dd, J = 7.3, 3.9, H-9), 3.06 (1H, dt, J = 10.7, 3.9, H-10), 1.69 (2H, m, H-11), 1.40 (2H, m, H-12), 1.30 (m, 8H, H-13, H-14, H-15, H-16), 0.87 (3H, brt, J = 6.8, H-17).

$^{13}$C NMR ($CDCl_3$,13C,δ, ppm):117.3 (C-1), 135.7 (C-2), 63.4 (C-3), 78.6 (C-4), 69.9 (C-5), 70.1 (C-6), 78.1 (C-7), 58.0 (C-8), 60.7 (C-9), 57.9 (C-10), 31.7 (C-11), 26.5 (C-12), 29.6 (C-13), 29.3 (C-14), 27.5 (C-15), 22.5 (C-16), 14.0 (C-17).

**Table 1. Antimicrobial Activity of the Ethyl acetate Extract of O*enanthe golobulosa* L.**

| Strains of bacteria | Inhibition zone, mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1/5v/v | | | 1/10v/v | | | ethanol | gentamycin |
| | R1 | R2 | R3 | R1 | R2 | R3 | | |
| *Staphylococcus aureus* ATCC 29213 | 18S | 17S | 15S | 15S | 15S | 15S | - | 35 |
| *Staphylococcus aureus* ATCC 43300 | 16S | 17S | 18S | 13S | 15S | 14S | - | 16 |
| *Staphylococcus aureus* ATCC 43566 | 15S | 14S | 16S | 12S | 13S | 13S | - | 34 |

*R1: repetition n = 1, R2: repetition n = 2, R3: repetition n = 3.*
*Standard: gentamycin*

**Compound 2 quercetin 3-O-rutinoside:** mp: 190-191°C UV, (λmax, MeOH, nm): 259, 347; +NaOH: 272, 322, 407; +NaOAc: 268, 327, 375; +$AlCl_3$: 274, 414; +$AlCl_3$/HCl: 269, 349, 393. $^1$HNMR ($CD_3OD$,δ, ppm, J/Hz): 7.75 (1H, m, H-2′), 7.70 (1H, m, H-6′), 6.90 (1H, d, J = 8.3, H-5′), 6.45 (1H, d, J = 2.1, H-8), 6.25 (1H, d, J = 2.1, H-6), 5.20 (1H, d, J = 7.4, H-1″glucose), 4.55 (1H, s, H-1‴ rhamnose), 1.15 (3H, d, J = 6.1, H-6‴ rhamnose).

These compounds were isolated from O*enanthe golobulosa* L for the first time.

**Antimicrobial Activity**

As reported in Table 1, ethyl acetate extract of oe*nanthe golobulosa* L *using* the disk diffusion method [15, 16], showed good antibacterial activity against the microorganisms *Staphylococcus* aureus ATCC 29213 and *Staphylococcus aureus* ATCC 43300.

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