

ISOLATION OF A NEW DITERPENE FROM *SIDERITIS CONGESTA*

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ABSTRACT

Linearol¹ (3 β , 7 α -Dihydroxy-18-acetoxykaur-16-ene) (1) as major compound and Siderol-18-palmitate (C₃₆H₆₀O₄) (2) have been isolated from *Sideritis congesta*². The structures of these compounds have been established by spectroscopic methods as ¹H-NMR, Mass spectroscopy (molecular peak) and X-ray³ crystallography for linearol. According to the literature, siderol-18-palmitate is a new compound.

Keywords: Siderol-18-palmitate, Linearol, *Sideritis congesta*

1.INTRODUCTION

In the literature, generally, many of diterpens have been isolated from *Sideritis species*^{4,5}. Some *Sideritis species* include only kaurene skeleton but some of them includes only isokaurene skeleton. *Sideritis congesta* includes both of kaurene and isokaurene skeleton. Some *Sideritis species* are endemic to Spain, Mediterranean, Iberian Peninsula, Canary Islands, and Andalusia^{5,6,7}. *Sideritis species* have been used in folk medicine for their antiinflammatory, antirheumatic, digestive and antimicrobial activities in Turkey as well as in Europe^{8,9}. They are also used as a home remedy for gastro-intestinal disturbances and herbal teas in Turkey¹⁰⁻¹¹.

We have investigated the aerial parts of *Sideritis congesta*, a species endemic to Mediterranean area, from which we have isolated mainly two diterpenes except other very few components. We report here diterpenic constituents of *Sideritis congesta*. Its diterpenic constituent are linearol (3 β , 7 α -Dihydroxy-18-acetoxykaur-16-ene) (1) and siderol-18-palmitate (C₃₆H₆₀O₄) (2), a new one from our research and literature. These two compound structures could see from Figure.

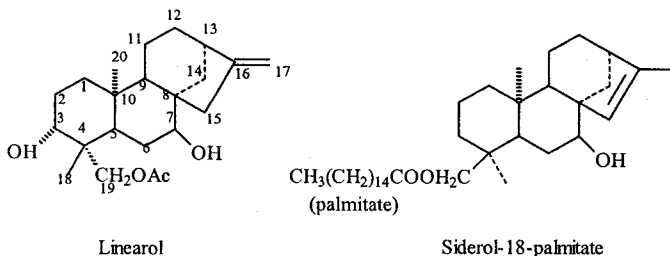


Figure The structure of linearol and siderol-18 palmitate

2. RESULTS AND DISCUSSIONS

From *Sideritis congesta* extract two diterpens were isolated. They were identified as linearol (1) and siderol-18-palmitate (2) based on $^1\text{H-NMR}$, X-ray crystallography and MS spectral data.

Siderol-18-palmitate: $^1\text{H-NMR}$ spectrum showed the signal of two methyls at δ 0,77 and 1,07 (C-4 and C-10). δ -1,24 peak shows methyl protons at C-17. δ -5,56 peak shows vinylic protons at C-15. δ -1,3 intense peak show palmitate protons as a CH_2 - form . Except δ -1,3 peak in the siderol-18-palmitate $^1\text{H-NMR}$ spectrum, all peaks show similarity with siderol $^1\text{H-NMR}$ spectrum¹². From the integration of $n\text{-CH}_2$ - in the $^1\text{H-NMR}$ spectrum showed that the compound has 60 protons. From mass spectrum 255 peak came across a palmitate group at a high degree. All these data indicates siderol-18 palmitate which is a new compound according to literature. Linearol was a well known compound in the studied *Sideritis species*^{6,7,10} in the world. It's structure identified with spectroscopic methods and X-ray³, respectively. Our isolated linearol spectroscopic data showed completely same data with literature¹⁰.

3. EXPERIMENTAL

Identification:

Air-dried aerial parts of the plant *Sideritis congesta* (350 g) collected above Alanya area were used for work plant identified at Herbarium at Biology Department of Science Faculty, Ankara University.

Isolation:

A general description of procedure to isolate the terpenoid substances of species of the genus *Sideritis* has been given in a different literatures^{4,5,6,11}. Dried aerial and finely broken up parts of *Sideritis congesta* were extracted with ethyl acetate in a Soxhlet. The neutral fraction (21 g) was applied on a Silica-gel column and eluted with petroleum ether-ether, ethyl acetate and ethyl alcohol mixtures of increasing polarity. Yielding the following compounds in order of elution are linearol (200 mg) and siderol-18-palmitate (18 mg). After column chromatography siderol-18 palmitate was isolated and purified by analytical and preparative thin layer chromatography as an oil.

Linearol: mp:217 °C ; $[\text{M}]^+$ at m/z 362, ($\text{C}_{20}\text{H}_{34}\text{O}_4$) requires 362. $^1\text{H-NMR}$ δ -0,77 and 1,07 (each 3H, s); 4,04 (2H); 3,60 (two hydrogens H-3, H-7); 4,83 (two hydrogens, = CH_2). Siderol-18-palmitate: ($\text{C}_{36}\text{H}_{60}\text{O}_4$) . $^1\text{H-NMR}$ δ -0,77 and 1,07 (each 3H, s);1,24 (3H); 5,56 (H); 1,3 (palmitate's H)

Physical Measurements

The spectral data were recorded with the following instruments:

The ¹H-NMR spectra data were measured on a Bruker GmbH Dpx-400 Mhz High Performance Digital FT-NMR Spectrometer (SiMe₄ as standard). Mass spectrums from Police Academy, Criminal Laboratory.

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