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A SESQUITERPENE LACTONE FROM *ARTEMISIA AUSTRIACA*

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SUMMARY

Artemisia austriaca Jacq. (*Compositae*, tribe *Anthemidae*) is one of the 23 species of *Artemisia* which grow in Turkey (1,2). This report is one of the series on the chemical investigations of the Turkish *Artemisia* (3-8). In this paper, a sesquiterpene lactone (8-α-hydroxyachillin) has been isolated from *A.austriaca*.

ÖZET

Artemisia austriaca Jacq. (*Compositae*, tribus *Anthemidae*) Türkiye'de yetişen 23 *Artemisia* türünden biridir (1,2). Bu çalışma, *Artemisia* türlerinin kimyasal yapısını araştıran bir seri incelemenin bir bölümünü oluşturmaktadır (3-8). Bu çalışma da *A.austriaca* türünden bir seskiterpen lakton (8-α-hidroksiaçillin) izole edilmiş ve yapısı aydınlatılmıştır.

Keywords: *Artemisia austriaca*, sesquiterpene lactone

INTRODUCTION

The essential oil of *A.austriaca* shows a strong antimicrobial effect (9). The vapor is prepared by boiling the plant and is used for vaginal purposes by women in Anatolia. *A.austriaca* was investigated previously for acetylenes (10), flavonoids (8, 11) and sesquiterpene lactones. Three sesquiterpene lactones arborescin, austricin and artausin were reported in this work (11). In this previous paper the occurence of 8-α-hydroxyachillin, an other sesquiterpene lacton is shown.

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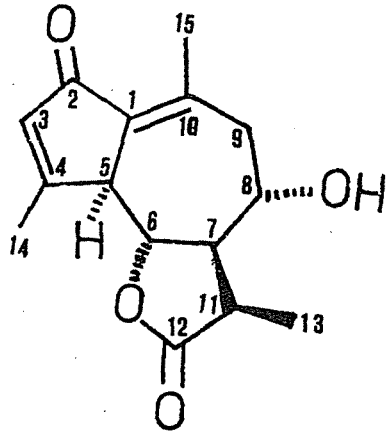

Fig. 1. 8-α-hydroxyachillin

RESULTS

The presence of 8-α-hydroxyachillin in *A.austriaca* Jacq. has been for the first time. The structure of this sesquiterpene lactone has been established by spectral analysis.

UV (λ_{max}): 255 nm, IR ν_{max}^{KBr} : 3500 (OH), 1760 (γ-lactone), 1680 (cyclopentenone), 1610 and 1630 (unsaturation) cm^{-1}. ^1H NMR ($CDCl_3$, δ): 6.15 brs (H-3), 3.37 brd (H-5), 3.84 dd (H-6), 2.53 m (H-7), 3.71 td (H-8), 2.74 dd (H-9), 2.91 dq (H-11), 1.25 d (H-13), 2.40 s (H-14), 2.27 s (H-15) ($J_{5,6}$=10 Hz, $J_{6,7}$=10 Hz, $J_{7,8}$=11 Hz, $J_{8,9\alpha}$=11 Hz, $J_{8,9\beta}$=2.5 Hz, $J_{9\alpha,10\beta}$=14 Hz, $J_{11,13}$=7 Hz). ^{13}C NMR ($CDCl_3$, δ): 146,2 (C-1), 195,6 (C-2), 135,4 (C-3), 178,4 (C-4), 51,8 (C-5), 80,9 (C-6), 58,0 (C-7), 65,0 (C-8), 48,2 (C-9), 132,7 (C-10), 38,0 (C-11), 170,6 (C-12), 9,3 (C-13), 21,7 (C-14), 19,8 (C-15). MS m/z (rel.int.): 262 $[M]^+$ (100), 244 $[M-H_2O]^+$ (14), 229 $[M-H_2O-Me]^+$ (26), 216 (49), 201 (56), 189 (88), 175 (56), 171 (92), 159 (74), 151 (26), 147 (91), 136 (85), 121 (53), 115 (37), 108 (26).

EXPERIMENTAL

Plant material - Aerial parts of *Artemisia austriaca* Jacq. were collected at the flowering time in July from Erzurum (Eastern Turkey). A voucher specimen identified by Prof.Dr.N.Özhatay has been deposited in the Herbarium of the Faculty of Pharmacy, University of Istanbul (ISTE 62414).

Extraction and isolation - The dried plant material (1 kg) was extracted in a Soxhlet apparatus with petroleum ether. The residual plant material from the petroleum ether extraction was re-extracted with 95% EtOH in a Soxhlet apparatus. The EtOH extract was concentrated, diluted with H_2O, and extracted with C_6H_6, $CHCl_3$. Evaporation o the $CHCl_3$ extract gave 5.6 g of residue which was chromatographed over Silica gel (0.2-0.5 mm Merck) (220 g) using benzen with increasing amounts of acetone, 111 fractions being collected. Fraction 73-78 were combined (529 mg). For the purification of sesquiterpene lactone (90 mg) preparative TLC and Sephadex LH-20 were applied.

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REFERENCES

1. Cullen, J., *Artemisia* in Davis, P.H., Flora of Turkey and the East Aegean Islands, Vol. 5, p. 311-324, University Press, Edinburgh (1975).
2. Davis, P.H., Mill, R.R., Tan, K., Flora of Turkey and the East Aegean Islands (supplement), vol. 10, p. 163, University Press, Edinburgh (1988).
3. Meriçli, A.H., Jakupovic, J., Bohlmann, F., Damadyan, B., Özhatay, N., Çubukçu, B., *Planta Med.*, **54**, 447-449 (1988).
4. Meriçli, A.H., Çubukçu, B., Jakupovic, J., Özhatay, N., *Planta Med.*, **54**, 463-464 (1988).
5. Çubukçu, B., Meriçli, A.H., Özhatay, N., Damadyan, B., *Acta Pharm. Turc.*, **31**, 41-42 (1989).
6. Meriçli, A.H., Özhatay, N., Çubukçu, B., *Fitoterapia*, **61**, 145-146 (1990).
7. Çubukçu, B., Meriçli, A.H., Güner, N., Özhatay, N., *Fitoterapia*, **61**, 377-378 (1990).
8. Çubukçu, B., Melikoğlu,G., *Planta Med.*, **61**, 488 (1995).
9. Coşar, G., Çubukçu, B., Melikoğlu, G., Öztürkmen, L., *J.Fac.Pharm. Istanbul*, **30**, 20-24 (1994).
10. Heywood,V.H., Harborne, J.B., Turner, B.L., The Biology and Chemistry of the *Compositae*, Vol. **II**, Academic Press, London, New York, San Francisco (1977).
11. Adekenov, S.M., Aituganov, K.A., Golovtsov, N.I., *Khim.Prir.Soedin*, 148-149 (1987).

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