

CAPILLANOL: A NEW ACETYLENIC ALCOHOL FROM *ARTEMISIA CAPILLARIS*

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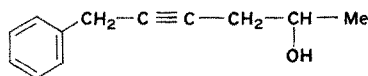
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Key Word Index—*Artemisia capillaris*; Compositae; essential oil; acetylenic alcohol; capillanol.

The following compounds have been isolated previously from the essential oil of *Artemisia capillaris* Thunb.: β -pinene [1], capillen [2], capillon [3], capillin [4], capillarin [5], 1-(2'-methoxyphenyl)-2,4-hexadiyne [6]. The isolation and structural elucidation of a new acetylenic alcohol, named capillanol, is now reported.

The essential oil was obtained by steam distillation of the aerial parts of the plant, which was collected from the outskirts of Osaka-Fu, Japan. The compound, 0.1% of the essential oil, was isolated by Al_2O_3 column chromatography and by preparative GLC, using Celite-545 as the stationary phase. The compound analysed for $\text{C}_{12}\text{H}_{14}\text{O}$, $[\alpha]_D^{21.5} -5.7^\circ$ (0.418%, in EtOH); IR spectrum shows $\text{C}\equiv\text{C}$ str at $2225, 2340\text{ cm}^{-1}$ (W), secondary OH str at 3375 cm^{-1} (S) and $1085, 1110\text{ cm}^{-1}$ (W), aromatic str at $1600, 1495\text{ cm}^{-1}$ (M), aromatic adjacent 5H drf at $730, 695\text{ cm}^{-1}$ (S). NMR spectrum (in CCl_4 at 60 MHz) shows signals for three protons of methyl group in the β -position of the hydroxyl group at $\delta_{\text{ppm}}^{\text{CCl}_4} 1.23$ (J 6.1 Hz), as a doublet. The one proton at δ 3.70 ~ 4.02 (J 6.1 Hz) as a multiplet, is in an α -position to the hydroxyl group. A multiplet around δ 1.65 integrating for one proton is assumed to be an OH proton; on deuteration, the OH proton disappears and the spectrum shows no signal in this region. The five protons in the benzene ring appeared as a broad singlet from δ 7.05 to 7.35. The multiplet at δ 2.20 ~ 2.41

indicated the methylene protons of the grouping $\text{C}\equiv\text{C}-\text{CH}_2-\text{CH}(\text{OH})-$. These methylene multiplets show a complex pattern of overlapping bands [7]. The remaining feature of the spectrum is a broad signal at δ 3.55 attributable to the methylene protons of the grouping $\phi-\text{CH}_2-\text{C}\equiv\text{C}-$.



(1)

Consequently, the splitting pattern of the signals in the NMR spectrum appears to be in conformity with structure (1) for capillanol. The mass spectrum was also compatible with this structure. Besides the molecular ion peak at m/e 174 the other significant peaks discernible were at m/e 159 (M^+-Me), 156 ($\text{M}^+-\text{H}_2\text{O}$), 130 (base peak), 129 ($\text{M}^+-\text{CH}(\text{OH})\text{Me}$), 115 ($\text{M}^+-\text{CH}_2\text{CH}(\text{OH})\text{Me}$) and 91 ($\text{M}^+-\text{C}\equiv\text{CCH}_2\text{CH}(\text{OH})\text{Me}$).

This component is probably responsible for the characteristic odour of *A. capillaris*.

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