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A MONOTERPENE ALCOHOL FROM *LAURUS NOBILIS*

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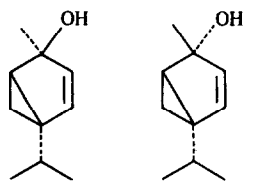
Key Word Index—*Laurus nobilis*; Lauraceae; laurel; essential oil; monoterpene alcohol; *cis*-thuj-2-en-4-ol.

Abstract—*Cis*- and *trans*-thuj-2-en-4-ol have been identified in the essential oil of *Laurus nobilis*, the former as a novel compound.

During our previous work [1] on laurel leaves, *Laurus nobilis* L., we obtained the mass spectra (by GC/MS) of the laurel volatiles. A pair of identical mass spectra aroused our interest. One of these spectra was identified [1] as that of *trans*-thuj-2-en-4-ol (**2**). We report here that the other spectrum belonged to *cis*-thuj-2-en-4-ol (**1**), a new bicyclic monoterpene alcohol.

Freshly ground laurel leaves (200 g, commercial sample; origin Turkey) were mixed with 600 ml H_2O and simultaneously steam distilled and extracted with 10 ml pentane–ether (2:1) during 3 hr using a modified Likens and Nickerson apparatus [2]. After drying (Na_2SO_4) the extract was concentrated by distillative fractionation using a Vigreux column, yielding 5 ml of essential oil, a part of which was fractionated by preparative GC on a Carbowax 20 M column. The fraction which contained the trace components **1** and **2**, both less than 0.01 % of the essential oil, was rechromatographed on a capillary CP Sil 5 CB fused silica column (Chrompack). The two isomers were identified on the basis of identity of the mass spectra and Kovats indices on two different capillary columns with reference samples.



1 **2**

EXPERIMENTAL

Compound **1**, found: M^+ 152.1201. $C_{10}H_{16}O$ requires 152.1201. Compounds **1** and **2**: MS 90 eV, *m/z* (rel. int.): 152 $[M]^+$ (< 1), 137 (5), 134 (10), 119 (30), 109 (21), 92 (48), 91 (100), 77 (10), 65 (13), 43 (27). The relative intensities of fragment ions in the observed mass spectrum of compound **2** differ somewhat from those published [3]. Kovats indices: capillary CP Sil 5 CB fused silica column (Chrompack), 140° isothermal, compound **2** 1035 and compound **1** 1053; capillary CP Wax 57 CB fused silica column (Chrompack), 100°C isothermal, compound **2** 1468 and compound **1** 1551.

The *trans*-isomer is already reported in the literature [3–5]. The reference sample of the *cis* isomer was isolated as a minor constituent from a sample of *trans*-thuj-2-en-4-ol [4] by preparative GC on a Carbowax 20 M column. The identification of compound **1** was confirmed by comparison of the ^1H NMR and ^{13}C NMR spectra and mass spectra with those of the *trans*-isomer. Compound **1**: ^1H NMR (90 MHz, CCl_4, TMS as internal standard): δ0.85 (3H, *d*, J = 7 Hz, isopr. Me), 0.95 (3H, *d*, J = 7 Hz, isopr. Me), 1.35 (3H, *s*, Me), 5.15 (1H, *d*, J = 6 Hz, CH=CH), 5.75 (1H, *d*, J = 6 Hz, CH=CH). ^{13}C NMR (20 MHz, $CDCl_3$, δ_{TMS} 0): δ20.3, 20.5, 22.7, 28.5, 29.3, 30.0, 41.7, 82.9, 134.5, 135.3. Compound **2**: ^1H NMR (90 MHz, CCl_4, TMS as internal standard): δ0.9 (3H, *d*, J = 7 Hz, isopr. Me), 1.0 (3H, *d*, J = 7 Hz, isopr. Me), 1.3 (3H, *s*, Me), 5.3 (1H, *d*, J = 6 Hz, CH=CH), 5.9 (1H, *d*, J = 6 Hz, CH=CH). ^{13}C NMR (20 MHz, $CDCl_3$, δ_{TMS} 0): δ20.4, 20.8, 22.9, 25.9, 29.6, 32.9, 40.7, 82.5, 134.5, 137.6.

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