

Table 2. Spectral Data of 3-Alkenols 2 and 3

Product	I. R. (film) ^a ν [cm ⁻¹]	¹ H-N.M.R. (CCl ₄ , TMS _{int}) ^b δ [ppm]	¹³ C-N.M.R. (neat + D ₂ O _{capillary}) ^b δ [ppm]
2a	3400(OH); 3050, 1640 (HC=C)	1.7 (s, 1H, OH); 1.8 (s, 3H, CH ₃); 2.3 (t, 2H, J = 7 Hz, CH ₂ -C=C); 3.8 (t, 2H, J = 7 Hz, O-CH ₂); 4.8-5.0 (m, 2H, H ₂ C=C)	23.3, 41.6, 61.1, 112.8, 143.0
2b	3360 (OH); 3030, 1660 (HC=C)	1.4-1.9 (m, 6H, 2CH ₃); 2.0-2.4 (m, 2H, CH ₂ -C=C); 2.3 (s, 1H, OH); 3.6 (t, 2H, J = 7 Hz, O-CH ₂); 5.1-5.5 (m, 1H, CH)	23.6, 34.8, 42.6, 60.4, 120.8, 132.3 ^c
2c	3320 (OH); 3040, 1640 (HC=C)	1.0 (t, 3H, J = 7 Hz, CH ₃); 1.8-2.5 (m, 4H, 2CH ₂ -C=C); 2.4 (s, 1H, OH); 3.6 (t, 2H, J = 7 Hz, O-CH ₂); 5.3-5.7 (m, 2H, 2CH)	14.1, 26.1, 36.3, 62.4, 125.6, 134.6 ^c
2d	3380 (OH); 3020, 1650 (HC=C)	1.0 (d, 6H, J = 7 Hz, 2CH ₃); 2.2 (t, 2H, J = 6 Hz, CH ₂ -C=C); 2.1-2.4 (m, 1H, CH-CH ₃); 2.7 (s, 1H, OH); 3.6 (t, 2H, J = 7 Hz, O-CH ₂); 5.2-5.6 (m, 2H, 2CH=C)	22.9, 31.6, 36.5, 62.4, 123.9, 139.8 ^c
2e	3340 (OH); 3040, 1640 (HC=C)	1.5-2.5 (m, 8H, 3CH ₂ ring, CH ₂ -C=C); 3.1 (s, 1H, OH); 3.6 (t, 2H, J = 7 Hz, O-CH ₂); 5.2-5.5 (m, 1H, CH)	23.2, 32.4, 34.1, 35.1, 60.3, 125.0, 140.8
2f	3410 (OH); 3060, 1640 (HC=C)	1.3-2.4 (m, 10H, 4CH ₂ ring, CH ₂ -C=C); 3.1 (s, 1H, OH); 3.8 (t, 2H, J = 7 Hz, O-CH ₂); 5.6-5.9 (m, 1H, CH)	23.4, 23.9, 26.2, 29.5, 42.1, 61.5, 123.3, 135.5
3b	3400 (OH); 3030, 1620 (HC=C)	1.4-1.9 (m, 6H, 2CH ₃); 2.0-2.4 (m, 3H, CH ₂ -C=C, OH); 5.3-5.7 (m, 1H, CH)	23.8, 35.0, 42.8, 61.6 (quin, CD ₂ , J_{CD} = 25 Hz), 120.4, 132.7 ^c
3c	3340 (OH); 3040, 1640 (HC=C)	1.0 (t, 3H, J = 7 Hz, CH ₃); 1.7-2.3 (m, 4H, 2CH ₂ -C=C); 3.0 (s, 1H, OH); 5.3-5.6 (m, 2H, 2CH)	13.6, 25.5, 35.6, 61.1 (quin, CD ₂ , J_{CD} = 25 Hz), 125.3, 134.0 ^c
3d	3400 (OH); 3040, 1650 (HC=C)	0.9 (d, 6H, J = 7 Hz, 2CH ₃); 2.0-2.4 (m, 3H, CH ₂ -C=C, CH-CH ₃); 2.2 (s, 1H, OH); 5.2-5.5 (m, 2H, 2CH=C)	23.8, 32.6, 37.6, 62.9 (quin, CD ₂ , J_{CD} = 22 Hz), 125.1, 142.5 ^c
3e	3400 (OH); 3050, 1650 (HC=C)	1.5-2.5 (m, 8H, 3CH ₂ ring, CH ₂ -C=C); 2.9 (s, 1H, OH); 5.5-5.8 (m, 1H, CH)	23.2, 32.3, 34.2, 35.2, 60.1 (quin, CD ₂ , J_{CD} = 23 Hz), 125.1, 141.6

^a Recorded in a Perkin-Elmer 298 infrared spectrometer.^b Recorded in a Varian FT-80A spectrometer.^c For the major isomer.

C₇H₁₃ClO₃ calc. C 46.54 H 7.25
(180.6) found 46.4 7.3

I. R. (film): ν = 3450 (OH); 1720 cm⁻¹ (C=O).

¹H-N.M.R. (CCl₄ + D₂O capillary): δ = 1.3 (t, 3H, J = 7 Hz, O-CH₂-CH₃); 1.3 [s, 3H, C(OH)-CH₃]; 2.5, 2.7 (2d, 2H, J = 18 Hz, CH₂-C=O); 3.5 (s, 2H, CH₂Cl); 4.2 (q, 2H, J = 7 Hz, O-CH₂-CH₃); 4.3 ppm (s, 1H, OH).

¹³C-N.M.R. (neat + D₂O capillary): δ = 14.9, 25.8, 43.6, 53.2, 61.5, 72.0, 172.3 ppm.

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¹ Barluenga, J., Yus, M., Concellón, J. M., Alvarez, F. J. *Chem. Research (S)* **1985**, 128; and early publications cited therein.

² Intermediates of this type are stable species only at low temperature: see, for instance, Barluenga, J., Flórez, J., Yus, M. *J. Chem. Soc., Perkin Trans. 1* **1983**, 3019; and literature cited therein.

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⁴ Mikeska, L. A., Arundale, E., *U.S. Patent* 2 308 192 (1939), Standard Oil Development Corp.; *C.A.* **1943**, 37, 3450.

⁵ Sondheimer, F. J. *Chem. Soc.* **1950**, 877.

⁶ Arnold, R. T., Amidon, R. W., Dodson, R. M. *J. Am. Chem. Soc.* **1950**, 72, 2871.

⁷ Cook, J. Dansi, E. *J. Chem. Soc.* **1950**, 500.