Addition of carboxyalkyl radicals to alkenes through a catalytic process using a Mn(II)/Co(II)/O₂ redox system

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Spectral Data

(3): 2-Methyl-dodecanoic acid methyl ester

¹H NMR 3.57 (s, 3H), 2.33-2.38 (m, 1H), 1.50-1.59 (m, 1H), 1.25-1.36 (m, 1H), 1.15-1.25 (m, 14H), 1.04-1.09 (m, 5H), 0.81 (t, *J* = 6.8 Hz, 3H) ¹³C NMR 177.2, 51.4, 51.3, 39.4, 33.8, 31.9, 29.5, 29.5, 29.3, 27.2, 22.8, 22.6, 17.0, 14.1; IR (NaCl) 2924, 2854, 1740, 1463, 1163 cm⁻¹.

(7): 2-Methyl-decanoic acid methyl ester

¹H NMR 3.66 (s, 3H), 2.49 (m, 1H), 1.65 (t, *J* = 7.3 Hz, 2H), 1.20-1.35 (m, 15H), 0.96 (t, *J* = 6.8 Hz, 3H); ¹³C NMR 174.5, 50.7, 38.3, 32.5, 32.3, 30.3, 27.2, 23.1, 15.2, 14.0; IR (NaCl) 2927, 2854, 1739, 1461, 1161 cm⁻¹.

(10): 2-Cyclooctyl-propionic acid methyl ester

¹H NMR 3.66 (s, 3H), 2.27-2.37 (m, 1H), 2.01-2.06 (m, 1H), 1.20-1.78 (m, 14H), 1.14 (d, *J* = 6.8 Hz, 3H); ¹³C NMR 176.8, 51.3, 46.1, 39.9, 31.2, 29.0, 26.9, 26.7, 26.5, 25.9, 25.7, 14.0; IR (NaCl) 2921, 2850, 1737, 1446, 1351, 1256, 1195, 1162, 1066 cm⁻¹.

(11): Cyclooctyl-acetic acid methyl ester

¹H NMR 3.58 (s, 3H), 2.14 (d, *J* = 7.3 Hz, 2H), 1.91-2.05 (m, 1H), 1.10-1.65 (m, 14H); ¹³C NMR 173.4, 51.1, 42.6, 34.4, 31.9, 26.9, 25.9, 25.0; IR (NaCl) 2918, 1738, 1470, 1434, 1161 cm⁻¹.

(15): 2,13-Dimethyl-tetradecanoic acid dimethyl ester

^1H NMR 3.66 (s, 6H), 2.43 (m, 2H), 1.60-1.68 (m, 2H), 1.20-1.41 (m, 18H), 1.14 (t, $J = 6.8$ Hz, 6H); ^{13}C NMR 177.2, 51.5, 51.3, 39.4, 33.8, 29.5, 29.5, 27.2, 17.1; IR (NaCl) 2927, 2854, 1739, 1460, 1434, 1377, 1258, 1196, 1166 cm^{-1} .

(18): (Octahydropentalen-1-yl)-acetic acid methyl ester

^1H NMR 3.66 (s, 3H), 2.35-2.47 (m, 2H), 2.20-2.30 (m, 1H), 1.78-1.91 (m, 4H), 1.48-1.62 (m, 4H), 1.25-1.39 (m, 2H), 1.10-1.17 (m, 2H); ^{13}C NMR 173.7, 51.4, 51.3, 49.6, 44.1, 43.1, 39.7, 33.9, 33.6, 33.1, 32.3, 25.5; IR (NaCl) 2945, 2859, 1738, 1434, 1246, 1200, 1173 cm^{-1} .