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synthesis of cis-carveol (4b) ¹⁵ 0.3 mol of carvone in 75 ml dry ether was added dropwise over one hour to a suspension of 0.084 mol of LiAlH₄ in 75 ml dry ether, after which the solution was heated under reflux for 90 minutes. 25 ml of water was added, followed by 200 ml of 10 % HCl solution. The ether layer was separated and the aqueous layer was extracted three times with 100 ml ether. The combined organic layer were neutralized with a saturated sodiumbicarbonate solution, washed three times with 100 ml water and dried over anhydrous sodium sulfate. Ether was evaporated and the resulting oil was distilled under vacuum giving a colourless oil; bp 112°C (10 mm) yield 87%; purity 97%. ¹H NMR (CDCl₃) δ 5.50 (t, 1H); 4.75 (s, 2H); 4.18 (t, 1H); 2.28 (m, 1H); 2.15 (m, 1H); 2.04 (m, 2H); 1.91 (br, OH), 1.76 (m, 3H); 1.74 (s, 3H); 1.50 (m, 1H); ¹³C NMR (CDCl₃) δ 149.0, 136.3, 123.8, 109.1, 70.9, 40.5, 38.0, 31.0, 20.6, 19.0; GC/MS m/z (%) 152 (14), 134 (49), 109 (80), 84 (100)

synthesis of trans-carveol (4a) and the monoacetate of sorbrerol (9) ¹⁶ 0.66 mol of α-pinene oxide was added dropwise during two hours to a suspension of 90 g sodium acetate in 440 g glacial acetic acid. The reaction temperature increased during the addition to 55 °C. The mixture was stirred overnight and then poured into one litre of water. The organic layer was separated and the aqueous layer was extracted three times with 100 ml of ether. The combined organic layers were neutralized with a saturated sodium carbonate solution, washed with three portions of 100 ml water and dried over anhydrous sodium sulfate. The ether was removed to afford 114 g of light yellow oil which was distilled under reduced pressure to give three fractions. The first was campholenaldehyde. The second fraction was identified as trans-carveol; yield 14%; purity 100%. ¹H NMR (CDCl₃) δ 5.59 (d, 1H); 4.73 (d, 2H); 4.02 (t, 1H); 2.34 (br, OH); 2.16 (m, 1H); 1.92 (m, 2H); 1.80 (s, 3H); 1.74 (s, 3H); 1.60 (m, 2H); ¹³C NMR (CDCl₃) 149.2, 134.4, 125.3, 109.0, 68.5,

36.8, 35.3, 31.0, 20.9, 20.8; GC/MS m/z (%) 152 (19), 134 (15) 109 (100), 84 (81).

The third fraction was identified as the monoacetate of sorbrerol; yield 30%; purity 100%. ^1H NMR (CDCl_3) δ 5.53 (d, 1H); 3.99 (s, 1H); 2.82 (OH, Br); 2.22 (t, 1H); 2.05 (m, 1H) 1.95 (s, 3H); 1.95-1.70 (m, 2H); 1.70 (s, 3H); 1.47 (s, 3H); 1.43 (s, 3H); 1.40 (m, 1H); ^{13}C NMR (CDCl_3) δ 170.6, 134.6, 124.7, 84.3, 68.3, 37.0, 32.6, 26.6, 23.4, 22.5, 22.4, 20.8; GC/MS m/z (%) 152 (20), 137 (23), 119 (54), 109 (100).

epoxidation of trans-carveol (4b) trans-carveol was epoxidized via two procedures. In the first procedure a commercial sample of 40 mmol carveol (cis/trans = 48/52), 20 mmol TBHP, 0.4 mmol vanadyl acetylacetonate were heated in 40 ml 1,2-dichloroethane at 80 °C for 60 seconds. The solvent and formed *tert*-butanol were removed under vacuum. The resulting yellow oil which consisted of trans-epoxy carveol, cis-carveol, carvone and trace amounts of trans-carveol and cis-epoxy carveol was purified by column chromatography (hexane:ethyl acetate = 95:5); yield 46% (based on trans carveol); purity 100%. ^1H NMR (CDCl_3) δ 4.70 (d, 2H); 3.93 (t, 1H); 3.28 (t 1H); 2.65 (br, 1H, OH); 2.30 - 2.10 (m, 2H); 1.72 (s, 3H); 1.80 - 1.60 (m, 2H); 1.43 (s, 3H); 1.35 (m, 1H); ^{13}C NMR (CDCl_3) δ 147.9, 109.5, 68.0, 62.9, 59.9, 35.6, 32.0, 30.1, 21.5, 21.1; GC/MS m/z (%) 168 (5), 150 (22), 135 (45), 107 (74), 87 (91), 43 (100). The second procedure was similar to the first except that pure trans-carveol was used as substrate with an equimolar amount of TBHP; yield 78%; purity 100%.

epoxidation of cis carveol (4a) cis-carveol was epoxidized by heating 26 mmol cis-carveol, 26 mmol TBHP, 0.26 mmol vanadyl acetylacetonate in 30 ml 1,2-dichloroethane at 80 °C for one hour. Solvent and *tert*-butanol were evaporated under vacuum. The resulting yellow oil which consisted of carvone and cis-epoxycarveol was purified by silica column chromatography (hexane:ethylacetate = 90:10); yield 50%; purity 100%

^1H NMR (CDCl_3) δ 4.68 (s, 2H); 3.85 (t, 1H); 3.15 (d, 1H); 2.78 (br, 1H, OH); 2.10 - 1.90 (m, 2H); 1.80 - 1.60 (m, 2H); 1.67 (s, 3H); 1.45 (s, 3H); 1.35 (m, 1H); ^{13}C NMR (CDCl_3) δ 147.7, 109.7, 72.1, 62.2, 60.6, 40.5, 33.8, 29.2, 20.2, 19.2; GC/MS m/z (%) 168 (1), 150 (5), 135 (7), 125 (22), 109 (35), 71 (70), 43 (100).

epoxidation of geraniol (5a) geraniol was epoxidized as described for cis-carveol. The resulting oil was purified by silica column chromatography (hexane:ethylacetate = 85:15); yield 82%; purity 95%. ^1H NMR (CDCl_3) δ 5.08 (t, 1H); 3.68 (m, 2H); 3.00 (q, 1H); 2.64 (br, OH); 2.08 (q, 2H); 1.69 (s, 3H); 1.60 (s, 3H); 1.70 - 1.50 (m, 2H); 1.30 (s, 3H); ^{13}C NMR (CDCl_3) δ 132.1, 123.4, 63.2, 61.4, 61.2, 38.5, 25.7, 23.7, 17.6, 16.8; GC/MS m/z (%) 170 (1), 152 (3), 109 (97), 82 (83), 69 (100)

epoxidation of pinocarveol (7) pinocarveol was epoxidized as described for cis-carveol. The resulting oil was purified by silica column chromatography (hexane:ethylacetate = 87:13); yield 23%; purity 87%. ^1H NMR (CDCl_3) δ 3.91 (d, 1H); 2.98 - 2.80 (dd, 2H); 2.56 (br, OH); 2.40 - 2.20 (m, 2 H); 2.07 - 1.94 (m, 3 H); 1.55 (t, 1H); 1.29 (s, 3H); 0.87 (s, 3H); ^{13}C NMR (CDCl_3) δ 66.1, 66.5, 57.0, 47.7, 41.3, 39.8, 33.3, 26.0, 25.7, 21.4; GC/MS m/z (%) 168 (1), 150 (7), 123 (33), 95 (82), 83 (100).

epoxidation of linalool (6) linalool was epoxidized as described for cis-carveol. The resulting oil was purified by silica column chromatography (hexane:ethylacetate = 87:13). Epoxy linalool was obtained as a mixture of isomers; yield 73%; purity 89%. ^1H NMR (CDCl_3) δ 5.13 (t, 1H); 2.97-2.66 (m, 3H); 2.10 (m, 2H); 2.00 (br, OH); 1.68 (s, 3H); 1.64-1.52 (m, 2H); 1.62 (s, 3H); 1.30, 1.18 (2 \times s, 3H); ^{13}C NMR (CDCl_3) δ 131.9, 131.8, 124.3, 124.1, 69.4, 69.2, 57.9, 57.7, 44.3, 43.4, 41.2, 38.8, 26.0, 25.7, 22.7, 22.3, 22.0, 17.6; GC/MS m/z (%) 170 (1), 152 (4), 109 (33), 82 (47), 69 (72), 43 (100).

epoxidation of the monoacetate of transsorbriol (9) the acetate of trans-sorbriol was epoxidized as described for cis-carveol; yield 83%; purity

100%. ^1H NMR (CDCl_3) δ 3.98 (t, 1H); 3.30 (t, 1H); 2.50 (br, OH); 2.19 (d, 1H); 2.20-1.92 (m, 1H); 1.98 (s, 3H); 1.73 (d, 1H); 1.56 (t, 1H), 1.42 (s, 9H); 1.22 (t, 1H); ^{13}C NMR (CDCl_3) δ 170.3, 83.4, 67.8, 63.1, 59.9, 33.5, 32.5, 26.1, 23.4, 23.3, 22.4, 21.8; GC/MS m/z (%) 228 (1), 168 (37), 150 (49), 135 (69), 107 (100), 95 (70).

epoxidation of myrtenol (8) myrtenol was epoxidized as described for cis-carveol; yield 33%; purity 95%. ^1H NMR (CDCl_3) δ 3.78 (d, 1H); 3.60 (dd, 1H); 3.40 (d, 1H); 2.24 (OH, br); 2.12-1.88 (m, 4H); 1.78 (m, 1H); 1.67 (d, 1H); 1.30 (s, 3H); 0.93 (s, 3H); ^{13}C NMR (CDCl_3) δ 63.9, 63.0, 53.3, 40.6 (2 \times), 40.2, 27.2, 26.5, 25.6, 20.1; GC/MS m/z (%) 168 (1), 153 (10), 135 (25), 98 (79), 83 (100).

epoxidation of nerol (5b) nerol was epoxidized as described for cis-carveol; yield 76%; purity 93%. ^1H NMR (CDCl_3) δ 5.10 (t, 1H); 3.80 (dd, 1H); 3.63 (dd, 1H); 2.98 (q, 1H); 2.40 (br, OH); 2.17 (m, 2H); 1.70 (s, 3H); 1.58 (s, 3H); 1.30 (s, 3H); 1.70-1.4 (m, 2H); ^{13}C NMR (CDCl_3) δ 132.4, 123.3, 64.3, 61.5, 61.2, 33.2, 25.7, 24.2, 22.2, 17.6; GC/MS m/z (%) 170 (1), 152 (3), 109 (100), 82 (74), 69 (99).

allylic oxidation of β -pinene (11) pinocarveol was oxidized by stirring 100 mmol β -pinene, 150 mmol TBHP, 0.1 mmol SeO_2 , 0.1 mmol acetic acid in 100 ml dichloromethane at room temperature for 4 days. Solvent was evaporated and the resulting oil was purified by silica column chromatography (hexane:ethylacetate = 87:13); yield 88%; purity 95 %. ^1H NMR (CDCl_3) δ 5.00 (s, 1H); 4.82 (s, 1H), 4.43 (d, 1H); 2.52 (t, 1H); 2.39 (m, 1H); 2.24 (m, 1H); 2.00 (m, 1H); 1.85 (dd, 1H); 1.60 (br, OH); 1.72 (d, 1H); 1.28 (s, 3H); 0.64 (s, 3H); ^{13}C NMR (CDCl_3) δ 156.0, 111.4, 67.0, 50.6, 40.4, 39.9, 34.5, 27.9, 25.9, 21.9; GC/MS m/z (%) 152 (1), 134 (35), 109 (40), 92 (90), 83 (100).

allylic oxidation of 2-carene (13) 2-carene was oxidized as described for β -pinene. The resulting oil was purified by silica column chromatography (hexane:ethylacetate = 85:15); yield 63%; purity 86%. ^1H NMR (CDCl_3) δ

5.51 (d, 1H); 3.70 (t, 1H); 2.02 (m, 2H); 1.78 (s, 3H); 1.08 (s, 3H); 1.02 (m, 1H); 0.88 (m, 1H); 0.84 (s, 3H); ^{13}C NMR (CDCl_3) δ 137.4; 123.0; 67.1; 28.6; 27.9; 23.1; 22.7; 21.0; 17.2; 15.0; GC/MS m/z (%) 152 (4), 134 (14), 119 (66), 109 (100), 91 (66).

allylic oxidation of methylene cyclohexane (12) methylene cyclohexane was oxidized as described for β -pinene; yield 78%; purity 98%. ^1H NMR (CDCl_3) δ 4.88 (s, 1H); 4.74 (s, 1H); 4.07 (t, 1H); 2.42 (m, 2H); 2.00 (m, 2H); 1.80-1.40 (m, 4H); ^{13}C NMR (CDCl_3) δ 151.6, 105.1, 72.6, 36.6, 33.5, 27.8, 23.8; GC/MS m/z (%) 112 (53), 97 (82), 83 (100).