

SUPPORTING INFORMATION

Structure–Activity Relationship of Natural Dihydrochalcones and Chalcones, and Their Respective Oxyalkylated Derivatives as Anti-*Saprolegnia* Agents

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S1. Spectroscopic data of natural dihydrochalcones and chalcones 1-5.

(*E*)-1-cyclohexa-1,3-dien-1-yl-3-cyclohexa-1,5-dien-1-ylprop-2-en-1-one (**1**): The compound was isolated as a yellow powder with a yield of 0.8 %. ¹H NMR (400 MHz, CDCl₃): δ 12.79 (1H, 2'-OH); 7.63 (*d*, 1H, H-6'); 7.32 (*m*, 2H, H-2 and H-6); 3.04 (*m*, 1H, H-7); 7.24 (*m*, 3H, H-3, H-4 and H-5); 6.37 (*m*, 2H, H-3' and H-5'), 3.23 (*m*, 1H, H-8). ¹³C NMR (100 MHz, CDCl₃): δ 203.7 (C-9); 165.1 (C-4'); 162.7 (C-2'); 39.7 (C-8); 140.8 (C-1); 132.2 (C-6'); 126.3 (C-4); 128.6 (C-2); 128.4 (C-6); 128.4 (C-3); 128.6 (C-5); 30.3 (C-7); 113.7 (C-1'); 107.9 (C-5'); 103.5 (C-3').

1-[2,4-dihydroxy-3-(3-methylbut-2-en-1-yl)phenyl]-3-phenylpropan-1-one (**2**): Colorless oil with a yield of 2.63 %. ¹H (CDCl₃, 400 MHz) *d* 7.30 (2H, *m*, H-2/H-6), 7.25 (3H, *m*, H-3,4,5), 6.35 (1H, *d*, *J*=8.8, H-5'), 7.54 (1H, *d*, *J*=8.8, H-6'), 3.44 (2H, *da*, *J*=7.1, H-1''), 5.26 (1H, *tt*, *J*=1.3, 6.1, H-2''), 1.76 (3H, *s*, CH₃), 1.82 (3H, *s*, CH₃), 3.24 (2H, *t*, *J*=7.7, Ha), 3.04 (2H, *t*, *J*=7.7, Hb), 6.06 (1H, *s*, OH-4'), 13.14 (1H, *s*, OH-2'); ¹³C (CDCl₃, 100MHz) *d* 141.1 (C-1), 128.5 (C-2/C-6), 128.7 (C-3/C-5), 126.4 (C-4), 113.4 (C-1'), 162.8 (C-2'), 114.1 (C-3'), 161.5 (C-4'), 107.9 (C-5'), 129.6 (C-6'), 21.8 (C-1''), 121.1 (C-2''), 136.1 (C-3''), 26.0 (CH₃), 18.1 (CH₃), 39.8 (Ca), 30.6 (Cb), 203.9 (C=O).

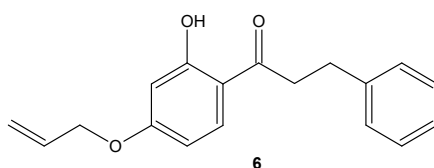
(2*E*)-1-(2,4-dihydroxyphenyl)-3-phenylprop-2-en-1-one (**3**): It was obtained as a yellow powder with a yield of 8.7 %. ¹H (400 MHz, CDCl₃): δ 13.38 (1H, 2'-OH); 7.91 (*s*, 1H, H-8); 7.92 (*m*, 1H, H-6'); 7.65 (*m*, 2H, H-2 and H-6); 7.55 (*s*, 1H, H-7); 7.43 (*m*, 3H, H-3, H-4 and H-5); 6.45 (*m*, 2H, H-3' and H-5'); 5.92 (1H, 4'-OH). ¹³C (100 MHz, CDCl₃): δ 192.0 (C-9); 166.4 (C-4'); 162.7 (C-2'); 144.6 (C-8); 134.7 (C-1); 132.0 (C-6'); 130.7 (C-4); 129.0 (C-2); 129.0 (C-6); 128.5 (C-3); 128.7 (C-5); 120.2 (C-7); 114.5 (C-1'); 107.8 (C-5'); 103.8 (C-3').

2', 4'-Dihydroxy-3'-(3-methylbut-2-enyl)chalcone (**4**): Yellow amorphous solid with a yield of 3.95 %. ¹H (500 MHz, CDCl₃): ¹H (500 MHz, CDCl₃): δ 1.78 (3H, *s*, 3''-Me), 1.85 (3H, *s*, 3''-Me), 3.49 (2H, *d*, *J*=7.0 Hz, H-1''), 5.31 (1H, *t*, *J*=7.0 Hz, H-2''), 6.44 (1H, *d*, *J*=8.9 Hz, H-5'), 7.43 (5H, *m*, B ring protons), 7.60 (1H, *d*, *J*=15.4 Hz, Hα), 7.74 (1H, *d*, *J*=8.9 Hz, H-6'), 7.89 (1H, *d*, *J*=15.4 Hz, Hβ), 13.76 (1H, *s*, OH). ¹³C (125 MHz, CDCl₃): δ 18.2 (3''-Me), 22.0 (C-1''), 26.0 (3''-Me), 108.1 (C-5'), 114.3 (C-1'), 114.4 (C-3'), 120.8 (C-α), 121.3 (C-2''), 128.7 (C-2/C-6), 129.2 (C-3/C-5), 129.6 (C-6'), 130.8 (C-4), 135.1 (C-1) 136.1 (C-3''), 144.5 (C-β), 162.0 (C-4'), 164.2 (C-2'), 192.3 (C=O).

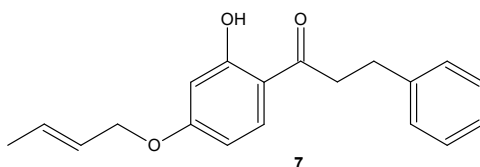
(2*E*)-1-(2,4-dihydroxyphenyl)-3-phenylprop-2-en-1-one (**5**): It was obtained as a yellow powder with a yield of 3.0 %. ¹H NMR (400 MHz, CDCl₃): δ 13.71 (*s*, 1H, 2'-OH); 7.87 (*s*, 1H, H-6'); 7.74 (*d*, 1H, H-8); 7.65 (*m*, 2H, H-2 and H-6); 7.60 (*d*, 1H, H-7); 7.43 (*m*, 3H, H-3, H-4 and H-5); 6.42 (*s*, 1H, H-3'); 5.30 (*t*, 1H, H-8'); 3.08 (*d*, 1H, H-7'); 1.58 (*s*, 1H, H-10'); 1.52 (*s*, 1H, H-11'). ¹³C NMR (100 MHz, CDCl₃): δ 191.6 (C-9); 163.9 (C-2'); 161.7 (C-4'); 144.2 (C-7); 136.0 (C-9'); 134.8 (C-1); 130.6 (C-4); 129.3 (C-6'); 129.0 (C-2); 129.0 (C-6); 128.5 (C-3); 128.5 (C-5); 121.0 (C-8'); 120.5 (C-8); 114.5 (C-1'); 114.1 (C-3'); 107.9 (C-5'); 28.8 (C-7'); 25.8 (C-10'); 17.8 (C-11').

S2. Spectroscopic data and structures of known dihydrochalcones and chalcones derivatives (6-29).

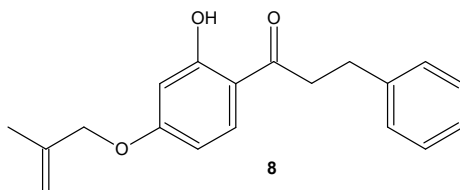
1-[4-(allyloxy)-2-hydroxyphenyl]-3-phenylpropan-1-one (6): The compound was isolated as a yellow oil with a yield of 76.3%. ^1H NMR (400 MHz, CDCl_3): δ 12.78 (s, 1H, 2'-OH), 7.64 (*m*, 1H, H-6'); 7.31 (*m*, 2H, H-2 and H-6); 7.25 (*m*, 3H, H-3, H-4 and H-5); 6.42 (*m*, 2H, H-3' and H-5'); 5.87 (*m*, 2H, H-2 and H-3''a); 5.72 (*m*, 1H, H-3''b); 4.48 (*d*, $J=6.0$ Hz, 2H, H-1''); 3.23 (*m*, 2H, H-8), 3.05(*m*, 2H, H-7). ^{13}C NMR (100 MHz, CDCl_3): δ 203.3 (C-9); 165.3 (C-2'); 165.1 (C-4'); 140.9 (C-1); 131.5 (C-2''); 131.4 (C-6'); 128.6 (C-2 and C-6); 128.5 (C-3 and C-5); 126.3 (C-4); 118.4 (C-3''); 113.4 (C-1'); 108.5 (C-5'); 101.7 (C-3'); 69.0 (C-1''); 40.2 (C-8); 30.3 (C-7). HRMS: $[\text{M} + \text{H}]^+$ ion m/z 283.3402 ($\text{C}_{18}\text{H}_{18}\text{O}_3$: 282.3339).



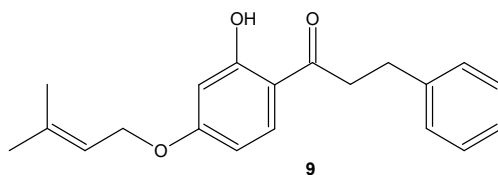
1-[4-(crotyloxy)-2-hydroxyphenyl]-3-phenylpropan-1-one (7): The compound was isolated as a light brown oil with a yield of 73.4%. ^1H NMR (400 MHz, CDCl_3): δ 12.78 (s, 1H, 2'-OH), 7.63 (*m*, 1H, H-6'); 7.30 (*m*, 2H, H-2 and H-6); 7.23 (*m*, 3H, H-3, H-4 and H-5); 6.42 (*m*, 2H, H-3' and H-5'); 5.85 (*m*, 1H, H-2''); 5.71 (*m*, 1H, H-3''); 4.48 (*d*, $J=6.1$ Hz, 2H, H-1''); 3.24 (*m*, 2H, H-8), 3.05(*m*, 2H, H-7); 1.77 (s, 3H, H-4''). ^{13}C NMR (100 MHz, CDCl_3): δ 203.5 (C-9); 165.3 (C-2'); 165.2 (C-4'); 140.9 (C-1); 131.5 (C-2''); 131.4 (C-6'); 128.6 (C-2 and C-6); 128.4 (C-3 and C-5); 126.3 (C-4); 125.0 (C-1'); 113.4 (C-3''); 108.1 (C-5'); 101.7 (C-3'); 69.0 (C-1''); 39.6 (C-8); 30.3 (C-7); 17.9 (C-4''). HRMS: $[\text{M} + \text{H}]^+$ ion m/z 297.3671 ($\text{C}_{19}\text{H}_{20}\text{O}_3$: 296.3603).



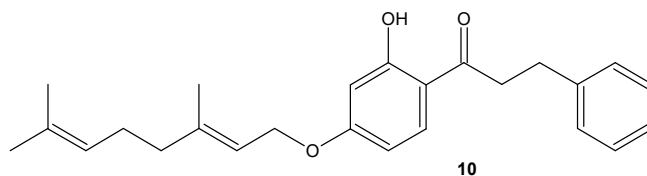
1-[4-(2-methylpropenyloxy)-2-hydroxyphenyl]-3-phenylpropan-1-one (8): Compound was isolated as a light-yellow oil with a yield of 74.0 %. ^1H NMR (400 MHz, CDCl_3): δ 12.76 (s, 1H, 2'-OH), 7.63 (*m*, 1H, H-6'); 7.31 (*m*, 2H, H-2 and H-6); 7.23 (*m*, 3H, H-3, H-4 and H-5); 5.08 (*m*, 1H, H-3''b); 5.01 (*m*, 1H, H-3''a); 4.46 (s, 2H, H-1''); 3.24 (*m*, 2H, H-8), 3.05(*m*, 2H, H-7); 1.82 (s, 3H, H-4''). ^{13}C NMR (100 MHz, CDCl_3): δ 203.5 (C-9); 165.3 (C-2'); 165.2 (C-4'); 140.9 (C-1); 139.8 (C-2''); 131.4 (C-6'); 128.6 (C-2 and C-6); 128.4 (C-3 and C-5); 126.3 (C-4); 113.5 (C-1'); 113.3 (C-3''); 108.1 (C-5'); 101.9 (C-3'); 71.9 (C-1''); 39.7 (C-8); 30.3 (C-7); 19.3 (C-4''). HRMS: $[\text{M} + \text{H}]^+$ ion m/z 297.3791 ($\text{C}_{19}\text{H}_{20}\text{O}_3$: 296.3506).



1-[4-(prenyloxy)-2-hydroxyphenyl]-3-phenylpropan-1-one (**9**): The compound was isolated as a yellow solid in a yield of 71.1% and a melting point 89-91°C. ¹H NMR (400 MHz, CDCl₃): δ 12.78 (*s*, 1H, 2'-OH), 7.63 (*d*, *J* = 9.4 Hz, 1H, H-6'); 7.31 (*m*, 2H, H-2 and H-6); 7.23 (*m*, 3H, H-3, H-4 and H-5); 6.42 (*m*, 2H, H-3' and H-5'); 5.47 (*m*, 1H, H-2''); 4.54 (*d*, *J* = 6.7 Hz, 2H, H-1''); 3.23 (*m*, 2H, H-8), 3.05 (*m*, 2H, H-7); 1.80 (*s*, 3H, H-4''); 1.74 (*s*, 3H, H-5''). ¹³C NMR (100 MHz, CDCl₃): δ 203.4 (C-9); 166.9 (C-2'); 165.8 (C-4'); 144.3 (C-1); 138.0 (C-3''); 130.6 (C-6'); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 126.3 (C-4); 120.4 (C-2''); 114.0 (C-1'); 108.3 (C-5'); 101.7 (C-3'); 65.2 (C-1''); 40.9 (C-8); 29.4 (C-7); 25.8 (C-5''); 18.2 (C-4''). HRMS: [M + H]⁺ ion *m/z* 311.3941 (C₂₀H₂₂O₃: 310.3869).

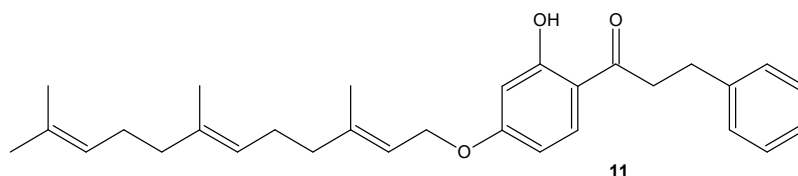


1-[4-(geranyloxy)-2-hydroxyphenyl]-3-phenylpropan-1-one (**10**): The compound was isolated as a yellow oil with a yield of 46.6%. ¹H NMR (400 MHz, CDCl₃): δ 12.79 (*s*, 1H, 2'-OH), 7.63 (*d*, *J* = 9.6 Hz, 1H, H-6'); 7.30 (*m*, 2H, H-2 and H-6); 7.25 (*m*, 3H, H-3, H-4 and H-5); 6.42 (*m*, 2H, H-3' and H-5'); 5.45 (*m*, 1H, H-2''); 5.07 (*m*, 1H, H-7''); 4.56 (*d*, *J* = 6.6 Hz, 2H, H-1''); 3.23 (*m*, 2H, H-8), 3.05 (*m*, 2H, H-7); 2.09 (*m*, 4H, H-5'' and H-6''), 1.73 (*s*, 3H, H-4''); 1.67 (*s*, 3H, H-9''), 1.60 (*s*, 3H, H-10''). ¹³C NMR (100 MHz, CDCl₃): δ 203.5 (C-9); 165.4 (C-2' and C-4'); 142.2 (C-1); 140.9 (C-3''); 131.9 (C-8''); 131.4 (C-6'); 128.6 (C-2 and C-6); 128.4 (C-3 and C-5); 126.3 (C-4); 123.7 (C-7''); 118.2 (C-2''); 113.3 (C-1'); 108.2 (C-5'); 101.7 (C-3'); 65.2 (C-1''); 39.6 (C-8); 39.5 (C-5''); 30.4 (C-7); 26.2 (C-6''); 25.6 (C-10''); 17.7 (C-9''); 16.7 (C-4''). HRMS: [M + H]⁺ ion *m/z* 379.5131 (C₂₅H₃₀O₃: 378.5038).

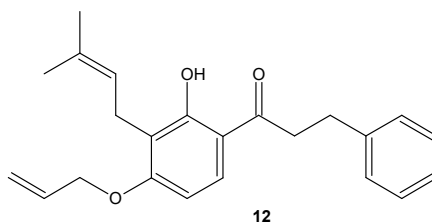


1-[4-(farnesyloxy)-2-hydroxyphenyl]-3-phenylpropan-1-one (**11**): The compound was isolated as a pale-yellow oil with a yield of 33.3%. ¹H NMR (400 MHz, CDCl₃): 7.87 (*d*, *J* = 8.8 Hz, 1H, H-6'); 7.48 (*m*, 2H, H-2 and H-6); 7.38 (*m*, 3H, H-3, H-4 and H-5); 6.62 (*d*, *J* = 8.8 Hz, 2H, H-5' and H-3'); 5.44 (*m*, 1H, H-2''); 5.09 (*m*, 2H, H-7'' and H-12''); 4.62 (*d*, *J* = 6.3 Hz, 2H, H-1''); 3.00 (*m*, 2H, H-8); 2.86 (*m*, 2H, H-7); 2.11 (*m*, 4H, H-5'' and H-6''), 2.06 (*m*, 4H, H-10'' and H-11''), 1.79 (*s*, 3H, H-4''); 1.73 (*s*, 3H, H-10''); 1.67 (*s*, 6H, H-9'' and H-14''). ¹³C NMR (100 MHz, CDCl₃): δ 201.5 (C-9); 163.7 (C-2'); 160.1 (C-4'); 142.0 (C-4''); 141.3 (C-1); 135.8 (C-8''); 131.3 (C-13''); 129.7 (C-6'); 128.7 (C-2 and C-6); 128.2 (C-3

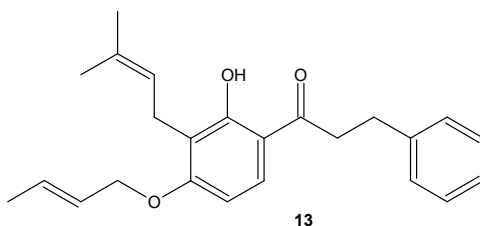
and C-5); 127.7 (C-4); 124.3 (C-7''); 123.5 (C-12''); 118.9 (C-2''); 118.7 (C-1'); 114.1 (C-1'); 106.1 (C-5'); 100.3 (C-3'); 65.1 (C-1''); 39.6 (C-8); 39.5 (C-5'' and C-10''); 30.2 (C-7); 26.7 (C-11''); 26.2 (C-6''); 25.7 (C-15''); 17.7 (C-14''); 16.8 (C-4''); 16.0 (C-9''). HRMS: $[M + H]^+$ ion m/z 447.6321 ($C_{30}H_{36}O_3$: 446.6209).



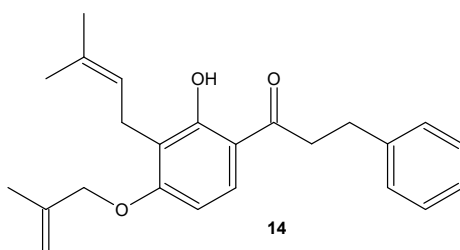
1-[4-(allyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylpropan-1-one (**12**): Compound was isolated as a pale oil in a yield of 89.3%. 1H NMR (400 MHz, $CDCl_3$): δ 12.58 (s, 1H, 2'-OH), 7.44 (s, 1H, H-6'); 7.27 (m, 5H, H-2, H-3, H-4, H-5 y H-6); 6.37 (s, 1H, H-5'); 6.01 (m, 1H, H-2''); 5.44 (d, $J=17.2$ Hz, 1H, H-3''b); 5.44 (d, $J=10.6$ Hz, 1H, H-3''a); 5.16 (m, 1H, H-8'); 4.43 (d, $J=6.6$ Hz, 2H, H-1''); 3.25 (m, 2H, H-8), 3.22 (m, 2H, H-7'); 3.05 (m, 2H, H-7); 1.78 (s, 3H, H-10'); 1.76 (s, 3H, H-11'). ^{13}C NMR (100 MHz, $CDCl_3$): δ 203.8 (C-9); 163.7 (C-2'); 161.4 (C-4'); 141.1 (C-1); 133.3 (C-2''); 131.4 (C-6'); 128.6 (C-2 and C-6); 128.4 (C-3 and C-5); 126.3 (C-4); 121.4 (C-8'); 118.9 (C-1'); 117.2 (C-3'); 113.6 (C-1'); 103.9 (C-5'); 69.6 (C-1''); 39.8 (C-8); 30.5 (C-7); 25.8 (C-7'); 21.0 (C-7'); 17.9 (C-10'). HRMS: $[M + H]^+$ ion m/z 335.4598 ($C_{23}H_{26}O_3$: 334.4510).



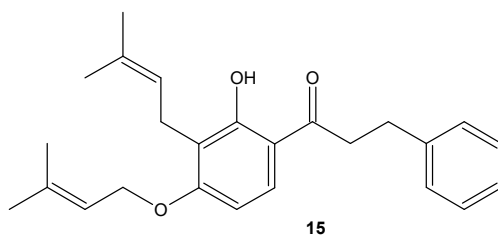
1-[4-(crotyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylpropan-1-one (**13**): Compound was isolated as a yellow oil with a yield of 88.0%. 1H NMR (400 MHz, $CDCl_3$): δ 12.58 (s, 1H, 2'-OH), 7.44 (s, 1H, H-6'); 7.27 (m, 5H, H-2, H-3, H-4, H-5 and H-6); 6.37 (s, 1H, H-5'); 5.91 (m, 2H, H-2'' and H-3''); 5.74 (m, 1H, H-8'); 4.51 (d, $J=6.0$ Hz, 2H, H-1''); 3.26 (m, 2H, H-8), 3.22 (m, 2H, H-7'); 3.05 (m, 2H, H-7); 1.80 (s, 3H, H-10'); 1.76 (s, 3H, H-11'); 1.68 (s, 3H, H-4''). ^{13}C NMR (100 MHz, $CDCl_3$): δ 203.5 (C-9); 163.2 (C-2'); 162.6 (C-4'); 141.2 (C-1); 131.7 (C-9'); 130.5 (C-6'); 130.3 (C-2''); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 125.6 (C-4); 122.0 (C-8'); 118.2 (C-3'); 103.3 (C-5'); 69.2 (C-1''); 40.0 (C-8); 30.1 (C-7); 25.8 (C-11'); 21.8 (C-7'); 17.9 (C-10'); 17.8 (C-4''). HRMS: $[M + H]^+$ ion m/z 365.4861 ($C_{24}H_{28}O_3$: 364.4774).



1-[4-(2-methylpropenyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylpropan-1-one (**14**): Compound was isolated as a light yellow oil in a yield of 75.0%. ^1H NMR (400 MHz, CDCl_3): δ 12.58 (s, 1H, 2'-OH), 7.63 (d, J =8.7 Hz, 1H, H-6'); 7.27 (m, 5H, H-2, H-3, H-4, H-5 and H-6); 6.45 (m, 1H, H-5'); 5.30 (m, 1H, H-8'); 5.07 (m, 1H, H-3''b); 5.01 (m, 1H, H-3''a); 4.46 (s, 2H, H-1''); 3.19 (d, J =8.3 Hz, 2H, H-7''); 3.10 (m, 2H, H-8); 2.80 (m, 2H, H-7); 1.82 (s, 6H, H-10' and H-4''); 1.65 (s, 3H, H-11'). ^{13}C NMR (100 MHz, CDCl_3): δ 203.5 (C-9); 163.2 (C-2'); 160.3 (C-4'); 141.0 (C-1); 140.3 (C-2''); 131.8 (C-9'); 130.5 (C-6'); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 126.1 (C-4); 122.0 (C-8'); 117.8 (C-3''); 114.6 (C-1'); 112.9 (C-3''); 71.9 (C-1''); 39.1 (C-8); 31.0 (C-7); 25.8 (C-11'); 21.8 (C-7'); 19.3 (C-4''); 17.9 (C-10'). HRMS: $[\text{M} + \text{H}]^+$ ion m/z 365.4863 ($\text{C}_{19}\text{H}_{20}\text{O}_3$: 364.4772).

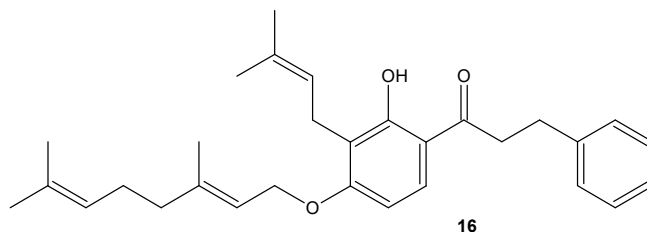


1-[4-(prenyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylpropan-1-one (**15**): Compound was isolated as a white solid with a yield of 89.1% and a melting point of 92-93 °C. ^1H NMR (400 MHz, CDCl_3): δ 12.61 (s, 1H, 2'-OH), 7.87 (d, J =15.4 Hz, 1H, H-6'); 7.27 (m, 5H, H-2, H-3, H-4, H-5 and H-6); 6.49 (d, J =9.0 Hz, 1H, H-5'); 5.47 (m, 1H, H-2''); 5.25 (m, 1H, H-8'); 4.63 (d, J =6.6 Hz, 2H, H-1''); 3.22 (m, 2H, H-7''); 3.10 (d, J =7.2 Hz, 2H, H-8); 2.82 (m, 2H, H-7); 1.79 (s, 6H, H-10' and H-4''); 1.75 (s, 3H, H-5''); 1.68 (s, 6H, H-11'). ^{13}C NMR (100 MHz, CDCl_3): δ 203.5 (C-9); 163.1 (C-2'); 162.8 (C-4'); 141.6 (C-1); 136.0 (C-3''); 131.6 (C-9'); 130.5 (C-6'); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 126.1 (C-4); 122.7 (C-8'); 119.5 (C-2''); 117.9 (C-3'); 114.6 (C-1'); 103.3 (C-5'); 65.3 (C-1''); 39.1 (C-8); 30.1 (C-7); 25.8 (C-4''); 25.7 (C-11'); 21.8 (C-7'); 18.3 (C-5''); 17.8 (C-10'). HRMS: $[\text{M} + \text{H}]^+$ ion m/z 379.5132 ($\text{C}_{25}\text{H}_{30}\text{O}_3$: 378.5038).

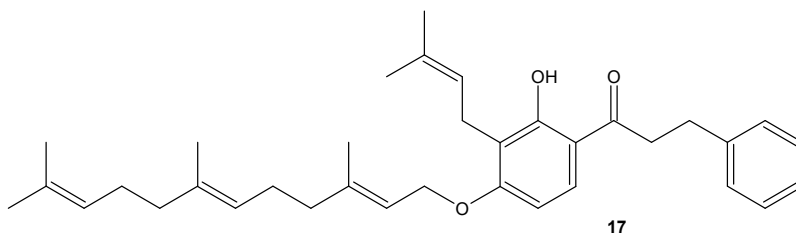


1-[4-(geranyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylpropan-1-one (**16**): Compound was isolated as a pale yellow oil with a yield of 73.6 %. ^1H NMR (400 MHz, CDCl_3): δ 12.60 (s, 1H, 2'-OH), 7.87 (d, J =15.5 Hz, 1H, H-6'); 7.27 (m, 5H, H-2, H-3, H-4, H-5 and H-6); 6.49 (d, J =9.0 Hz, 1H, H-5'); 5.48 (m, 1H, H-2''); 5.25 (m, 1H, H-8'); 5.08 (m, 1H, H-6''); 4.65 (d, J =6.4 Hz, 2H, H-1''); 3.22 (m, 2H, H-8), 3.10 (d, J =7.2 Hz, 2H, H-8); 2.82 (m, 2H, H-7); 2.09 (m, 4H, H-4'' and H-5''), 1.79 (s, 3H, H-10'); 1.75 (s, 3H, H-9''); 1.67 (s, 6H, H-11' and H-8''); 1.61 (s, 3H, H-10''). ^{13}C NMR (100 MHz, CDCl_3): δ 203.5 (C-9);

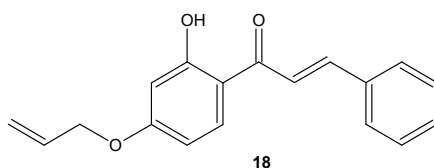
163.2 (C-2'); 159.5 (C-4'); 141.3 (C-1 and C-3''); 131.6 (C-9' and C-7''); 130.2 (C-6'); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 126.3 (C-4); 123.7 (C-6''); 122.1 (C-8''); 119.3 (C-2''); 117.8 (C-3'); 114.4 (C-1'); 103.3 (C-5'); 65.4 (C-1''); 43.9 (C-8); 39.5 (C-4''); 30.9 (C-7); 26.3 (C-5''); 25.8 (C-11''); 25.7 (C-8''); 21.8 (C-7'); 17.8 (C-10'); 17.7 (C-10''); 16.7 (C-9'). HRMS: $[M + H]^+$ ion m/z 447.6321 (C₃₀H₃₈O₃: 446.6207).



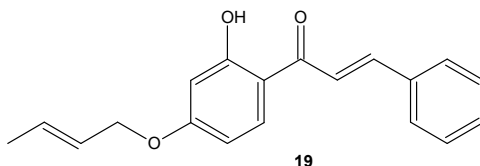
1-[4-(farnesyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylpropan-1-one (**17**): Compound was isolated as a pale yellow oil in a yield of 56.6%. ¹H NMR (400 MHz, CDCl₃): δ 12.58 (s, 1H, 2'-OH), 7.87 (d, J =15.5 Hz, 1H, H-6'); 7.28 (m, 5H, H-2, H-3, H-4, H-5 and H-6); 6.49 (d, J =9.0 Hz, 1H, H-5'); 5.48 (m, 1H, H-2''); 5.25 (m, 1H, H-8'); 5.08 (m, 2H, H-6'' and H-10''); 4.65 (d, J =6.6 Hz, 2H, H-1''); 3.22 (d, J =9.0 Hz, 2H, H-7''); 3.10 (m, 2H, H-8); 2.82 (m, 2H, H-7); 2.07 (m, 4H, H-4'', H-5'', H-8'' and H-9''); 1.79 (s, 6H, H-10' and H-13''); 1.75 (s, 3H, H-11'); 1.67 (s, 6H, H-14'' and H-15''). ¹³C NMR (100 MHz, CDCl₃): δ 203.5 (C-9); 163.2 (C-2'); 159.6 (C-4'); 141.7 (C-1y C-3''); 131.3 (C-9' and C-11''); 130.5 (C-6'); 128.9 (C-2 and C-6); 128.5 (C-3 and C-5); 126.7 (C-4); 124.3 (C-6''); 122.1 (C-8'); 119.3 (C-2''); 118.7 (C-3'); 114.5 (C-1'); 103.3 (C-5'); 65.8 (C-1''); 44.1 (C-8); 39.7 (C-4''); 39.4 (C-8''); 30.2 (C-7); 26.7 (C-9''); 26.2 (C-5''); 25.8 (C-12''); 25.7 (C-11''); 21.8 (C-7'); 17.9 (C-10'); 17.7 (C-15''); 16.7 (C-13''); 16.0 (C-14''). HRMS: $[M + H]^+$ ion m/z 515.7512 (C₃₅H₄₆O₃: 514.7380).



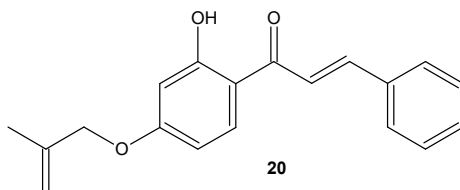
(2E)-1-[4-(allyloxy)-2-hydroxyphenyl]-3-phenylprop-2-en-1-one (**18**): Compound was isolated as an orange solid in a yield of 75.0% and a melting point of 109 °C. ¹H NMR (400 MHz, CDCl₃): δ 13.41 (s, 1H, 2'-OH), 7.91 (s, 1H, H-7); 7.85 (m, 1H, H-6'); 7.65 (m, 2H, H-2 and H-6); 7.57 (s, 1H, H-8); 7.43 (m, 3H, H-3, H-4 and H-5); 6.51 (m, 1H, H-5'); 6.48 (s, 1H, H-3'); 6.05 (m, 1H, H-2''); 5.44 (d, J =17.2 Hz, 1H, H-3'a); 5.33 (d, J =10.6 Hz, 1H, H-3'b); 4.60 (d, J =5.3 Hz, 2H, H-1''). ¹³C NMR (100 MHz, CDCl₃): δ 191.9 (C-9); 166.6 (C-2'); 165.2 (C-4'); 144.4 (C-7); 134.8 (C-1); 132.2 (C-2''); 131.3 (C-6'); 130.7 (C-4); 129.0 (C-3 and C-5); 128.5 (C-2 and C-6); 124.0 (C-1'); 120.3 (C-8); 118.4 (C-3''); 108.2 (C-5'); 101.9 (C-3'); 69.0 (C-1''). HRMS: $[M + H]^+$ ion m/z 281.3242 (C₁₈H₁₆O₃: 280.3178).



(2E)-1-[4-(crotyloxy)-2-hydroxyphenyl]-3-phenylprop-2-en-1-one (**18**): Compound was isolated as an orange solid in a yield of 72.0% and a melting point of 110 °C. ¹H NMR (400 MHz, CDCl₃): δ 13.43 (s, 1H, 2'-OH), 7.91 (s, 1H, H-7); 7.84 (m, 1H, H-6'); 7.64 (m, 2H, H-2 and H-6); 7.57 (s, 1H, H-8); 7.43 (m, 3H, H-3, H-4 and H-5); 6.49 (m, 2H, H-3' and H-5'); 5.93 (m, 1H, H-2''); 5.73 (m, 1H, H-3''); 4.51 (d, *J* = 6.1 Hz, 2H, H-1''); 1.77 (s, 3H, H-4''). ¹³C NMR (100 MHz, CDCl₃): δ 191.8 (C-9); 166.6 (C-2'); 165.4 (C-4'); 144.8 (C-7); 134.8 (C-1); 131.6 (C-2''); 131.1 (C-6'); 130.6 (C-4); 129.0 (C-3 and C-5); 128.5 (C-2 and C-6); 125.0 (C-1'); 120.4 (C-8); 114.1 (C-3''); 108.3 (C-5'); 101.8 (C-3'); 69.0 (C-1''); 17.9 (C-4''). HRMS: [M + H]⁺ ion *m/z* 295.3512 (C₁₉H₁₈O₃: 294.3444).

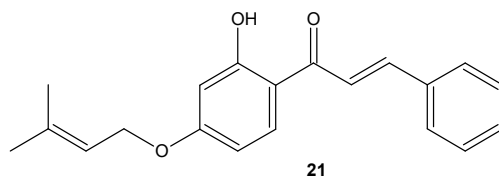


(2E)-1-[4-(2-methylpropenyloxy)-2-hydroxyphenyl]-3-phenylprop-2-en-1-one (**20**): The compound was isolated as an orange solid in a yield of 72.0 % and a melting point of 108-110 °C. ¹H NMR (400 MHz, CDCl₃): δ 13.40 (s, 1H, 2'-OH), 7.91 (s, 1H, H-7); 7.84 (m, 1H, H-6'); 7.64 (m, 2H, H-2 and H-6); 7.57 (s, 1H, H-8); 7.43 (m, 3H, H-3, H-4 and H-5); 6.51 (m, 2H, H-3' and H-5'); 5.10 (s, 1H, H-3''b); 5.03 (s, 1H, H-3''a); 4.47 (d, *J* = 11.12 Hz, 2H, H-1''); 1.84 (s, 3H, H-4''). ¹³C NMR (100 MHz, CDCl₃): δ 191.8 (C-9); 166.6 (C-2'); 165.4 (C-4'); 144.8 (C-7); 139.9 (C-2''); 134.8 (C-1); 131.2 (C-6'); 130.6 (C-4); 129.0 (C-3 and C-5); 128.7 (C-2 and C-6); 122.4 (C-1'); 120.4 (C-8); 113.4 (C-3''); 108.2 (C-5'); 102.0 (C-3'); 71.9 (C-1''); 19.3 (C-4''). HRMS: [M + H]⁺ ion *m/z* 295.3565 (C₁₉H₁₈O₃: 294.3335).

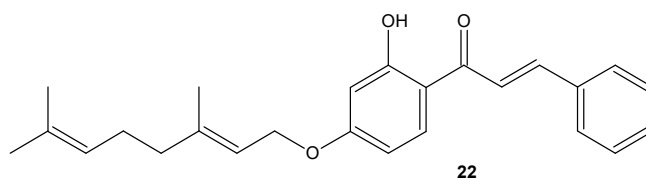


(2E)-1-[4-(prenyloxy)-2-hydroxyphenyl]-3-phenylprop-2-en-1-one (**21**): Compound was isolated as a yellow solid with a yield of 69.0% and a melting point of 112-113°C. ¹H NMR (400 MHz, CDCl₃): δ 13.49 (s, 1H, 2'-OH), 7.91 (s, 1H, H-7); 7.84 (d, *J* = 9.6 Hz, 1H, H-6'); 7.30 (m, 2H, H-2 and H-6); 7.57 (s, 1H, H-8); 7.42 (m, 3H, H-3, H-4 and H-5); 6.51 (m, 2H, H-3' and H-5'); 5.49 (m, 1H, H-2''); 4.57 (d, *J* = 6.7 Hz, 2H, H-1''); 1.81 (s, 3H, H-4''); 1.79 (s, 3H, H-5''). ¹³C NMR (100 MHz, CDCl₃): δ 191.5 (C-9); 166.7 (C-2'); 165.6 (C-4'); 144.3 (C-7); 139.2 (C-3''); 134.9 (C-1); 131.2 (C-6'); 130.6 (C-4); 129.0 (C-3 and

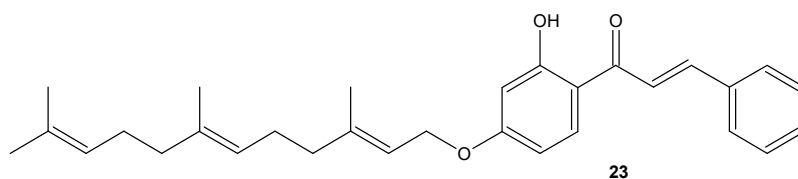
C-5); 128.5 (C-2 and C-6); 120.4 (C-8); 118.7 (C-2''); 114.0 (C-1'); 108.3 (C-5'); 101.7 (C-3'); 64.6 (C-1''); 25.8 (C-5''); 18.2 (C-4''). HRMS: $[M + H]^+$ ion m/z 309.3782 ($C_{20}H_{20}O_3$: 318.3710).



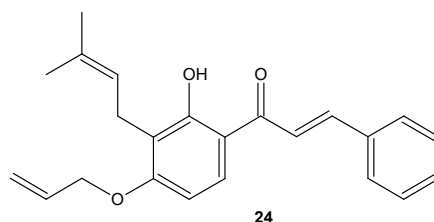
(2E)-1-[4-(geranyloxy)-2-hydroxyphenyl]-3-phenylprop-2-en-1-one (**22**): Compound was isolated as a light orange oil with a yield of 47.4%. 1H NMR (400 MHz, $CDCl_3$): δ 13.43 (s, 1H, 2'-OH), 7.91 (s, 1H, H-7); 7.84 (d, J = 9.6 Hz, 1H, H-6'); 7.30 (m, 2H, H-2 and H-6); 7.57 (s, 1H, H-8); 7.42 (m, 3H, H-3, H-4 and H-5); 6.50 (m, 2H, H-3' and H-5'); 5.48 (m, 1H, H-2''); 5.09 (m, 1H, H-7''); 4.60 (d, J = 6.6 Hz, 2H, H-1''); 2.12 (m, 4H, H-5'' and H-6''), 1.75 (s, 3H, H-4''); 1.68 (s, 3H, H-9''), 1.61 (s, 3H, H-10''). ^{13}C NMR (100 MHz, $CDCl_3$): δ 191.8 (C-9); 166.7 (C-2'); 166.0 (C-4'); 144.3 (C-7); 141.2 (C-3''); 134.9 (C-1); 131.2 (C-6' and C-8''); 130.6 (C-4); 129.0 (C-3 and C-5); 128.5 (C-2 and C-6); 123.7 (C-7''); 120.4 (C-8); 118.5 (C-2''); 114.0 (C-1'); 108.3 (C-5'); 101.8 (C-3'); 65.3 (C-1''); 39.5 (C-5''); 26.3 (C-6''); 25.6 (C-10''); 17.7 (C-9''); 16.7 (C-4''). HRMS: $[M + H]^+$ ion m/z 377.5221 ($C_{25}H_{28}O_3$: 376.5130).



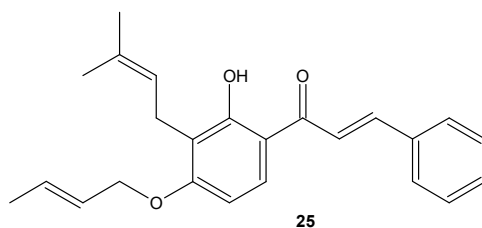
(2E)-1-[4-(farnesyloxy)-2-hydroxyphenyl]-3-phenylprop-2-en-1-one (**23**): Compound was isolated as a light-yellow oil with a yield of 30.6%. 1H NMR (400 MHz, $CDCl_3$): δ 7.85 (d, J = 9.6 Hz, 1H, H-6'); 7.70 (s, 1H, H-7); 7.69 (s, 1H, H-8); 7.58 (m, 2H, H-2 and H-6); 7.35 (m, 3H, H-3, H-4 and H-5); 6.56 (m, 1H, H-5'); 6.52 (m, 1H, H-3'); 5.50 (m, 1H, H-2''); 5.10 (m, 2H, H-7'' and H-12''); 4.60 (d, J = 6.6 Hz, 2H, H-1''); 2.07 (m, 4H, H-5'' and H-6''), 1.99 (m, 4H, H-10'' and H-11''), 1.76 (s, 3H, H-4''); 1.73 (s, 3H, H-10''); 1.67 (s, 6H, H-9'' and H-14''). ^{13}C NMR (100 MHz, $CDCl_3$): δ 189.9 (C-9); 163.7 (C-2'); 160.1 (C-4'); 142.0 (C-7); 142.0 (C-3''); 135.8 (C-8''); 135.6 (C-1); 133.1 (C-6'); 131.3 (C-13''); 129.7 (C-4); 128.7 (C-3 and C-5); 128.2 (C-2 and C-6); 124.3 (C-7''); 123.6 (C-12''); 122.1 (C-8); 118.9 (C-2''); 118.7 (C-1'); 106.1 (C-5'); 100.3 (C-3'); 65.6 (C-1''); 39.7 (C-5''); 39.6 (C-10''); 26.2 (C-11'' and C-6''); 25.7 (C-15''); 17.7 (C-14''); 16.7 (C-4''); 16.0 (C-9''). HRMS: $[M + H]^+$ ion m/z 445.6162 ($C_{30}H_{36}O_3$: 444.605).



(2E)-1-[4-(allyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylprop-2-en-1-one (**24**): The compound was isolated as a yellow solid in a yield of 85.0% and a melting point of 96 °C. ¹H NMR (400 MHz, CDCl₃): δ 13.37 (s, 1H, 2'-OH), 7.88 (d, *J*=15.4 Hz, 1H, H-6'); 7.78 (d, *J*=9.1 Hz, 1H, H-8); 7.62 (*m*, 2H, H-7 and H-4); 7.42 (*m*, 4H, H-2, H-3, H-5 and H-6); 6.48 (d, *J*=9.0 Hz, 1H, H-5'); 6.07 (*m*, 1H, H-2''); 5.45 (*m*, 1H, H-3''b); 5.31 (*m*, 1H, H-3''a); 5.27 (*m*, 1H, H-8'); 4.65 (d, *J*=5.1 Hz, 2H, H-1''); 3.42 (d, *J*=7.1 Hz, 1H, H-7''); 1.80 (s, 3H, H-10'); 1.68(s, 3H, H-11'). ¹³C NMR (100 MHz, CDCl₃): δ 192.4 (C-9); 163.2 (C-2'); 162.4 (C-4'); 144.1 (C-7); 132.7 (C-1); 131.8 (C-9'); 130.5 (C-6'); 129.1 (C-4); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 121.9 (C-8'); 120.6 (C-8); 118.0 (C-3') 117.6 (C-3''); 114.6 (C-1'); 118.4 (C-3''); 103.2 (C-5'); 69.2 (C-1''); 25.8 (C-11'); 21.8 (C-7'); 17.9 (C-10'). HRMS: [M + H]⁺ ion *m/z* 349.4432 (C₂₃H₂₄O₃: 348.4348).

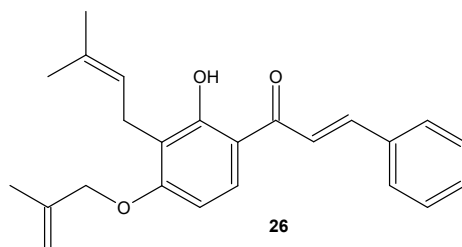


(2E)-1-[4-(crotyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylprop-2-en-1-one (**25**): The compound was isolated as a yellow solid in a yield of 85.0 % and a melting point of 93-94°C. ¹H NMR (400 MHz, CDCl₃): δ 13.37 (s, 1H, 2'-OH), 7.87 (d, *J*=15.5 Hz, 1H, H-6'); 7.77 (d, *J*=9.1 Hz, 1H, H-8); 7.63 (*m*, 2H, H-7 and H-4); 7.42 (*m*, 4H, H-2, H-3, H-5 and H-6); 6.49 (d, *J*=9.0 Hz, 1H, H-5'); 5.87 (*m*, 1H, H-2''); 5.82 (*m*, 1H, H-3''); 5.26 (*m*, 1H, H-8'); 4.57 (d, *J*=5.9 Hz, 2H, H-1''); 3.40 (d, *J*=7.2 Hz, 1H, H-7''); 1.80 (s, 3H, H-10'); 1.77 (s, 3H, H-4''); 1.68(s, 3H, H-11'). ¹³C NMR (100 MHz, CDCl₃): δ 192.2 (C-9); 163.2 (C-2'); 162.6 (C-4'); 144.0 (C-7); 134.9 (C-1); 131.7 (C-6'); 130.5 (C-9'); 130.3 (C-4); 129.1 (C-2''); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 125.6 (C-3''); 122.0 (C-8'); 120.7 (C-8); 118.0 (C-3') 117.8 (C-3''); 115.6 (C-1'); 103.3 (C-5'); 69.0 (C-1''); 25.8 (C-11'); 21.8 (C-7'); 17.9 (C-10'); 17.8 (C-4''). HRMS: [M + H]⁺ ion *m/z* 363.4702 (C₂₄H₂₆O₃: 362.4614).

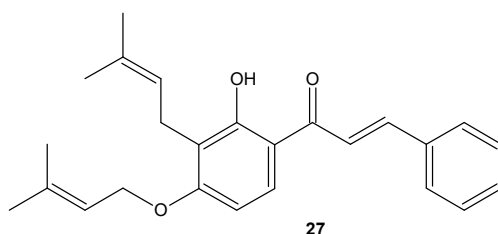


(2E)-1-[4-(2-methylpropenyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylprop-2-en-1-one (**26**): The compound was isolated as a yellow solid in a yield of 84.5% and a melting point of 101 °C. ¹H NMR (400 MHz, CDCl₃): δ 13.39 (s, 1H, 2'-OH), 7.87 (d, *J*=15.5 Hz, 1H, H-6'); 7.77 (d, *J*=9.0 Hz, 1H, H-8); 7.63 (*m*, 2H, H-7 and H-4); 7.42 (*m*, 4H, H-2, H-3, H-5 and H-6); 6.48 (d, *J*=9.0 Hz, 1H, H-5'); 5.26 (*m*, 1H, H-2''); 5.11 (s, 1H, H-3b''); 5.01 (s, 1H, H-3a''); 4.54 (s, 2H, H-1''); 3.43 (d, *J*=7.1 Hz, 1H, H-7''); 1.84 (s, 3H, H-4''); 1.80 (s, 3H, H-10'); 1.68(s, 3H, H-11'). ¹³C NMR (100 MHz, CDCl₃): δ 192.2 (C-9); 163.2 (C-2'); 162.4 (C-4'); 144.1 (C-7); 134.9 (C-1); 131.8 (C-6'); 130.5 (C-9'); 129.1 (C-4); 129.0 (C-2 and C-6);

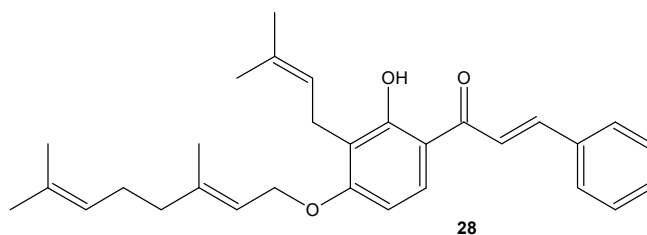
128.5 (C-3 and C-5); 122.0 (C-8'); 120.6 (C-8); 117.8 (C-3') 117.8 (C-3'); 114.6 (C-1'); 113.0 (C-3''); 103.2 (C-5'); 71.9 (C-1''); 25.8 (C-11'); 21.8 (C-7'); 19.3 (C-4''); 17.9 (C-10'). HRMS: $[M + H]^+$ ion m/z 363.4702 ($C_{25}H_{28}O_3$: 362.4616).



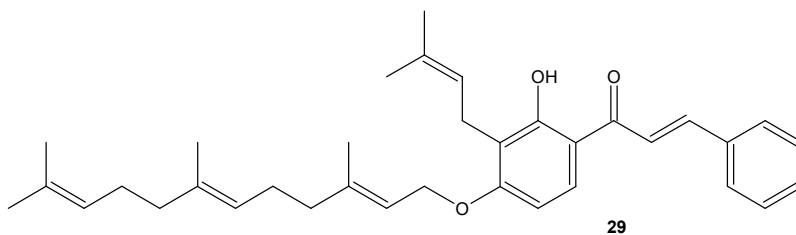
(2E)-1-[4-(prenyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylprop-2-en-1-one (**27**): The compound was isolated as a yellow solid in a yield of 79.0 % and a melting point of 108 °C. 1H NMR (400 MHz, $CDCl_3$): δ 13.37 (s, 1H, 2'-OH), 7.87 (d, J =15.5 Hz, 1H, H-6'); 7.77 (d, J =9.1 Hz, 1H, H-8); 7.63 (m, 2H, H-7 and H-4); 7.42 (m, 4H, H-2, H-3, H-5 and H-6); 6.49 (d, J =9.0 Hz, 1H, H-5'); 5.48 (m, 1H, H-2''); 5.25 (m, 1H, H-8'); 4.62 (d, J =6.6 Hz, 2H, H-1''); 3.39 (d, J =7.2 Hz, 1H, H-7'); 1.80 (s, 6H, H-4'' and H-10'); 1.75 (s, 3H, H-5''); 1.68 (s, 3H, H-11'). ^{13}C NMR (100 MHz, $CDCl_3$): δ 192.1 (C-9); 163.2 (C-2'); 162.8 (C-4'); 144.0 (C-7); 138.1 (C-3''); 134.9 (C-1); 131.7 (C-6'); 130.5 (C-9'); 129.1 (C-4); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 122.1 (C-8'); 120.7 (C-8); 119.5 (C-2''); 117.9 (C-3'); 114.5 (C-1'); 103.3 (C-5'); 65.3 (C-1''); 25.8 (C-4''); 25.7 (C-11'); 21.8 (C-7'); 18.3 (C-5''); 17.8 (C-10'). HRMS: $[M + H]^+$ ion m/z 377.4972 ($C_{25}H_{28}O_3$: 376.4880).



(2E)-1-[4-(geranyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylprop-2-en-1-one (**28**): The compound was isolated as a yellow solid in a yield of 70.3 % and a melting point of 79 °C. 1H NMR (400 MHz, $CDCl_3$): δ 13.37 (s, 1H, 2'-OH), 7.87 (d, J =15.5 Hz, 1H, H-6'); 7.77 (d, J =9.1 Hz, 1H, H-8); 7.63 (m, 2H, H-7 and H-4); 7.42 (m, 4H, H-2, H-3, H-5 and H-6); 6.49 (d, J =9.0 Hz, 1H, H-5'); 5.48 (m, 1H, H-2''); 5.25 (m, 1H, H-8'); 5.08 (m, 1H, H-6''); 4.65 (d, J =6.4 Hz, 2H, H-1''); 3.39 (d, J =7.2 Hz, 1H, H-7'); 2.10 (m, 4H, H-4'' and H-5''); 1.80 (s, 3H, H-10'); 1.75 (s, 3H, H-9''); 1.68 (s, 3H, H-8''); 1.61 (s, 3H, H-11'). ^{13}C NMR (100 MHz, $CDCl_3$): δ 191.1 (C-9); 163.1 (C-2'); 162.8 (C-4'); 144.0 (C-7); 141.3 (C-3''); 134.9 (C-1); 131.9 (C-6'); 131.7 (C-7''); 130.5 (C-9'); 129.1 (C-4); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 123.7 (C-8'); 120.7 (C-8); 119.3 (C-2''); 117.8 (C-3'); 114.4 (C-1'); 103.3 (C-5'); 65.4 (C-1''); 39.5 (C-4''); 26.3 (C-5''); 25.8 (C-11'); 25.7 (C-8''); 21.8 (C-7'); 17.9 (C-10'); 17.7 (C-10''); 16.7 (C-9''). HRMS: $[M + H]^+$ ion m/z 445.6261 ($C_{30}H_{36}O_3$: 444.6051).

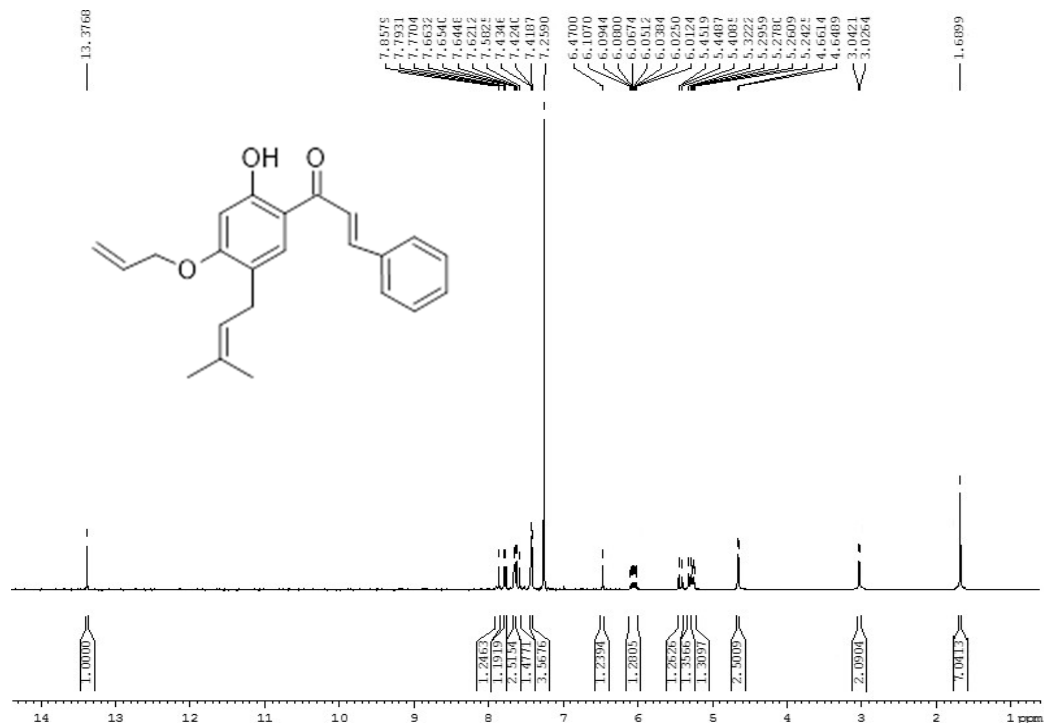


(2E)-1-[4-(farnesyloxy)-2-hydroxy-3-(prenyl)phenyl]-3-phenylprop-2-en-1-one (**29**): The compound was isolated as a yellow solid in a yield of 69.6% and a melting point of 62-64 °C. ¹H NMR (400 MHz, CDCl₃): δ 13.37 (s, 1H, 2'-OH), 7.87 (*d*, *J* =15.5 Hz, 1H, H-6'); 7.77 (*d*, *J* =9.1 Hz, 1H, H-8); 7.63 (*m*, 2H, H-7 and H-4); 7.42 (*m*, 4H, H-2, H-3, H-5 and H-6); 6.49 (*d*, *J* =9.0 Hz, 1H, H-5'); 5.48 (*m*, 1H, H-2''); 5.25 (*m*, 1H, H-8'); 5.08 (*m*, 2H, H-6'' and H-10''); 4.65 (*d*, *J* =6.6 Hz, 2H, H-1''); 3.39 (*d*, *J* =7.2 Hz, 1H, H-7''); 2.09 (*m*, 4H, H-4'', H-5'', H-8'' and H-9''); 1.80 (s, 6H, H-10' and H-13''); 1.75 (s, 3H, H-11'); 1.67 (s, 6H, H-14'' and H-15''). ¹³C NMR (100 MHz, CDCl₃): δ 192.1 (C-9); 163.2 (C-2'); 162.9 (C-4'); 144.0 (C-7); 141.3 (C-3''); 135.3 (C-7''); 134.9 (C-1); 131.5 (C-9' and C-11''); 131.3 (C-6'); 130.5 (C-4); 129.0 (C-2 and C-6); 128.5 (C-3 and C-5); 124.3 (C-6''); 123.6 (C-10''); 122.1 (C-8); 120.7 (C-8); 119.3 (C-2'') 117.9 (C-3'); 114.5 (C-1'); 103.3 (C-5'); 65.4 (C-1''); 39.7 (C-4''); 39.5 (C-8''); 26.7 (C-9''); 26.2 (C-5''); 25.8 (C-12''); 25.7 (C-11'); 21.8 (C-7'); 17.9 (C-10'); 17.7 (C-15''); 16.7 (C-14''); 16.0 (C-13'). HRMS: [M + H]⁺ ion *m/z* 513.7351 (C₃₅H₄₄O₃: 512.7220).

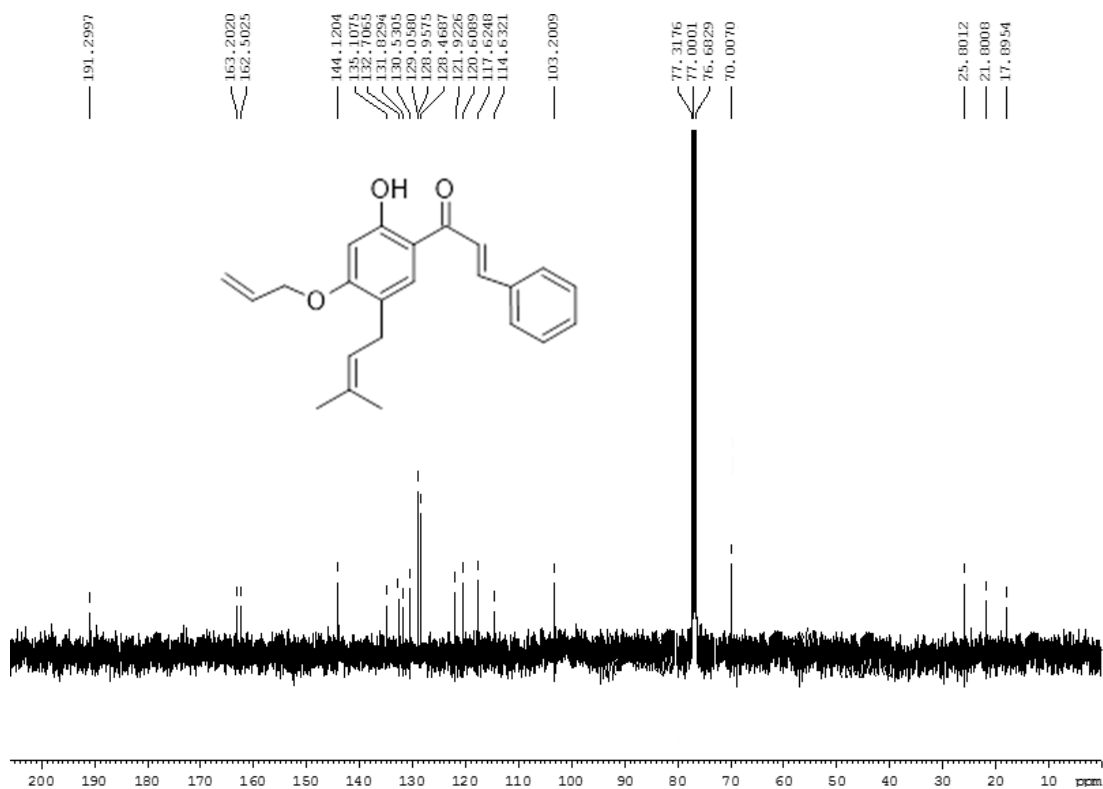


S3. NMR ^1H and ^{13}C of compounds 30-35.

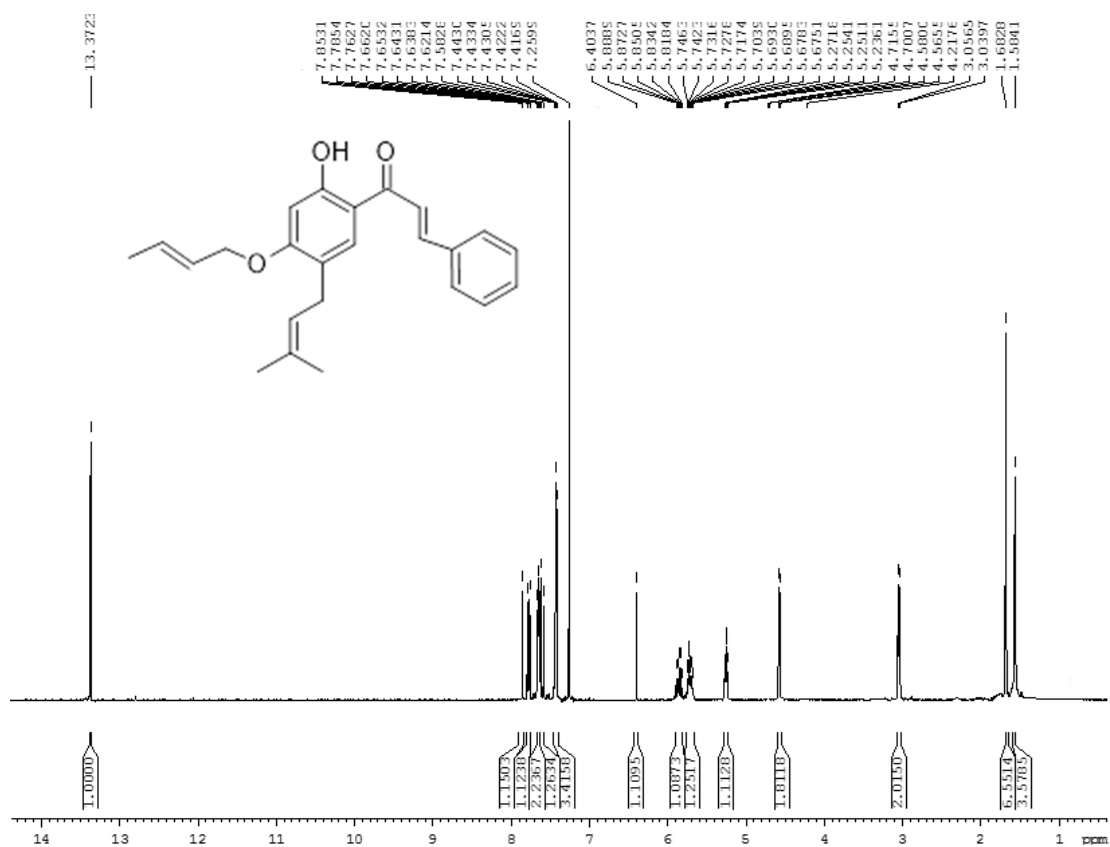
^1H NMR (400 MHz, CDCl_3) spectrum of compound 30



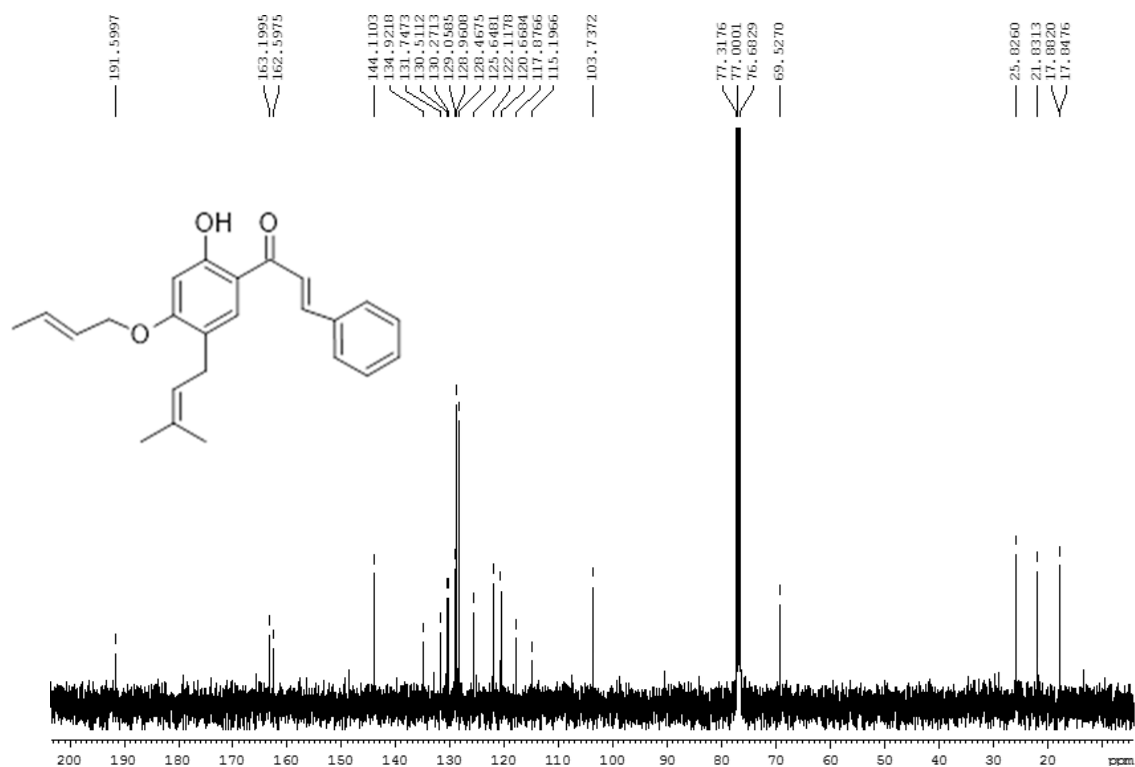
¹³C NMR (100 MHz, CDCl₃) spectrum of compound 30



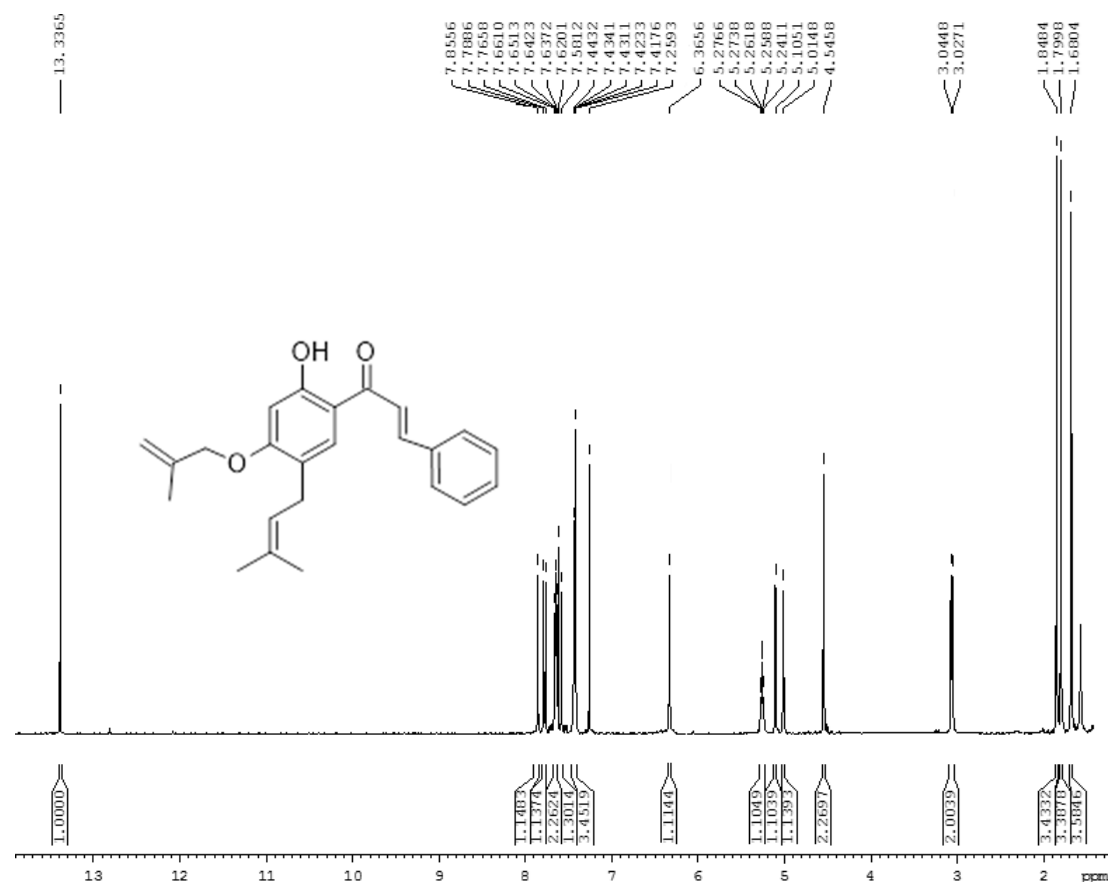
¹H NMR (400 MHz, CDCl₃) spectrum of compound 31



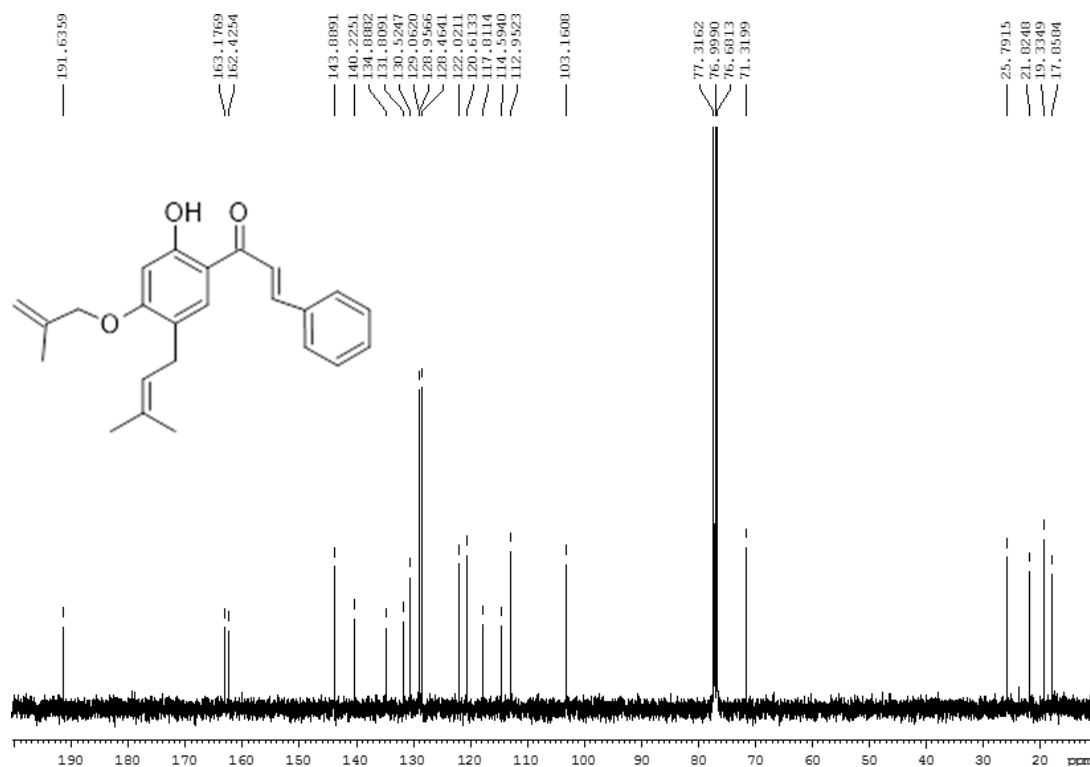
^{13}C NMR (100 MHz, CDCl_3) spectrum of compound 31



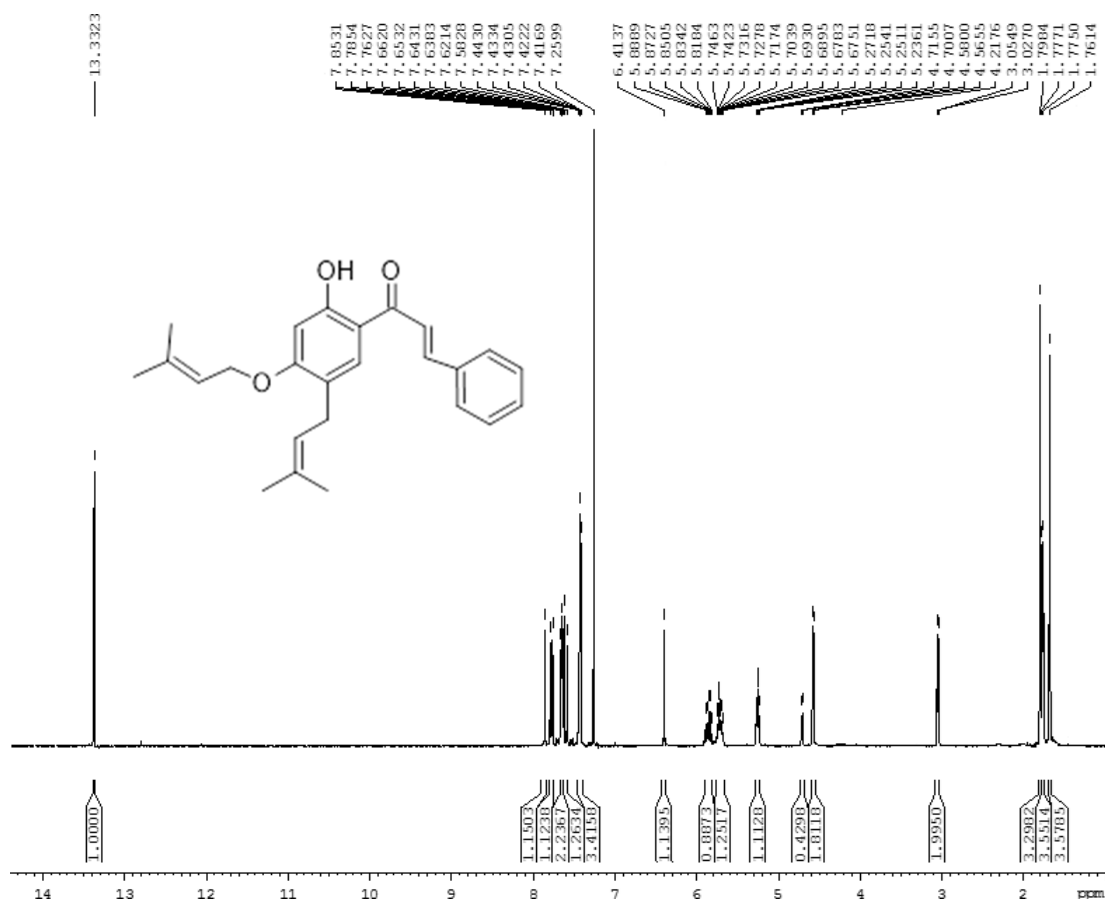
¹H NMR (400 MHz, CDCl₃) spectrum of compound 32



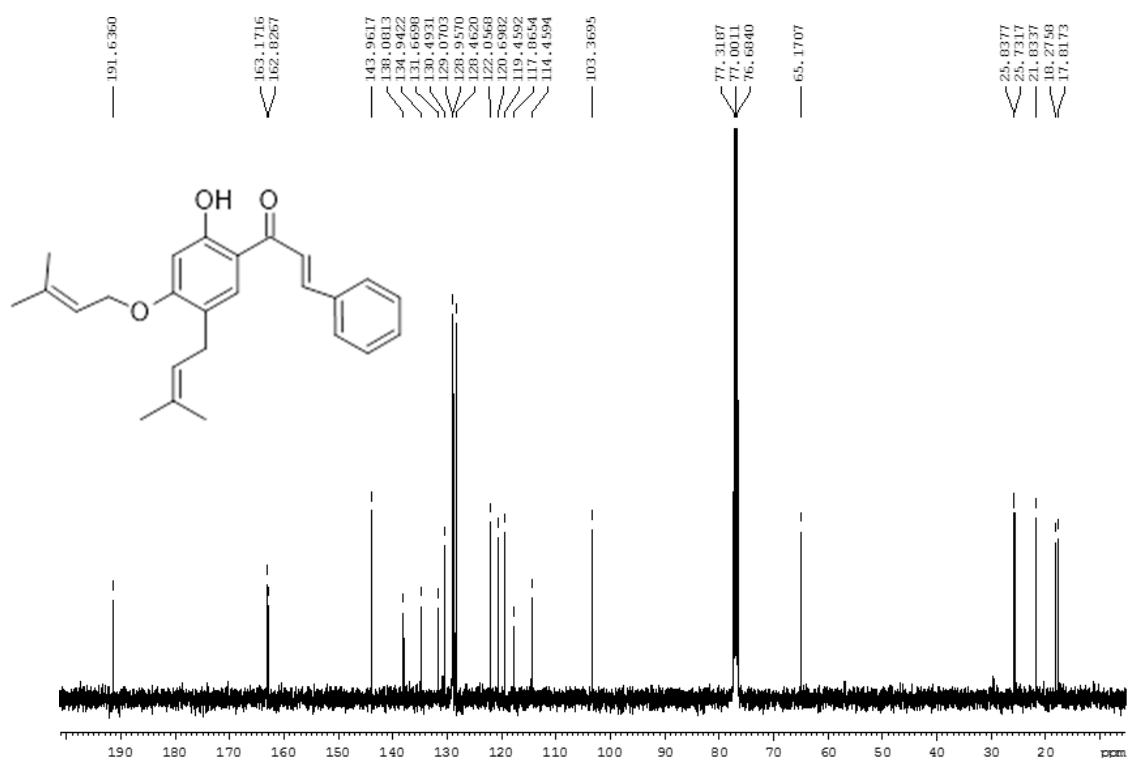
¹³C NMR (100 MHz, CDCl₃) spectrum of compound 32



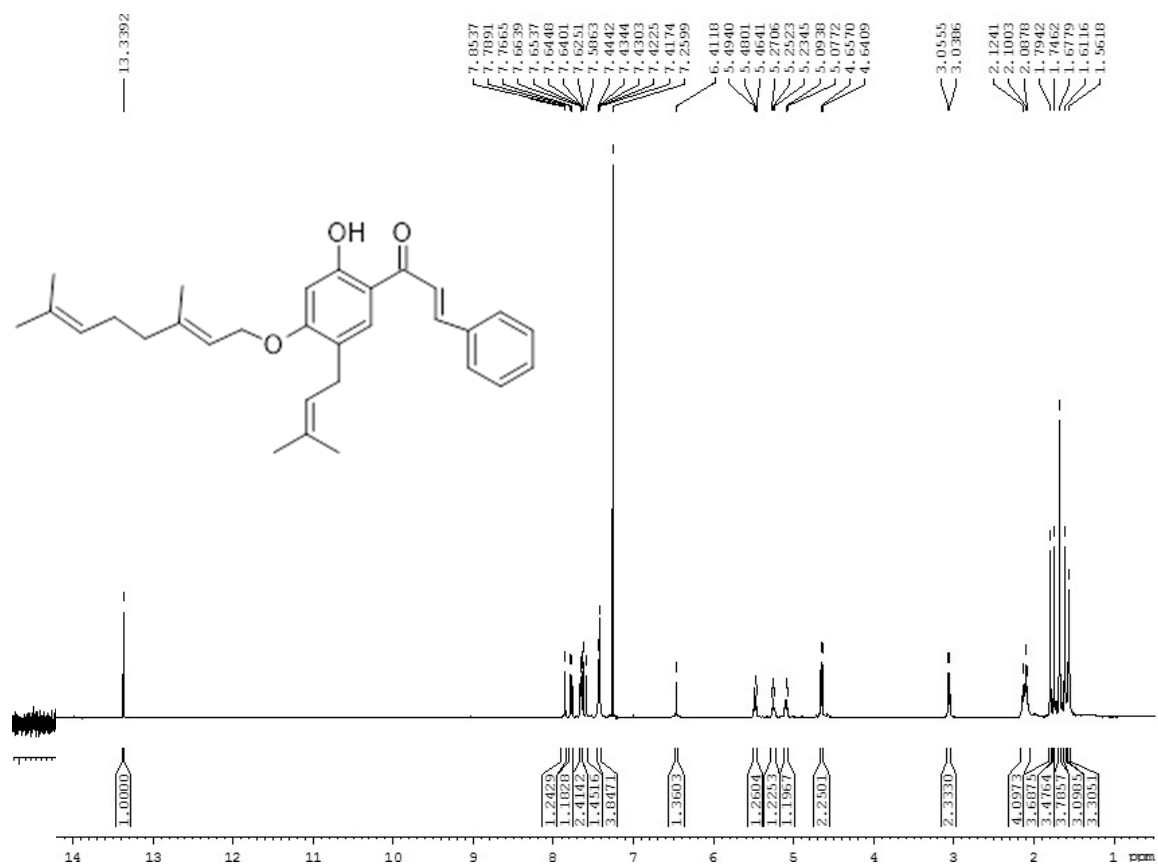
¹H NMR (400 MHz, CDCl₃) spectrum of compound 33



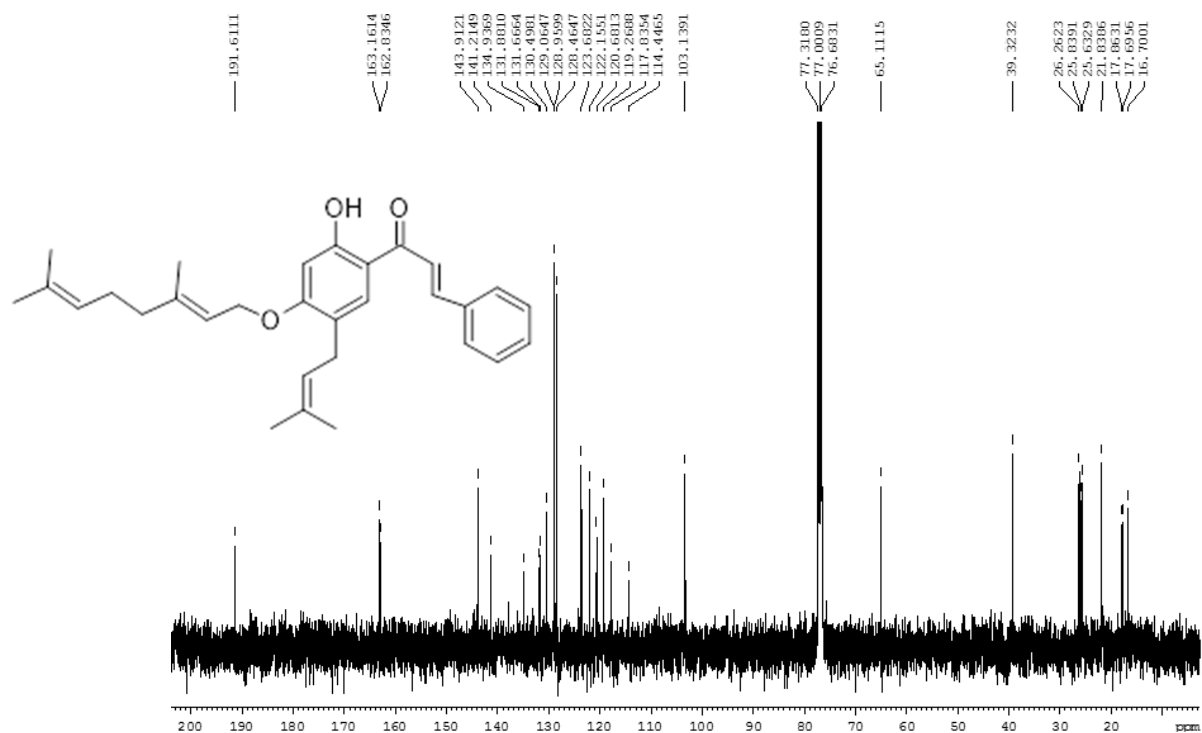
¹³C NMR (100 MHz, CDCl₃) spectrum of compound 33



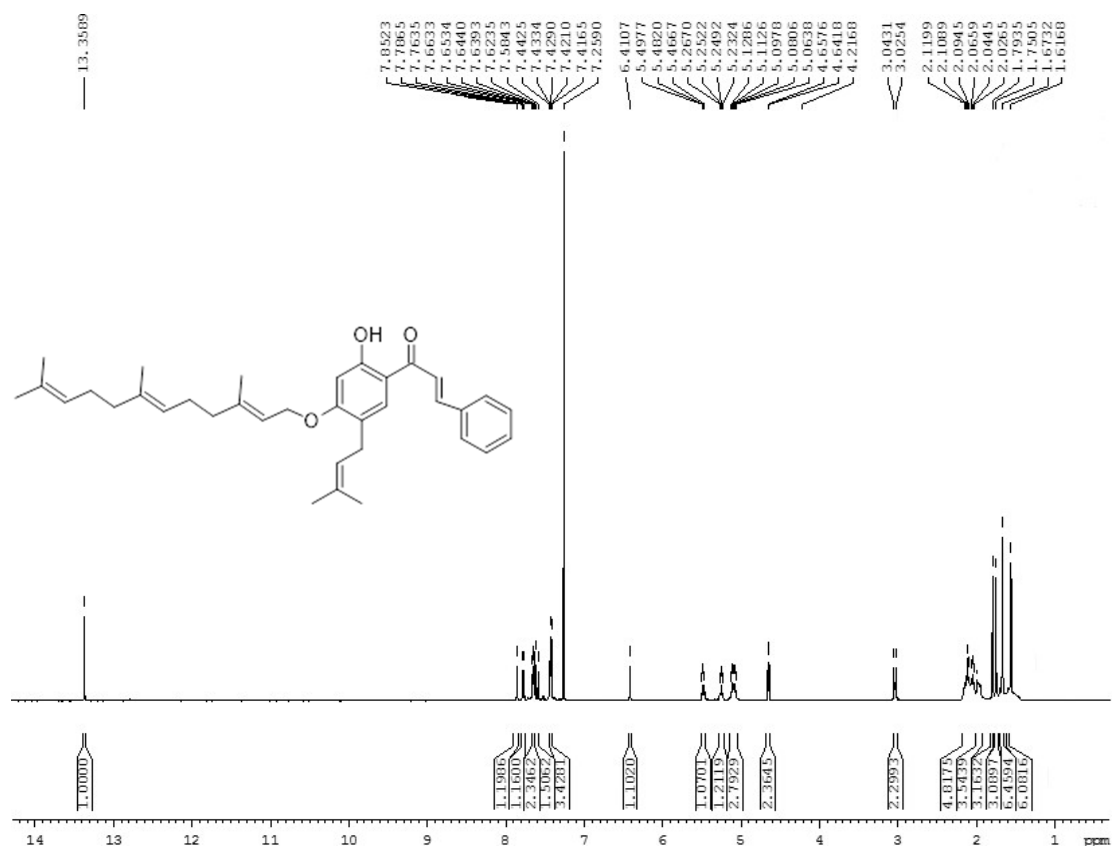
^1H NMR (400 MHz, CDCl_3) spectrum of compound 34



¹³C NMR (100 MHz, CDCl₃) spectrum of compound 34



^1H NMR (400 MHz, CDCl_3) spectrum of compound 35



¹³C NMR (100 MHz, CDCl₃) spectrum of compound 35

