

Type of the Paper (Article)

Synthesis and Fungicidal Activity of Hydrated Geranylated Phenols Against *Botrytis cinerea*

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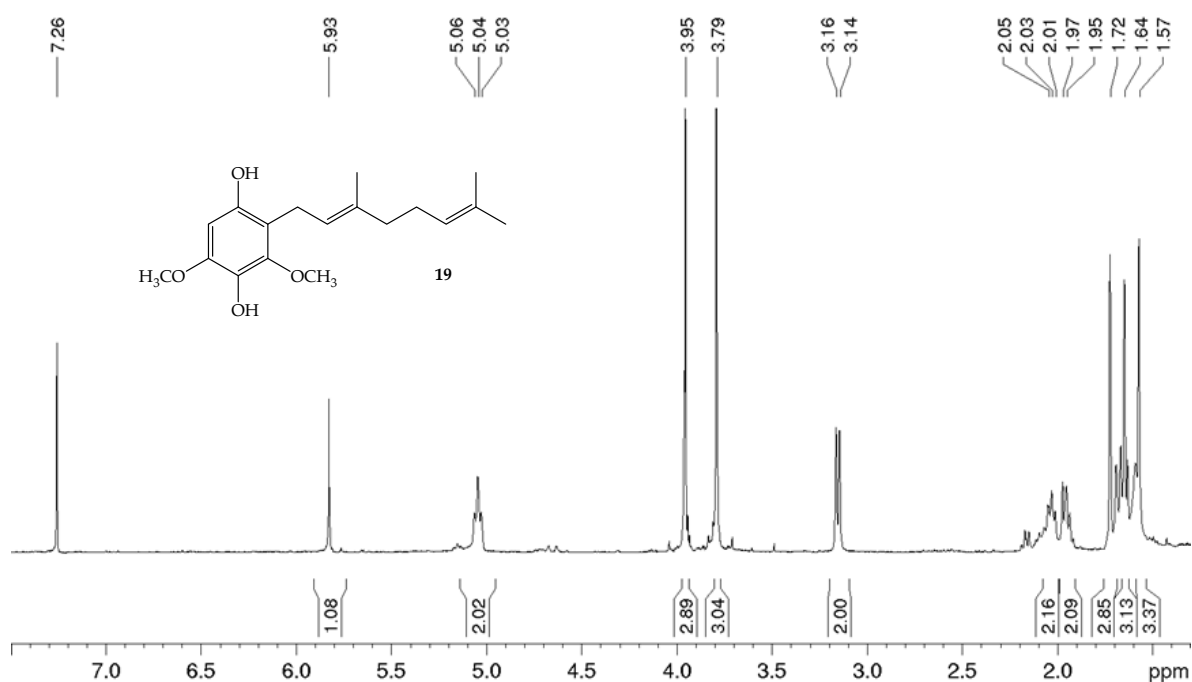
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Supplementary Materials: The following are available online at www.mdpi.com/xxx/s1, **Figure S1**: NMR spectra of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxybenzene-1,4-diol (**19**); **Figure S2**: NMR spectra of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (**20**); **Figure S3**: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**23**); **Figure S4**: NMR spectra of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (**24**); **Figure S5**: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-5-methylbenzene-1,3-diol (**26**); **Figure S6**: NMR spectra of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)-5-methylbenzene-1,3-diol (**27**); **Figure S7**: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-2,3-dimethoxyphenol (**28**); **Figure S8**: NMR spectra of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-4,5-dimethoxyphenol (**29**); **Figure S9**: NMR spectra of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxybenzene-1,4-diol (**30**); **Figure S10**: NMR spectra of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (**31**); **Figure S11**: NMR spectra of 4-((E)-3,7-dimethylocta-2,6-dien-1-yl)-6-((E)-7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**32**); **Figure S12**: NMR spectra of (E)-4-(3,7-dimethylocta-2,6-dien-1-yl)-6-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (**33**); **Figure S13**: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**23**); and 4-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,3-diol (**34**); **Figure S14**: NMR spectra of 2-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,4-diol (**35**); **Figure S15**: NMR spectra of 4-(3,7-dihydroxy-3,7-dimethyloctyl)-5-methylbenzene-1,3-diol (**36**); **Figure S16**: NMR spectra of 8-(2-hydroxy-4,5-dimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (**37**); **Figure S17**: NMR spectra of 8-(2-hydroxy-3,4,5-trimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (**38**); **Figure S18**: HRMS (EI⁺) spectrum of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxybenzene-1,4-diol (**19**); **Figure S19**: HRMS (EI⁺) spectrum of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (**20**); **Figure S20**: HRMS (EI⁺) spectrum of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**23**); **Figure S21**: HRMS (EI⁺) spectrum of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (**24**); **Figure S22**: HRMS (EI⁺) spectrum of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-5-methylbenzene-1,3-diol (**26**); **Figure S23**: HRMS (EI⁺) spectrum of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)-5-methylbenzene-1,3-diol (**27**); **Figure S24**: HRMS (EI⁺) spectrum of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-2,3-dimethoxyphenol (**28**); **Figure S25**: HRMS (EI⁺) spectrum of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-4,5-dimethoxyphenol (**29**); **Figure S26**: HRMS (EI⁺)

spectrum of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxybenzene-1,4-diol (**30**); **Figure S27**: HRMS (EI⁺) spectrum of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (**31**); **Figure S28**: HRMS (EI⁺) spectrum of 4-((E)-3,7-dimethylocta-2,6-dien-1-yl)-6-((E)-7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**32**); **Figure S29**: HRMS (EI⁺) spectrum of (E)-4-(3,7-dimethylocta-2,6-dien-1-yl)-6-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (**33**); **Figure S30**: HRMS (EI⁺) spectrum of 4-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,3-diol (**34**); **Figure S31**: HRMS (EI⁺) spectrum of 2-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,4-diol (**35**); **Figure S32**: HRMS (EI⁺) spectrum of 4-(3,7-dihydroxy-3,7-dimethyloctyl)-5-methylbenzene-1,3-diol (**36**); **Figure S33**: HRMS (EI⁺) spectrum of 8-(2-hydroxy-4,5-dimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (**37**); **Figure S34**: HRMS (EI⁺) spectrum of 8-(2-hydroxy-3,4,5-trimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (**38**).

¹H-NMR



¹³C-NMR

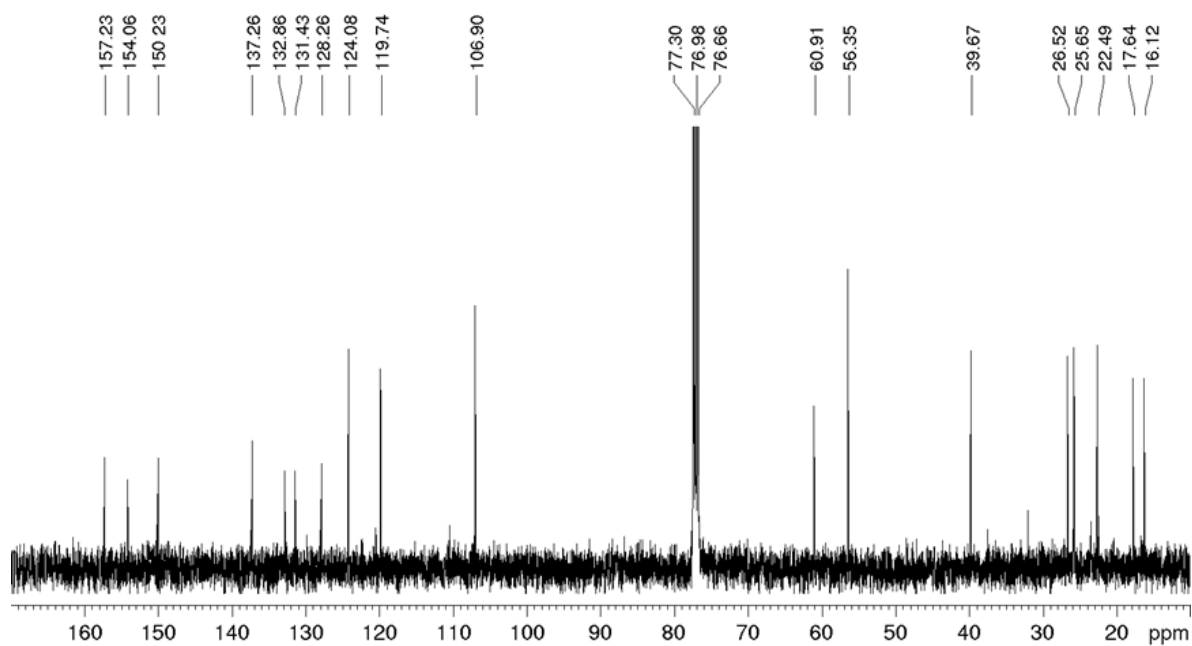
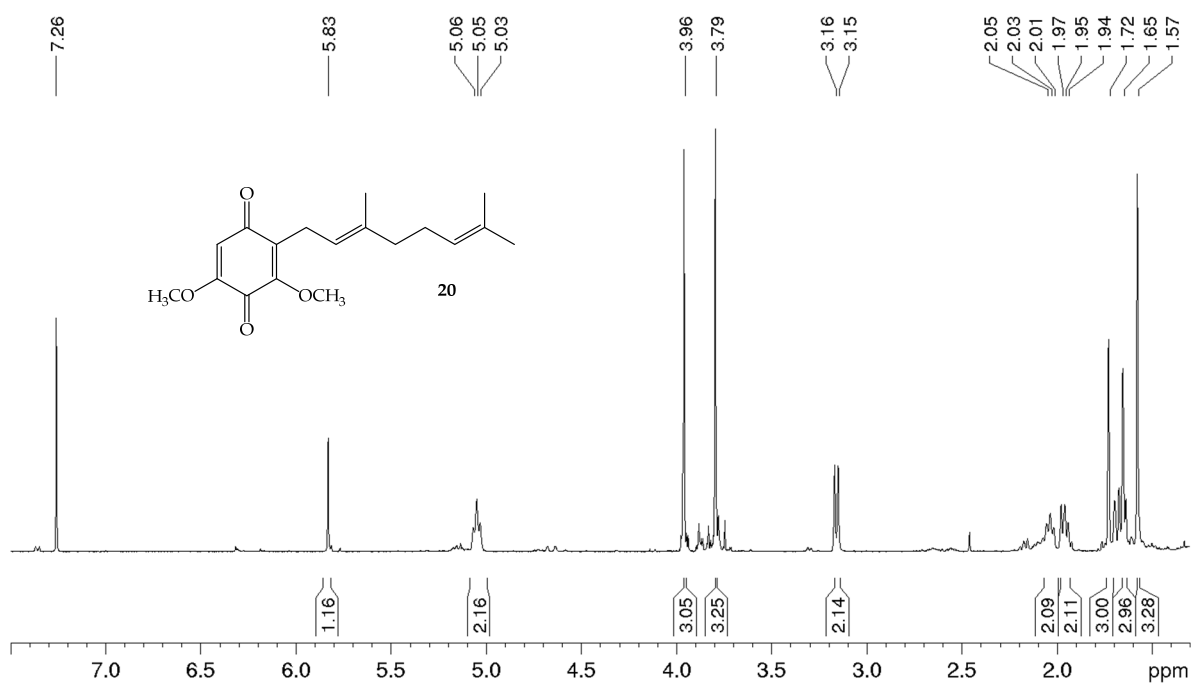


Figure S1: NMR spectra of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxybenzene-1,4-diol (19)

¹H-NMR



¹³C-NMR

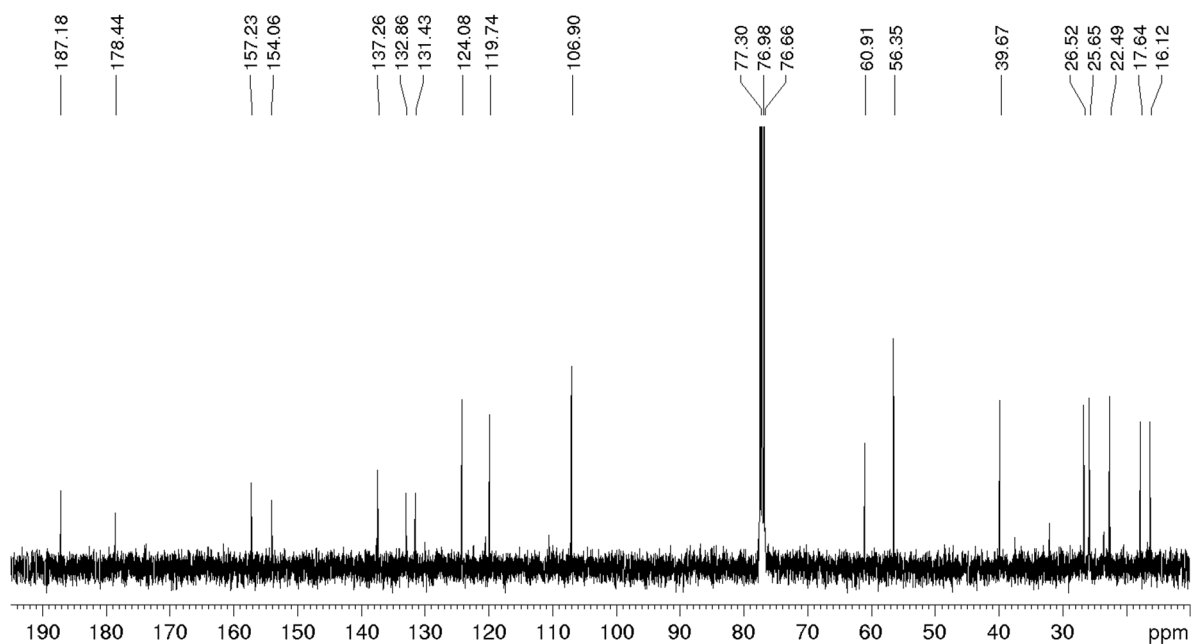
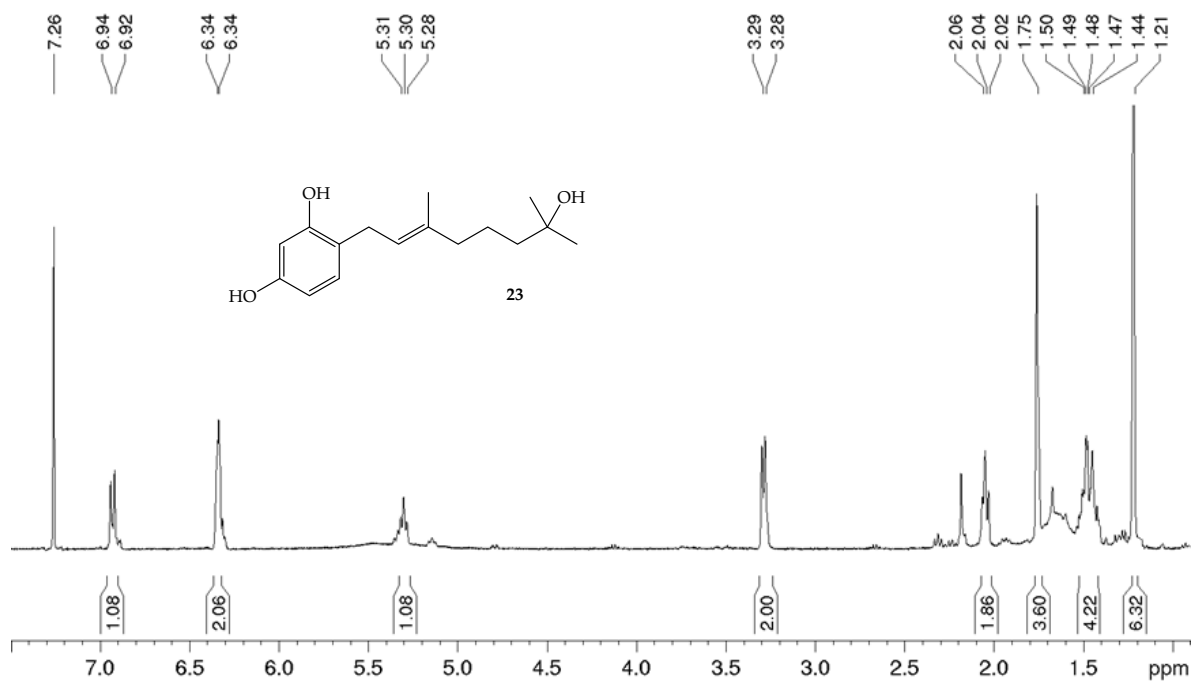


Figure S2: NMR spectra of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (20)

¹H-NMR



¹³C-NMR

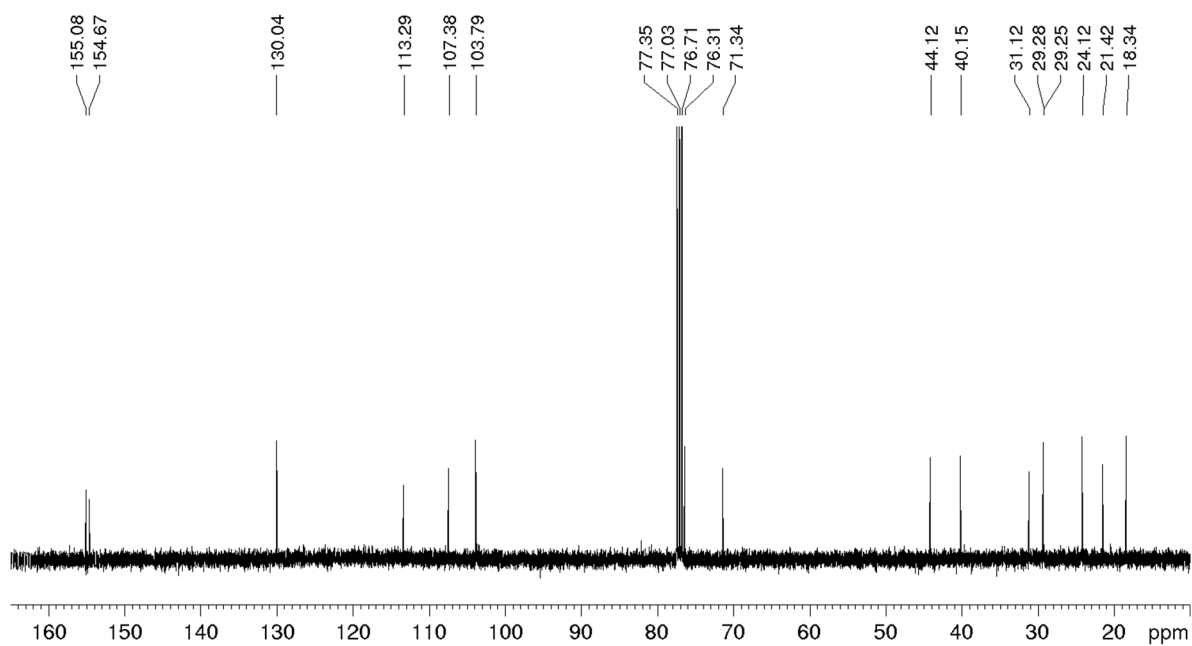
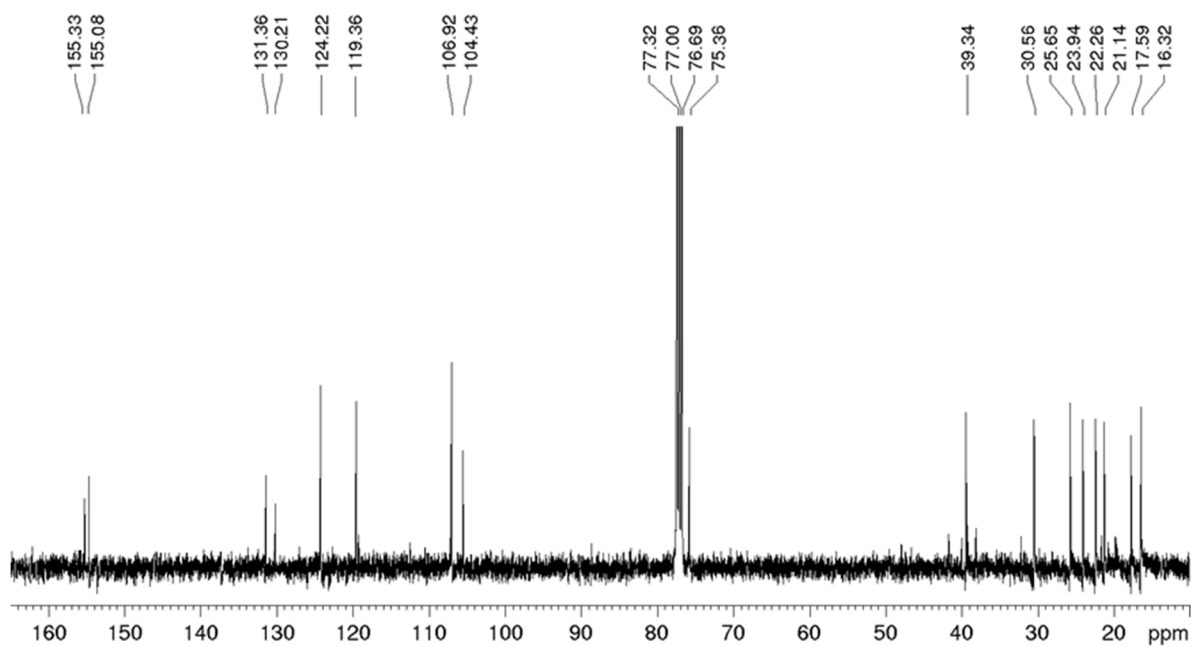
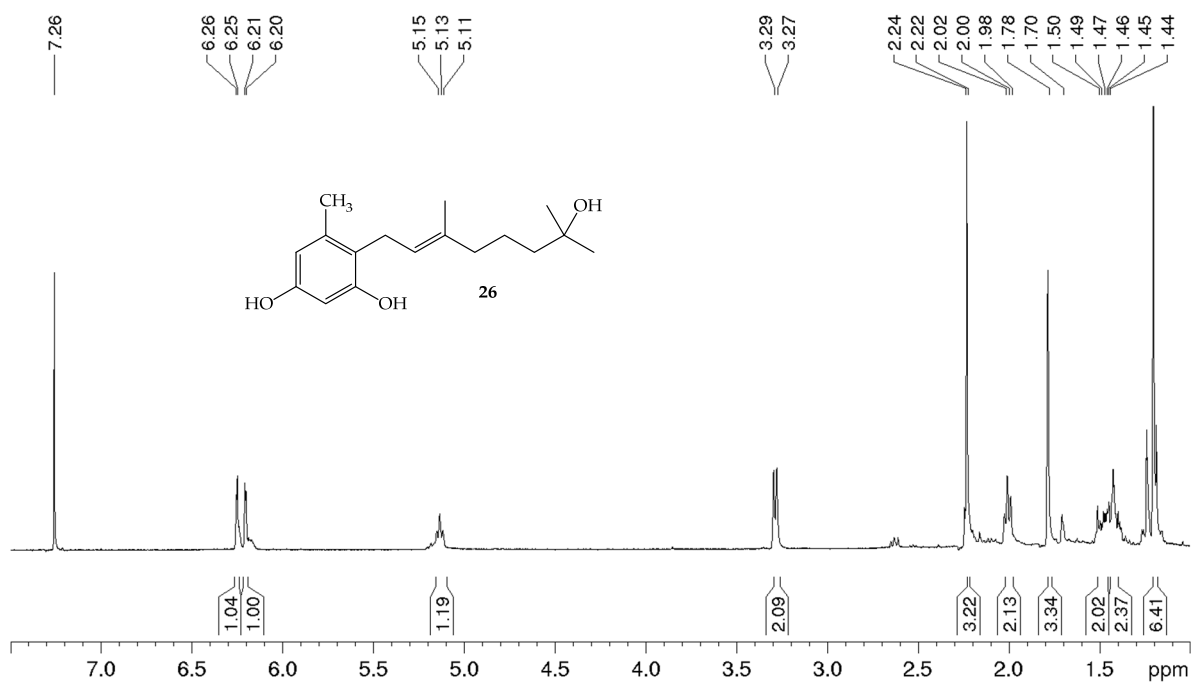


Figure S3: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (23)

¹H-NMR



^{13}C -NMR**Figure S4:** NMR spectra of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (24) ^1H -NMR

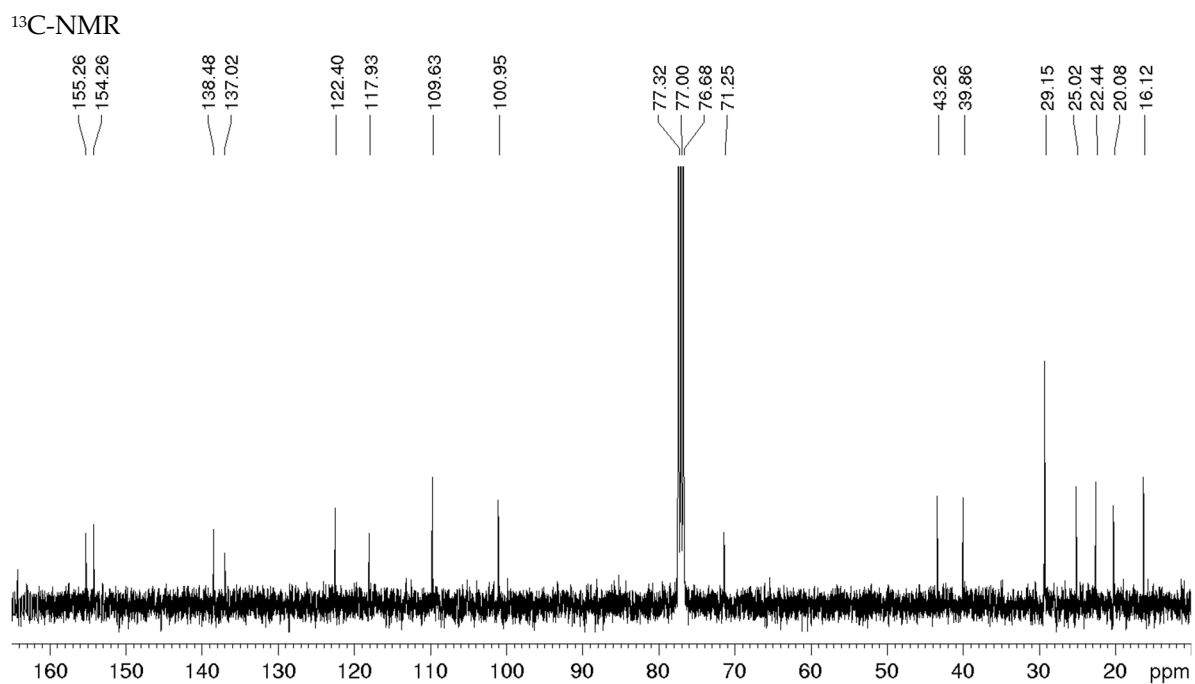
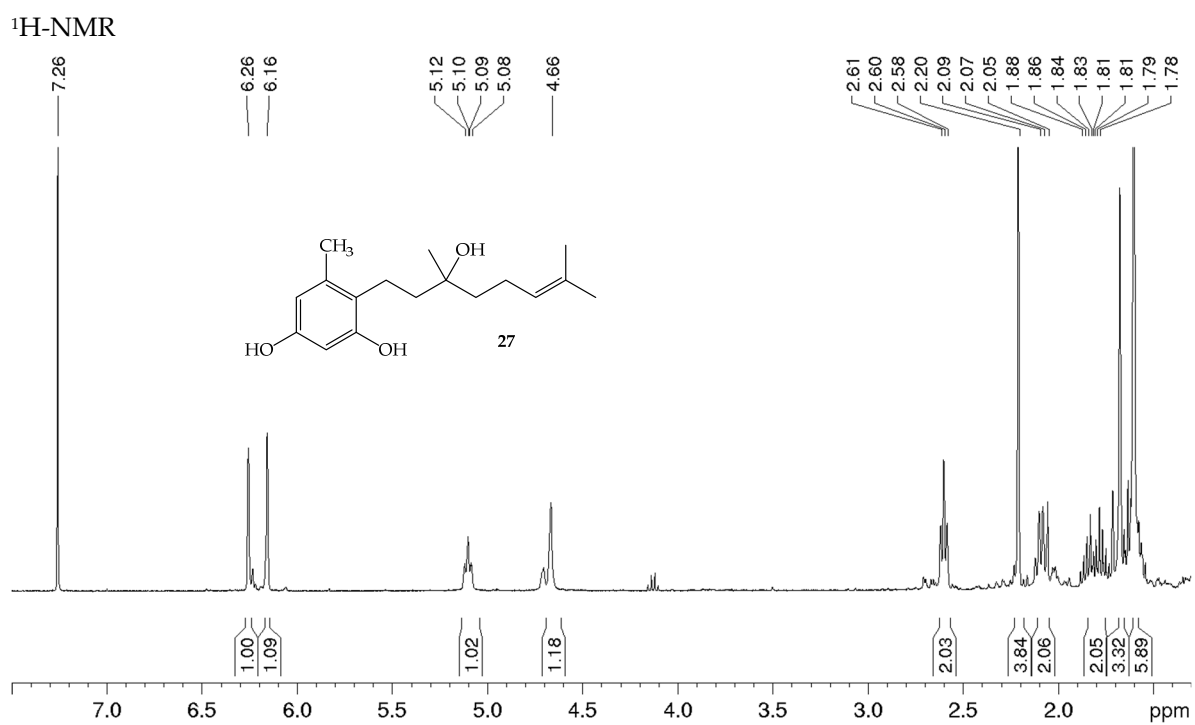


Figure S5: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-5-methylbenzene-1,3-diol (26)



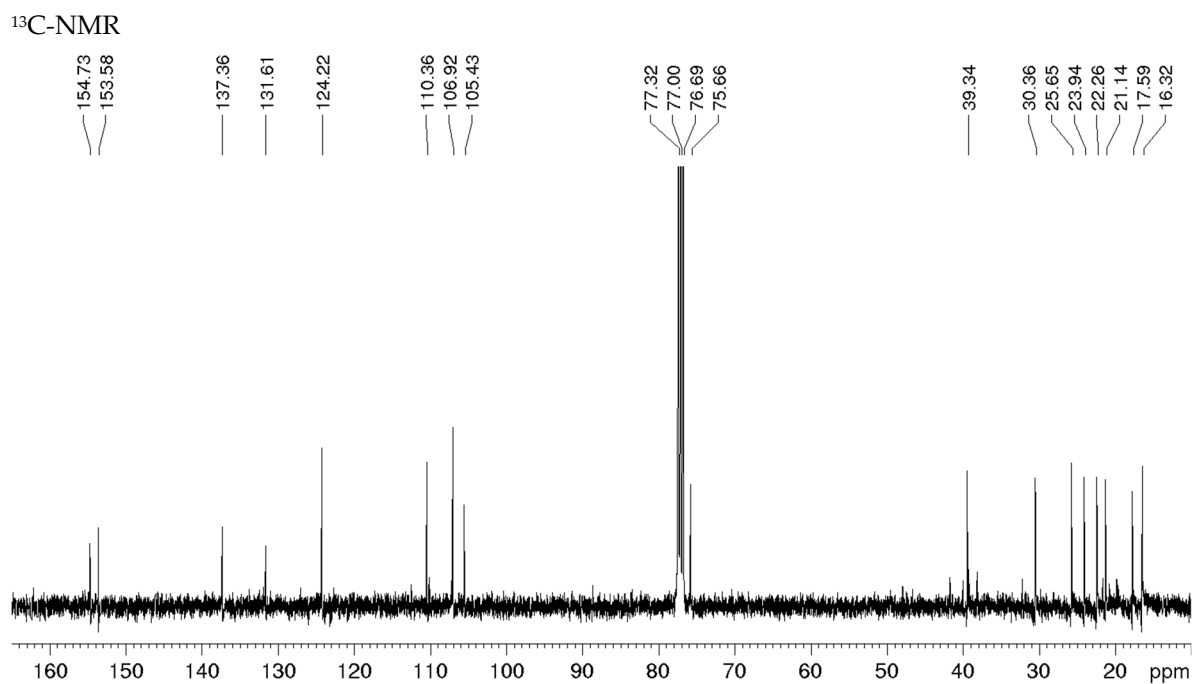
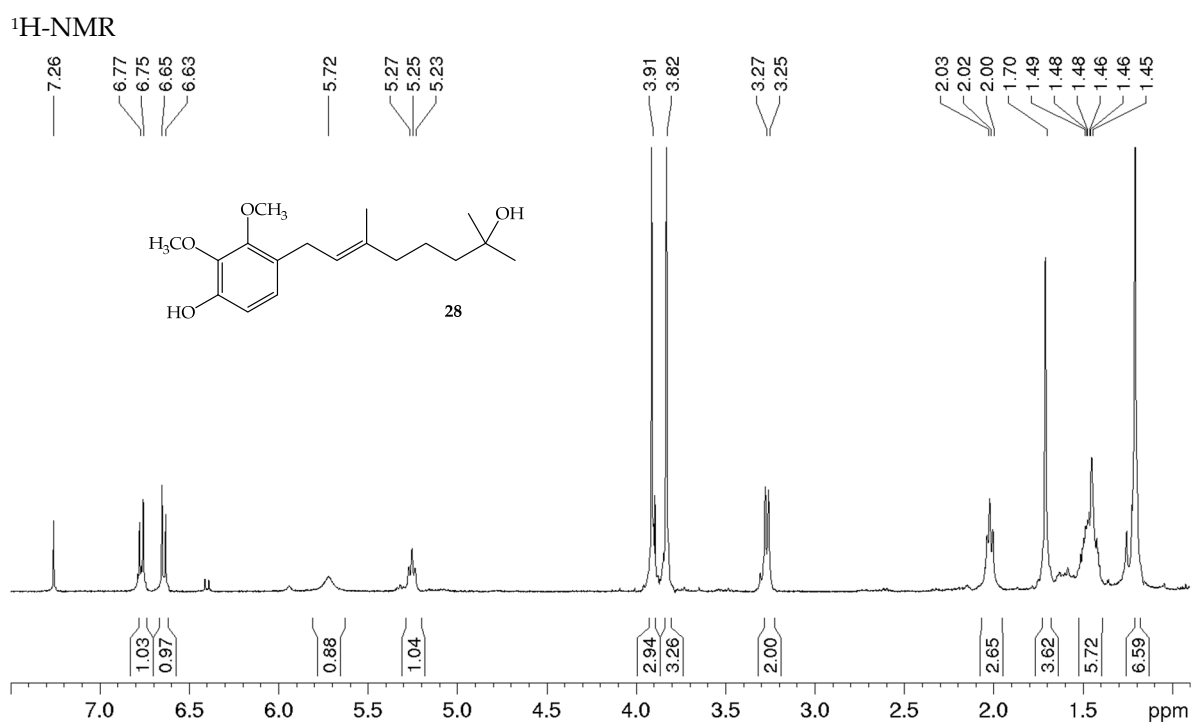
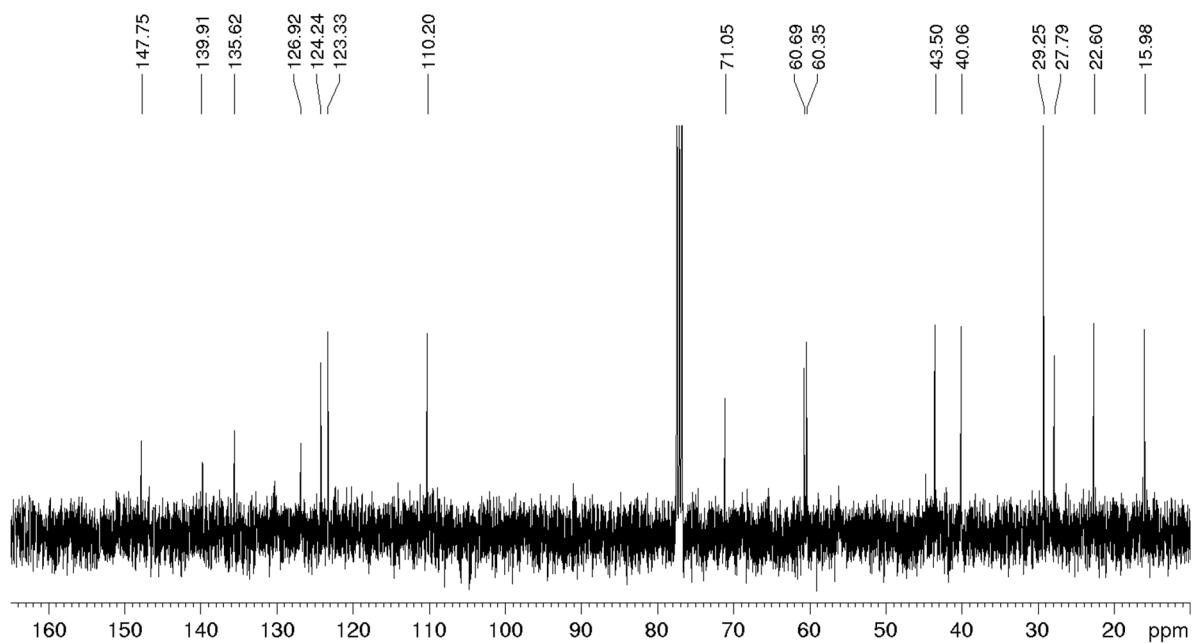
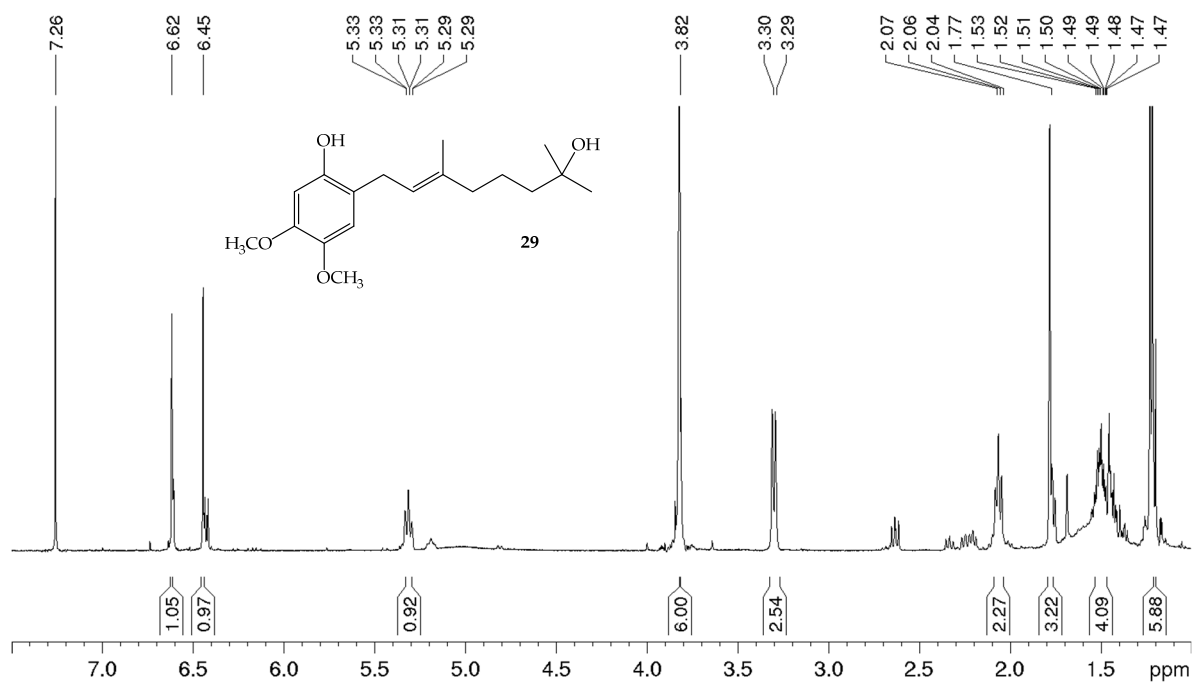
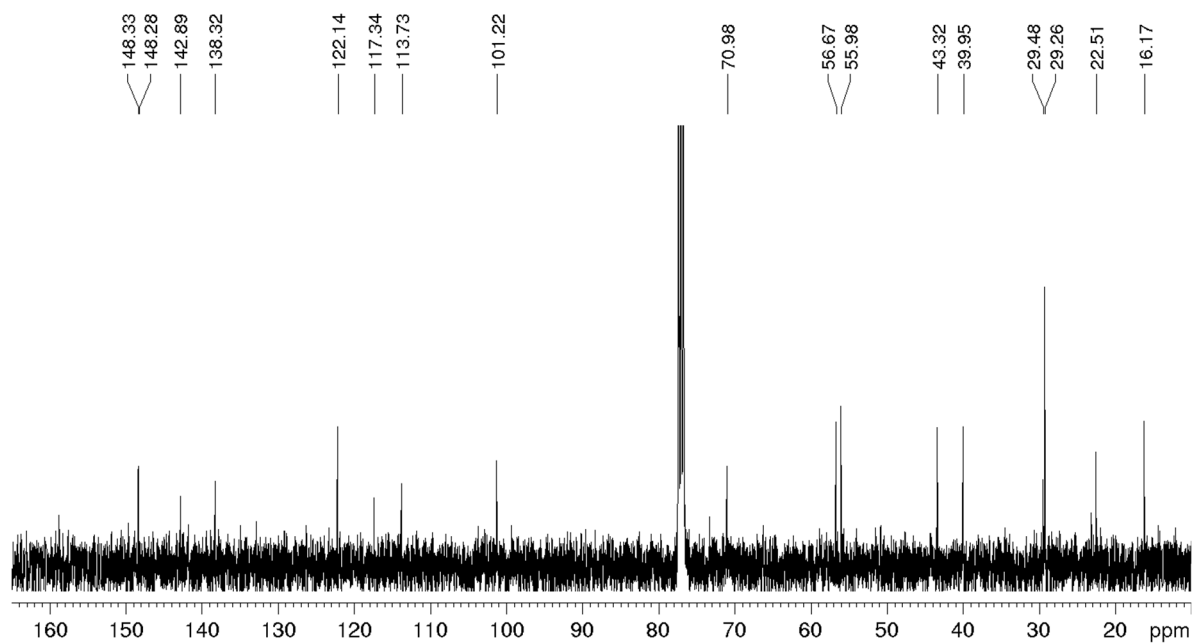
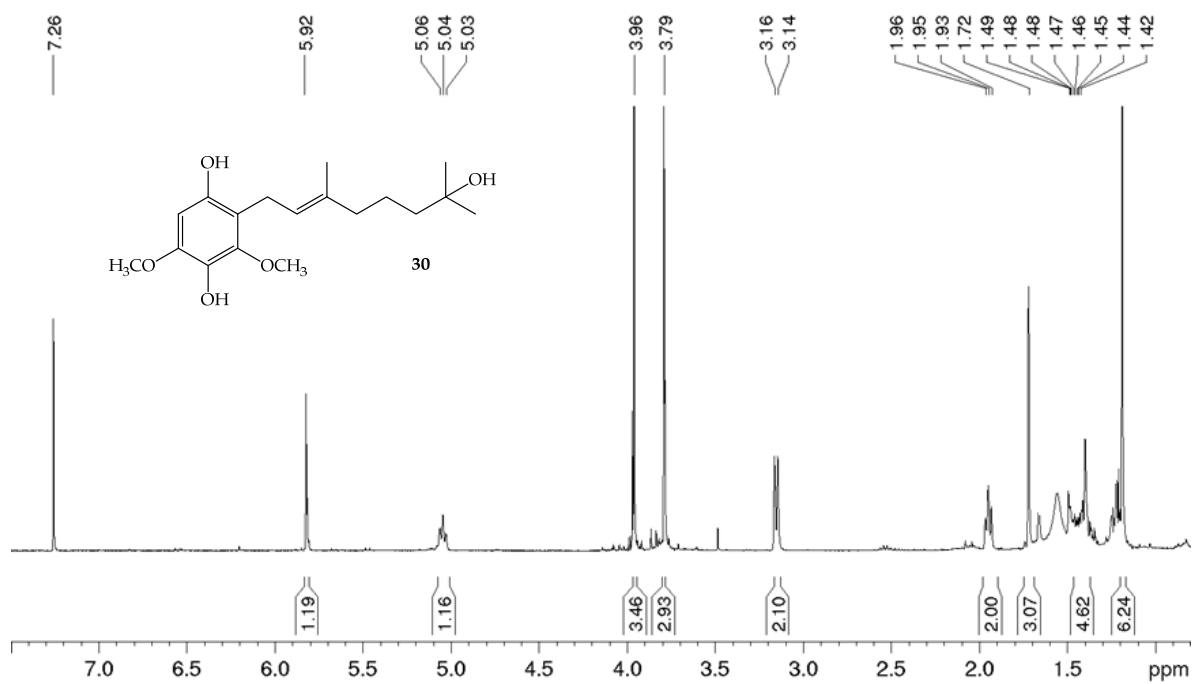
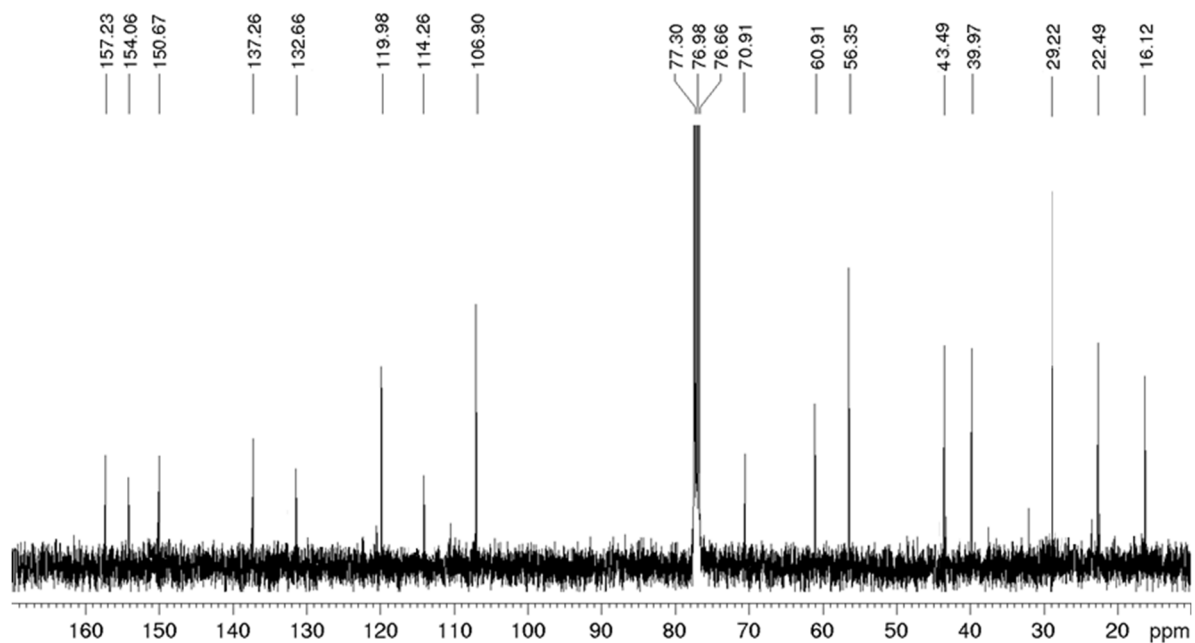
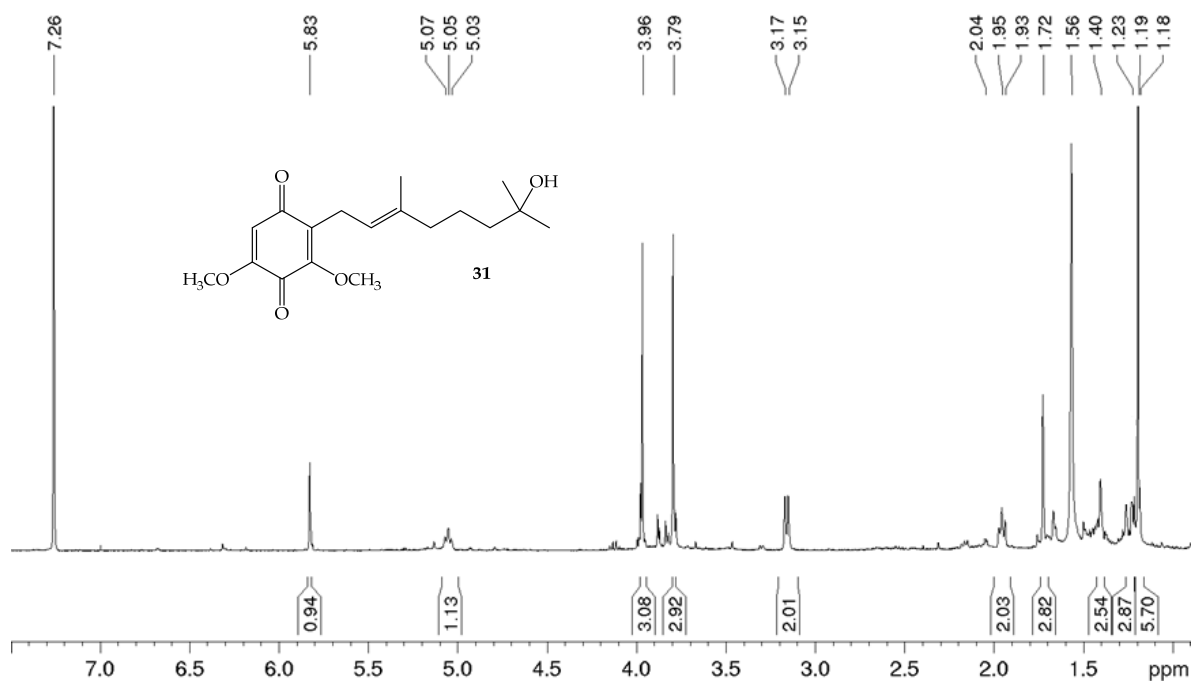


Figure S6: NMR spectra of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)-5-methylbenzene-1,3-diol (27)



¹³C-NMR**Figure S7:** NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-2,3-dimethoxyphenol (28)¹H-NMR

¹³C-NMR**Figure S8:** NMR spectra of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-4,5-dimethoxyphenol (29)¹H-NMR

¹³C-NMR**Figure S9:** NMR spectra of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxybenzene-1,4-diol (30)¹H-NMR

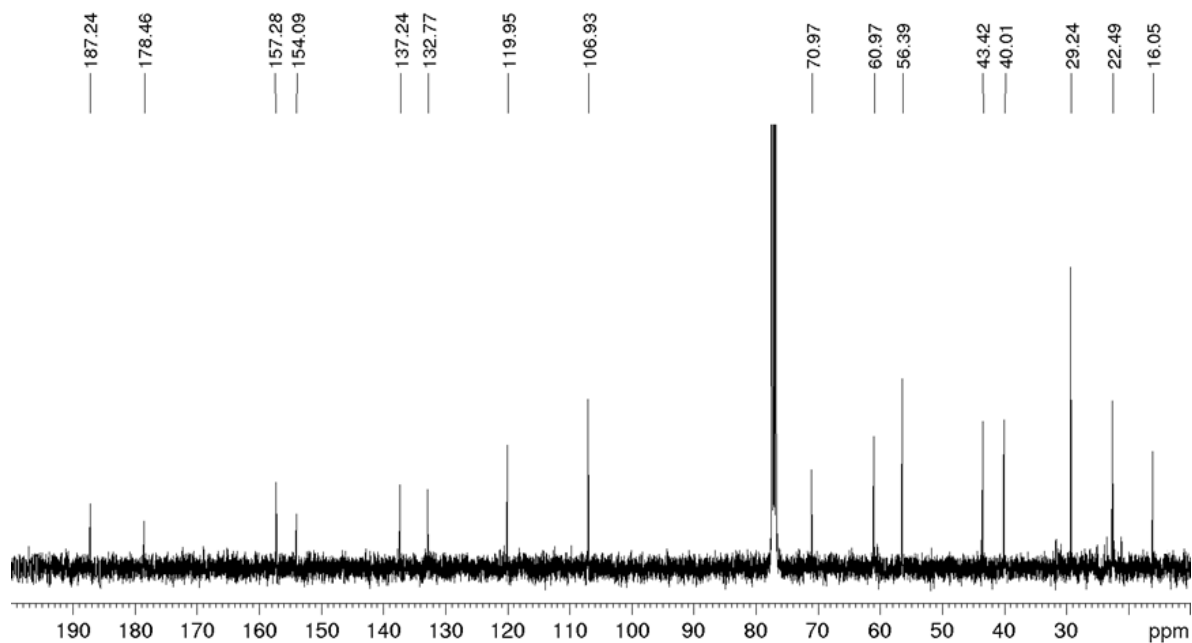
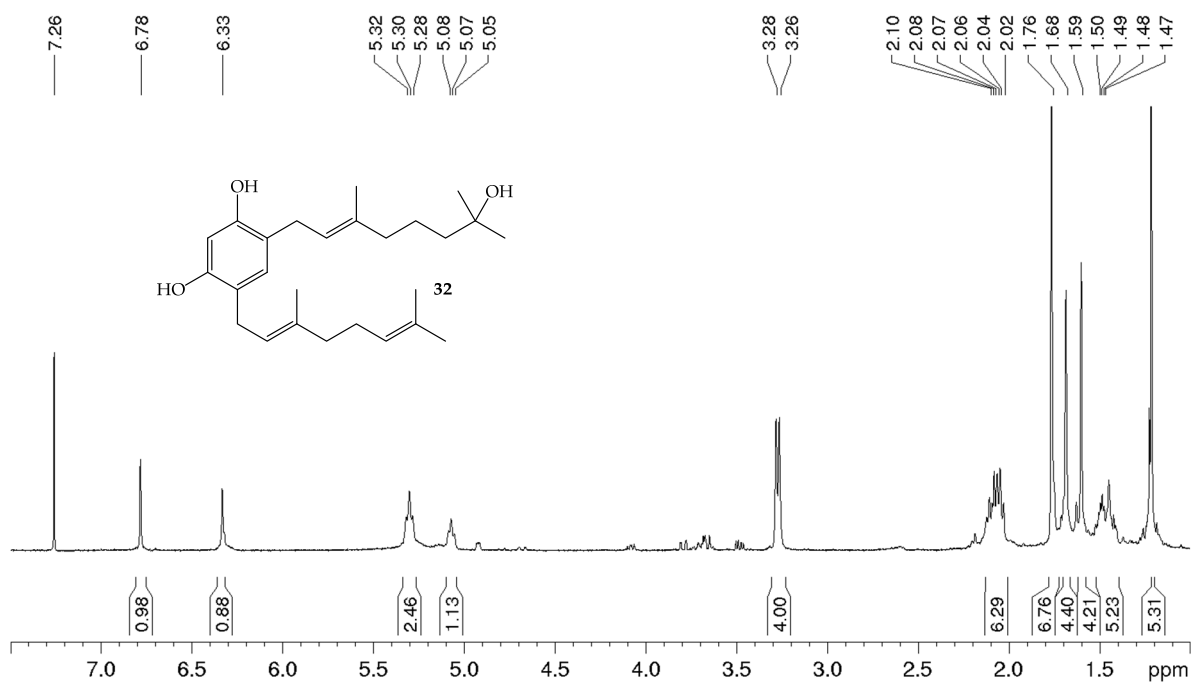
¹³C-NMR

Figure S10: NMR spectra of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (31)

¹H-NMR

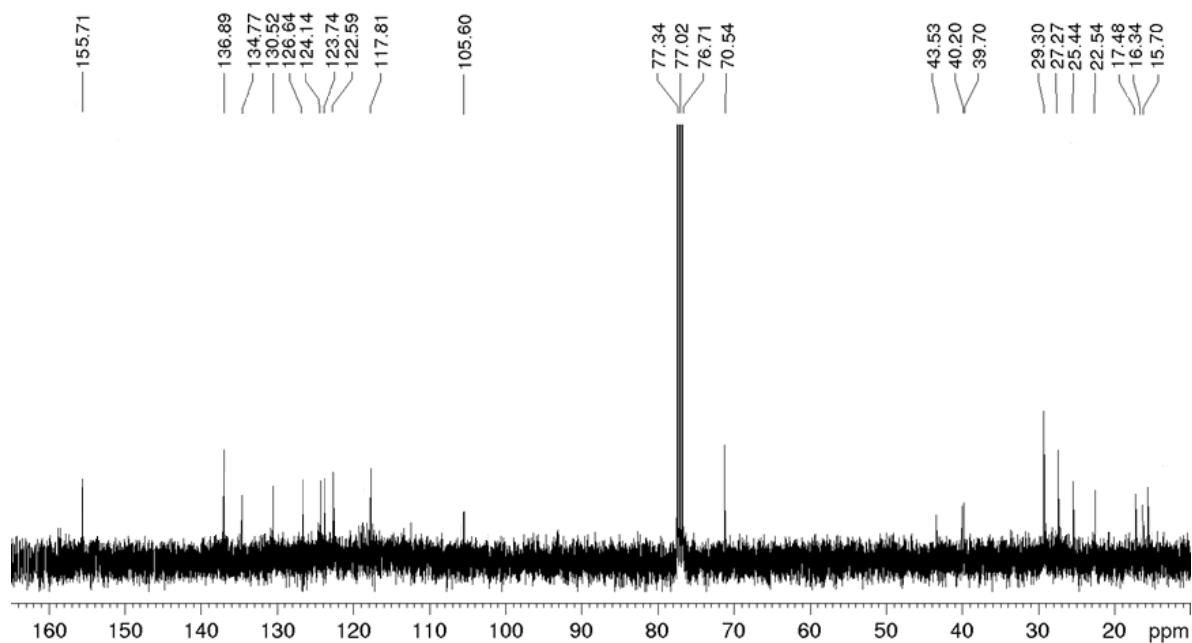
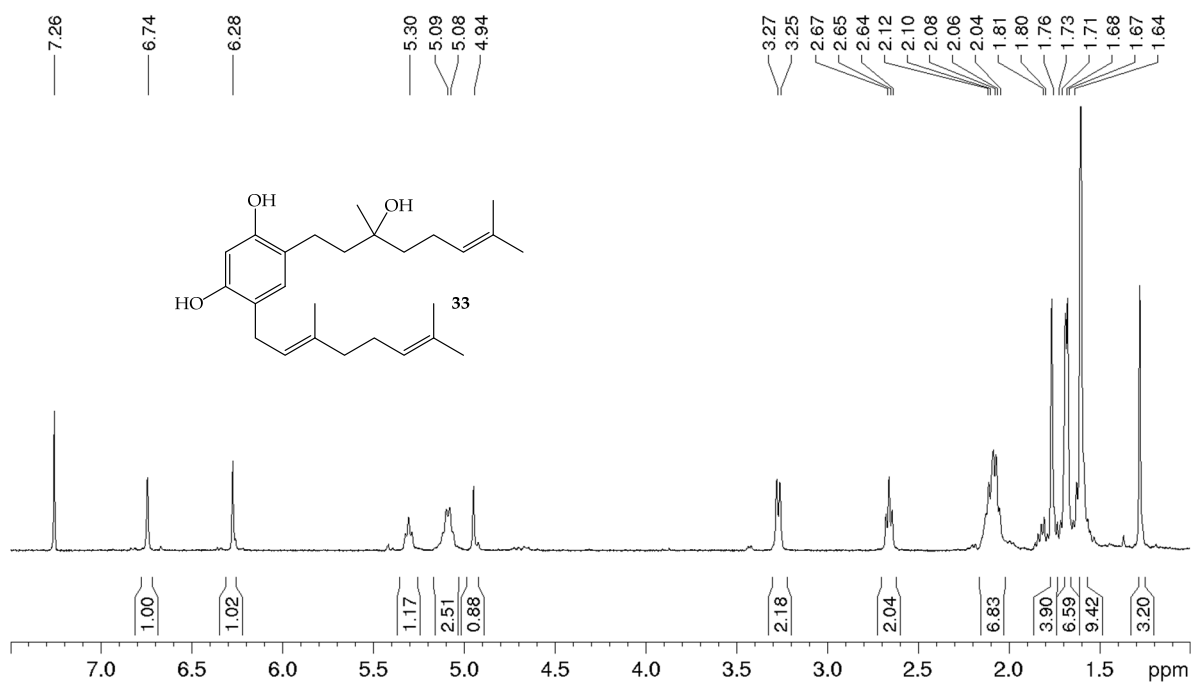
¹³C-NMR

Figure S11: NMR spectra of 4-((E)-3,7-dimethylocta-2,6-dien-1-yl)-6-((E)-7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**32**)

¹H-NMR

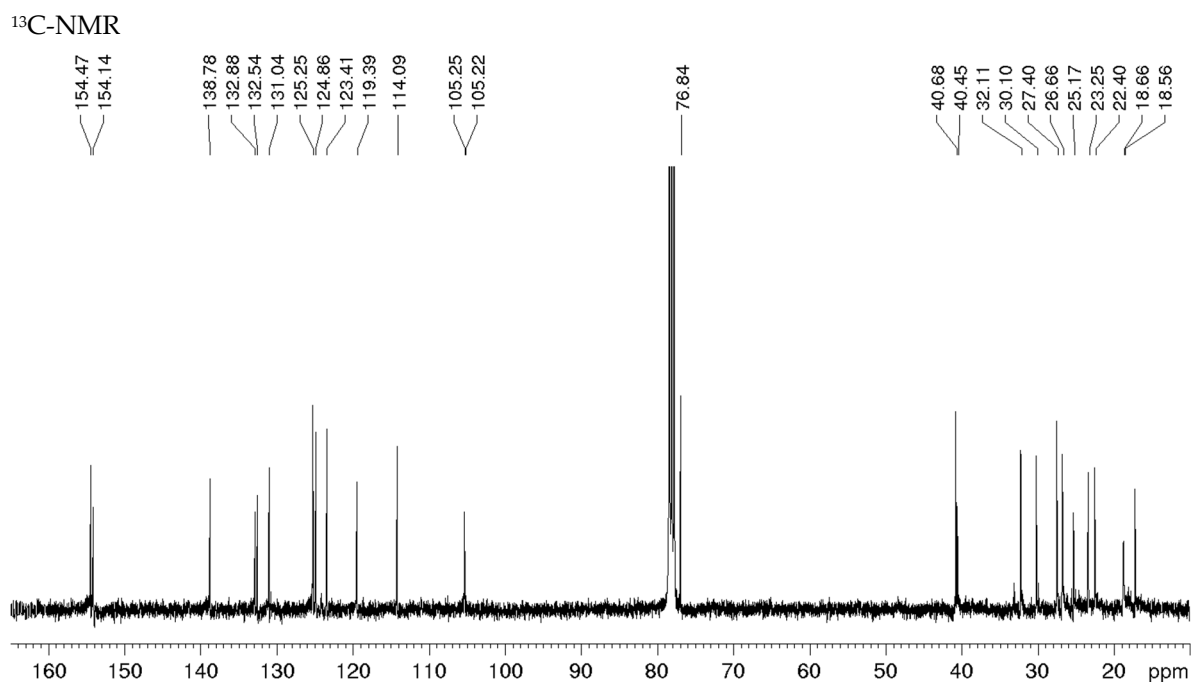
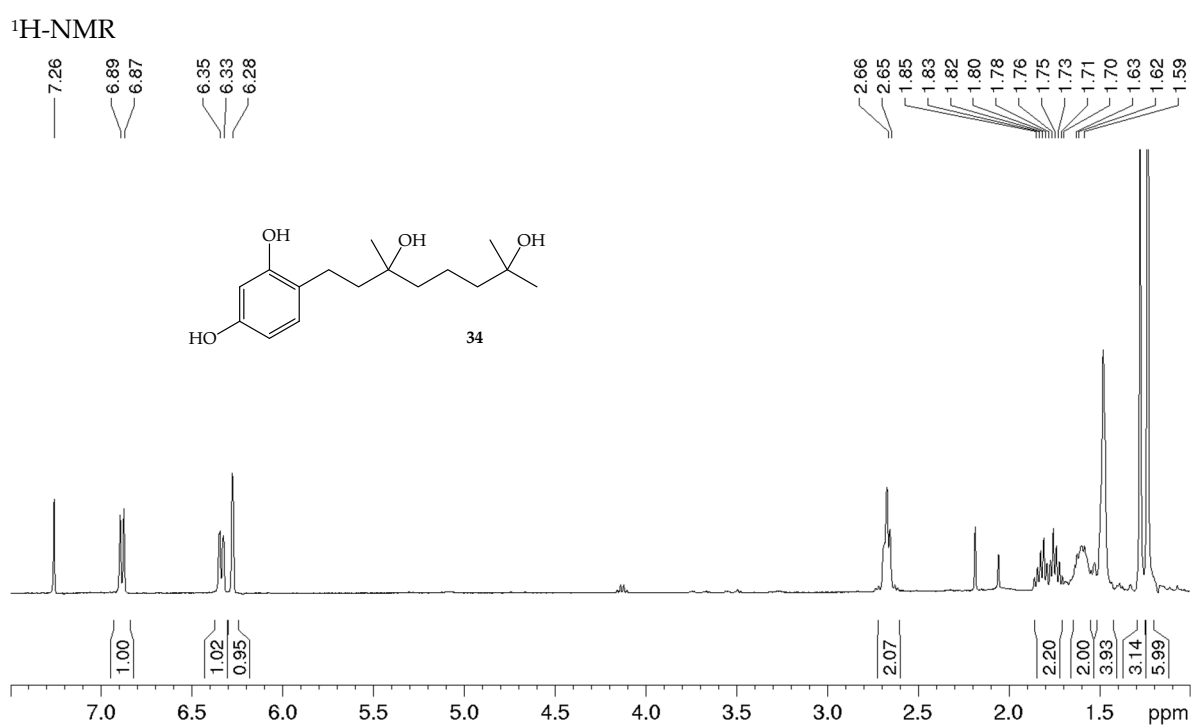


Figure S12: NMR spectra of (E)-4-(3,7-dimethylocta-2,6-dien-1-yl)-6-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (**33**)



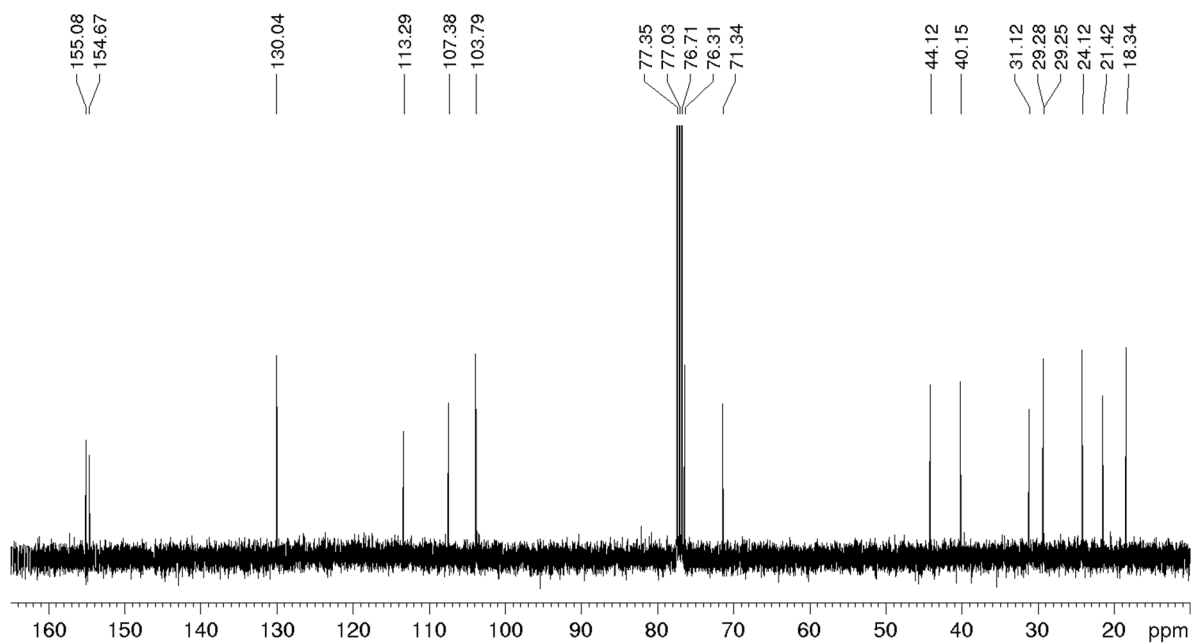
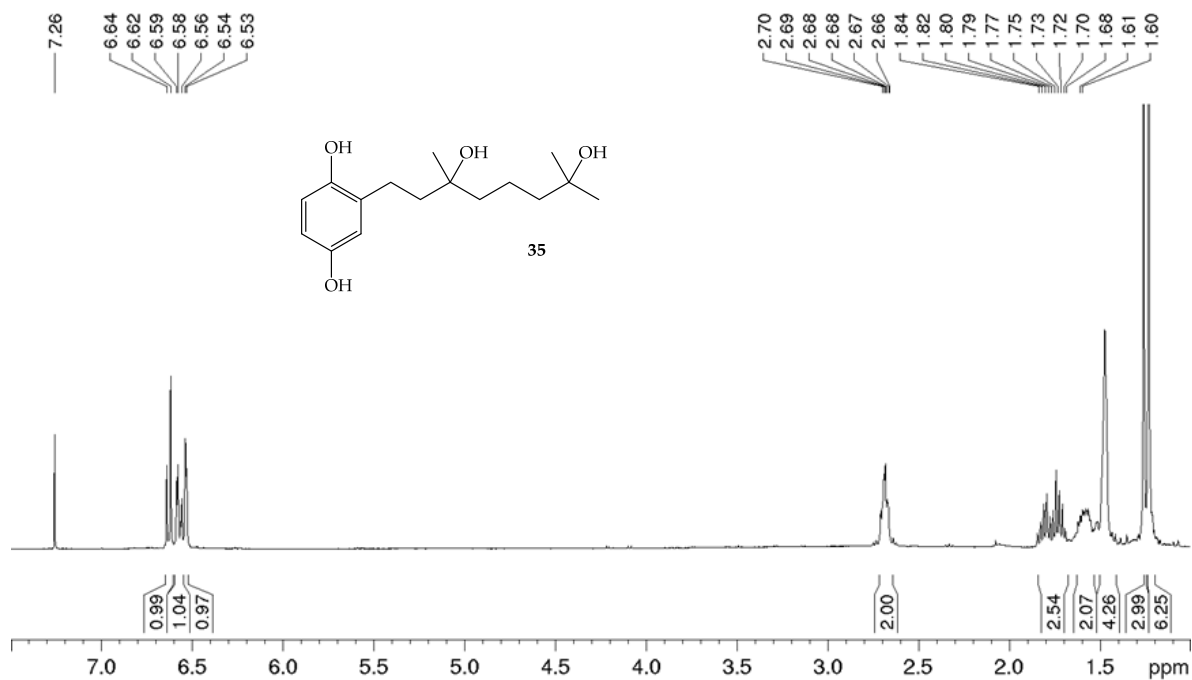
¹³C-NMR

Figure S13: NMR spectra of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (23); and 4-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,3-diol (34)

¹H-NMR¹³C-NMR

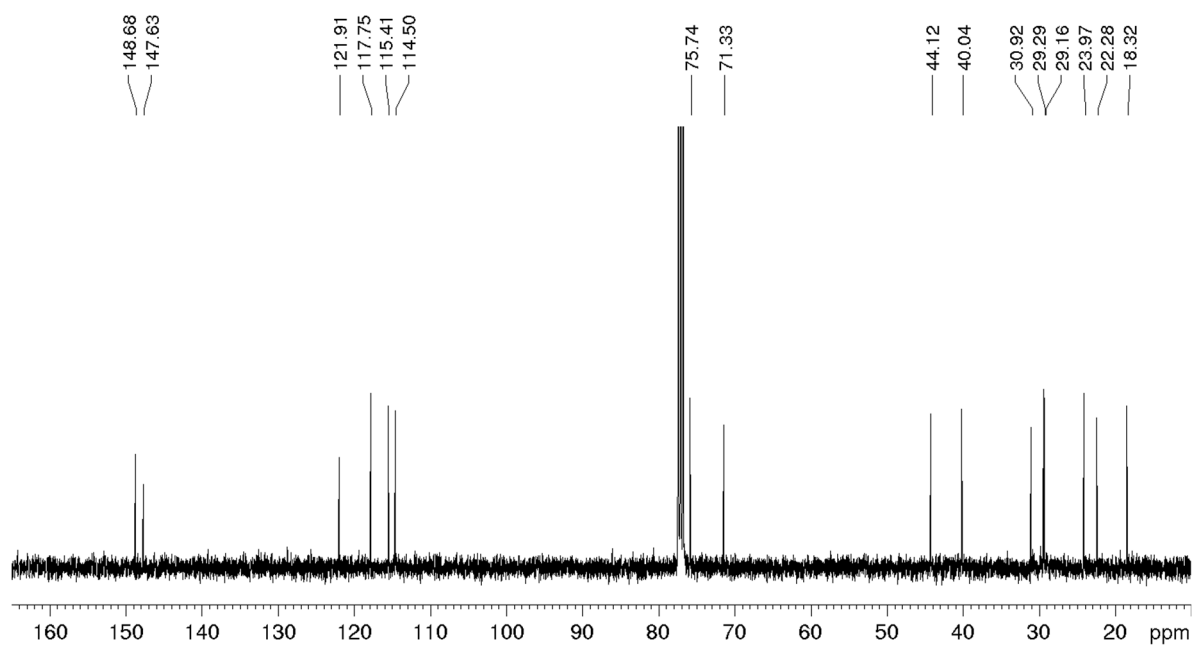
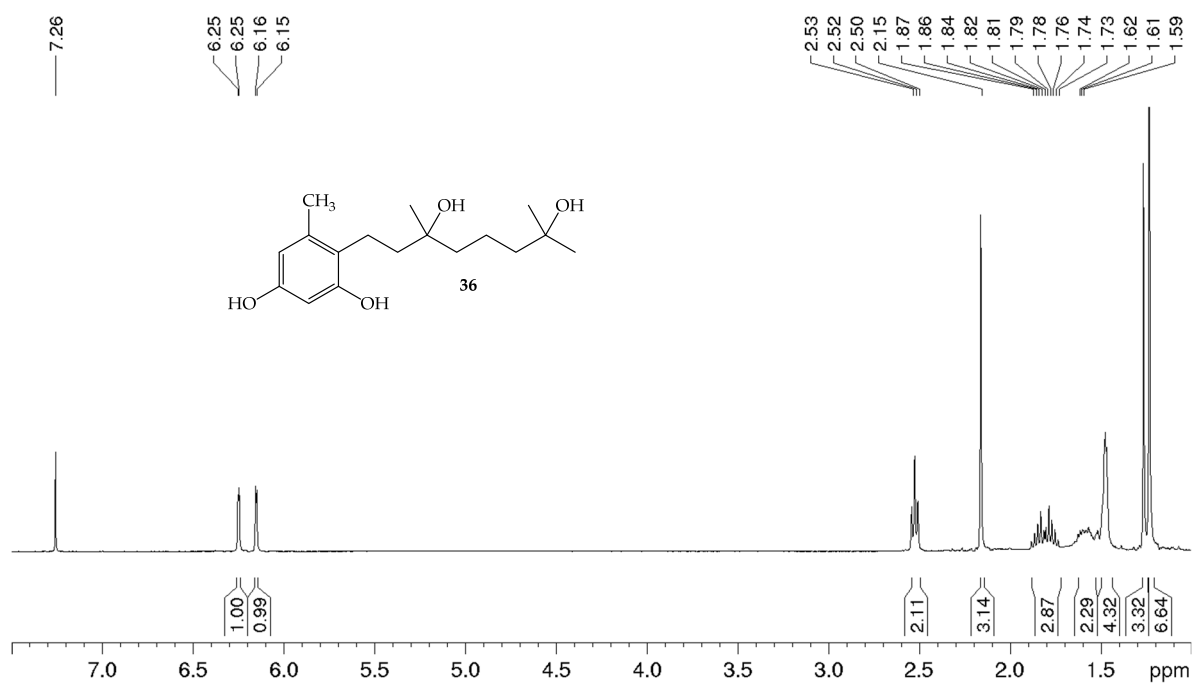


Figure S14: NMR spectra of 2-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,4-diol (35)

¹H-NMR



¹³C-NMR

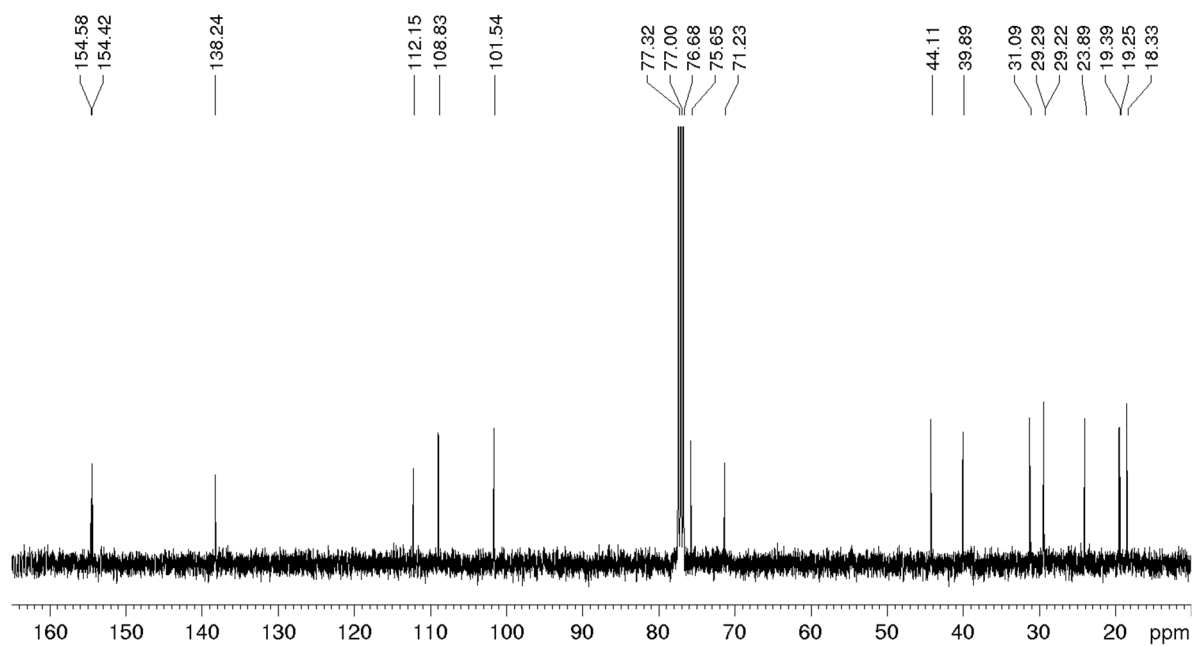
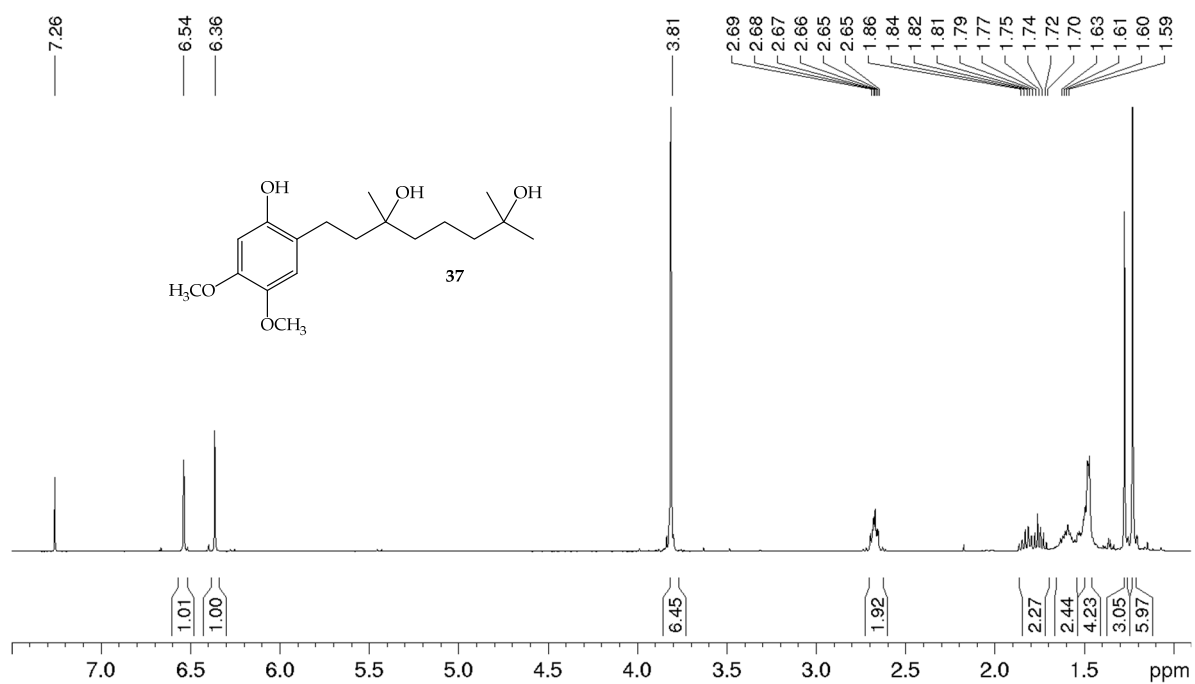
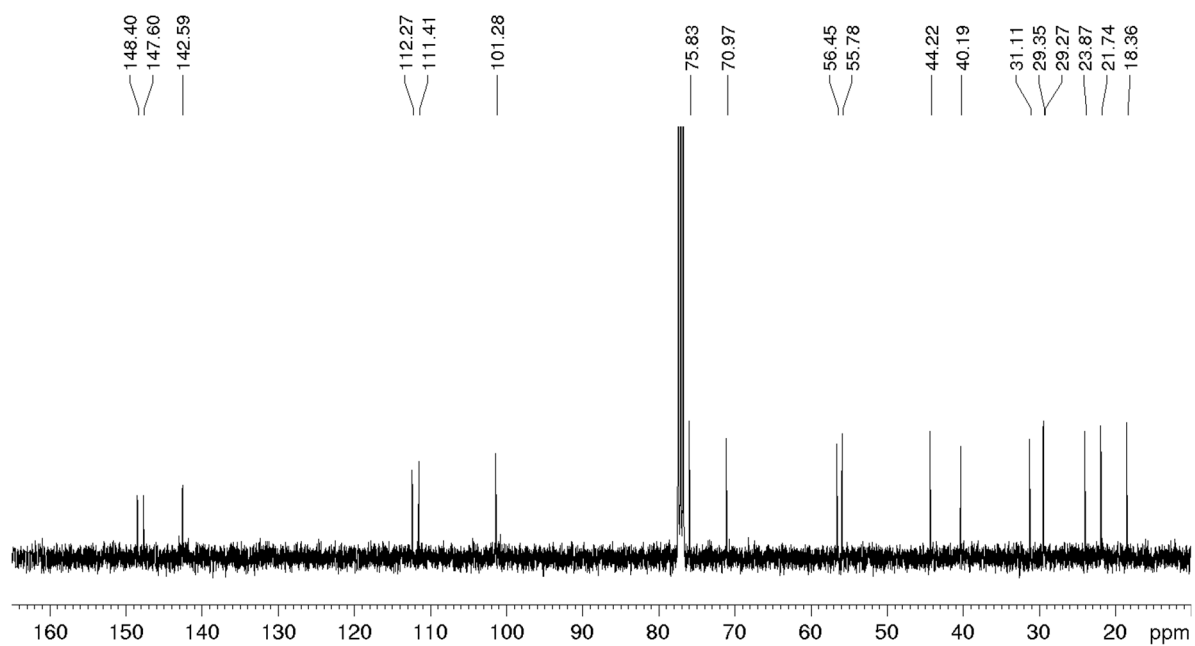
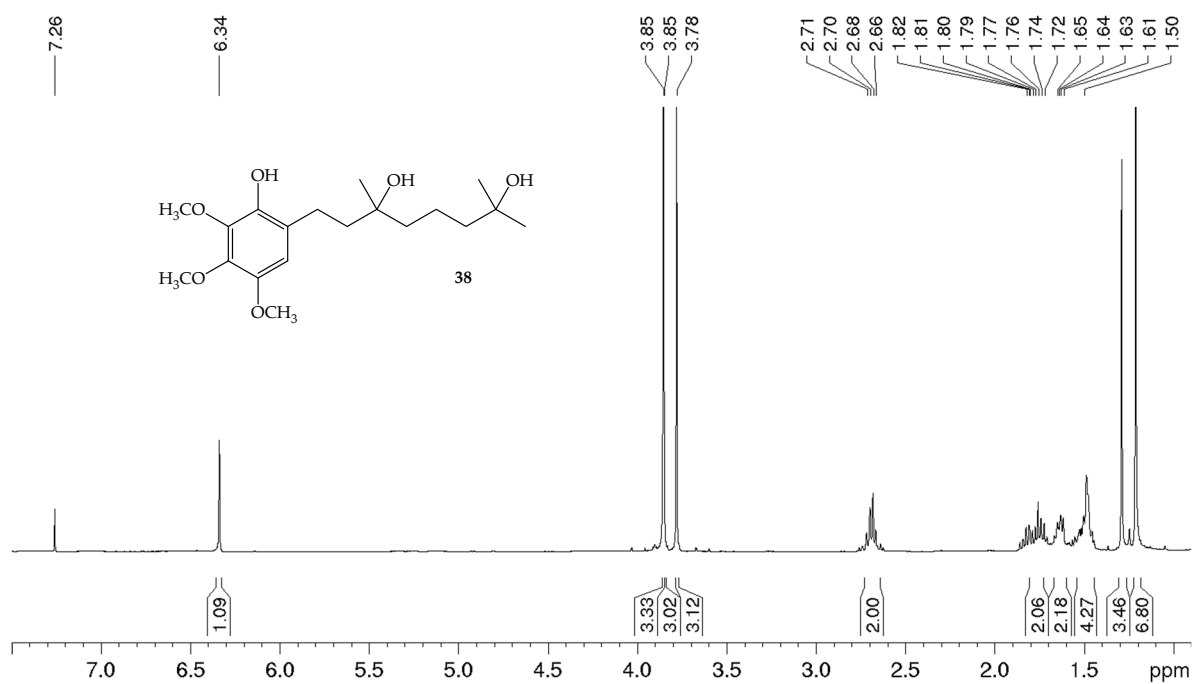


Figure S15: NMR spectra of 4-(3,7-dihydroxy-3,7-dimethyloctyl)-5-methylbenzene-1,3-diol (36)

¹H-NMR



¹³C-NMR

**Figure S16:** NMR spectra of 8-(2-hydroxy-4,5-dimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (37)¹H-NMR¹³C-NMR

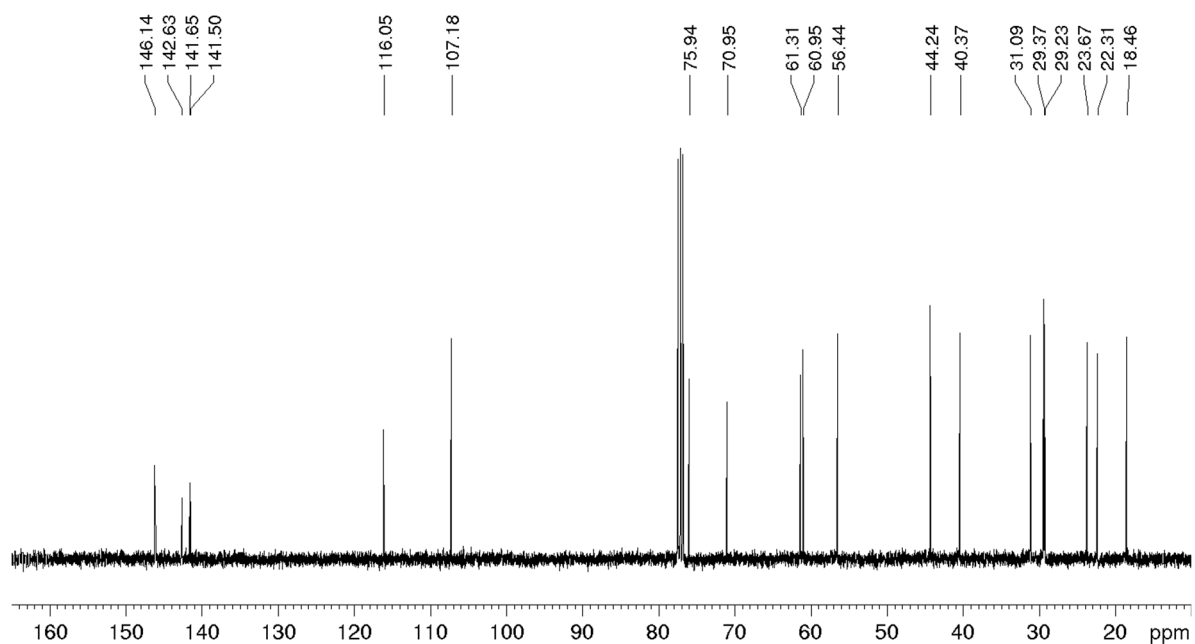


Figure S17: NMR spectra of 8-(2-hydroxy-3,4,5-trimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (**38**)

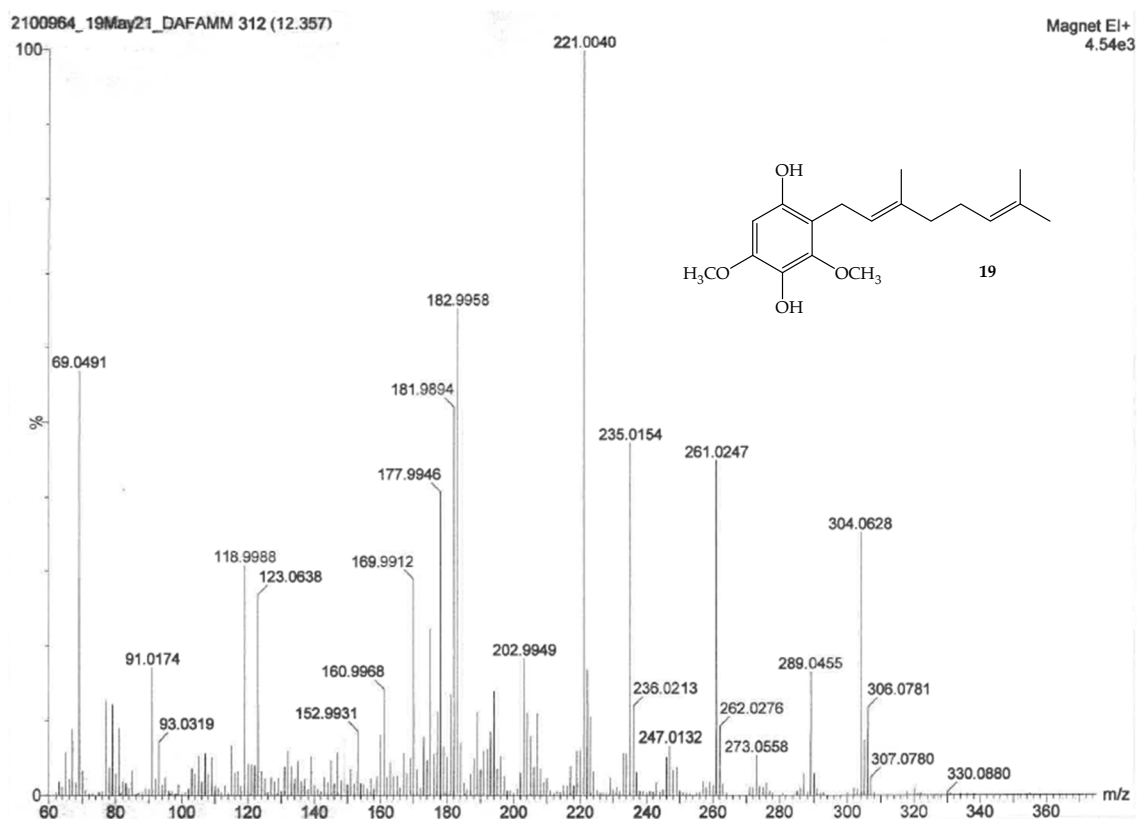


Figure S18: HRMS (EI⁺) spectrum of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxybenzene-1,4-diol (**19**)

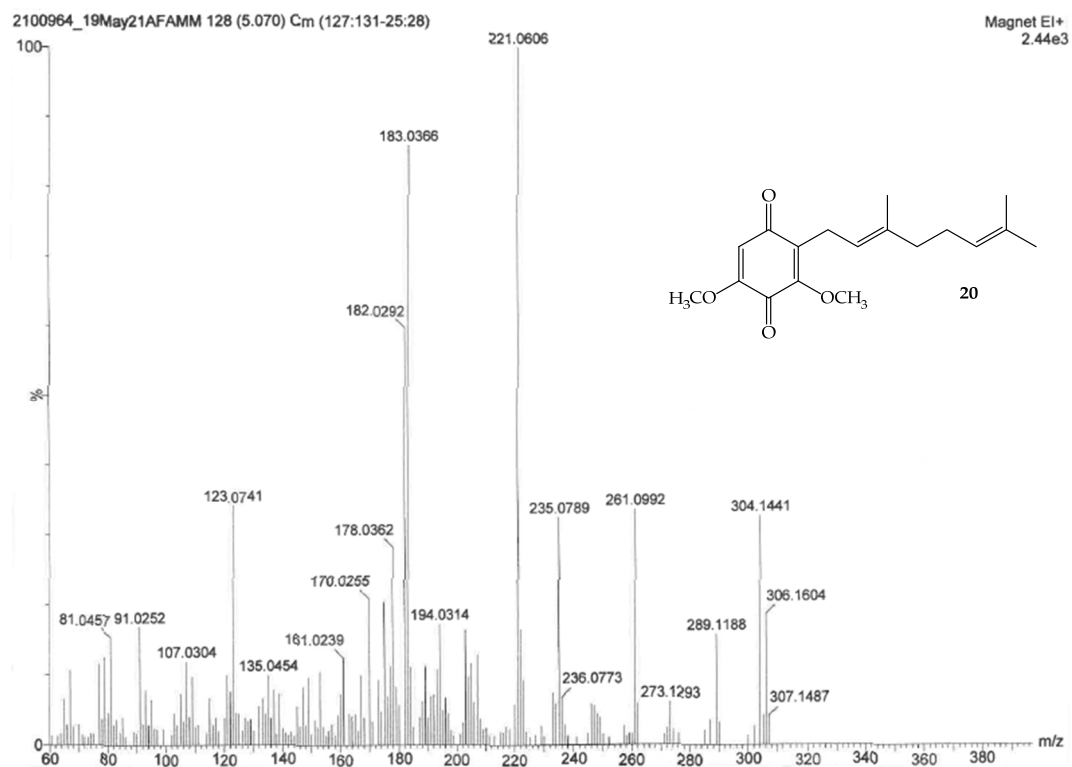


Figure S19: HRMS (EI⁺) spectrum of (E)-2-(3,7-dimethylocta-2,6-dien-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (20)

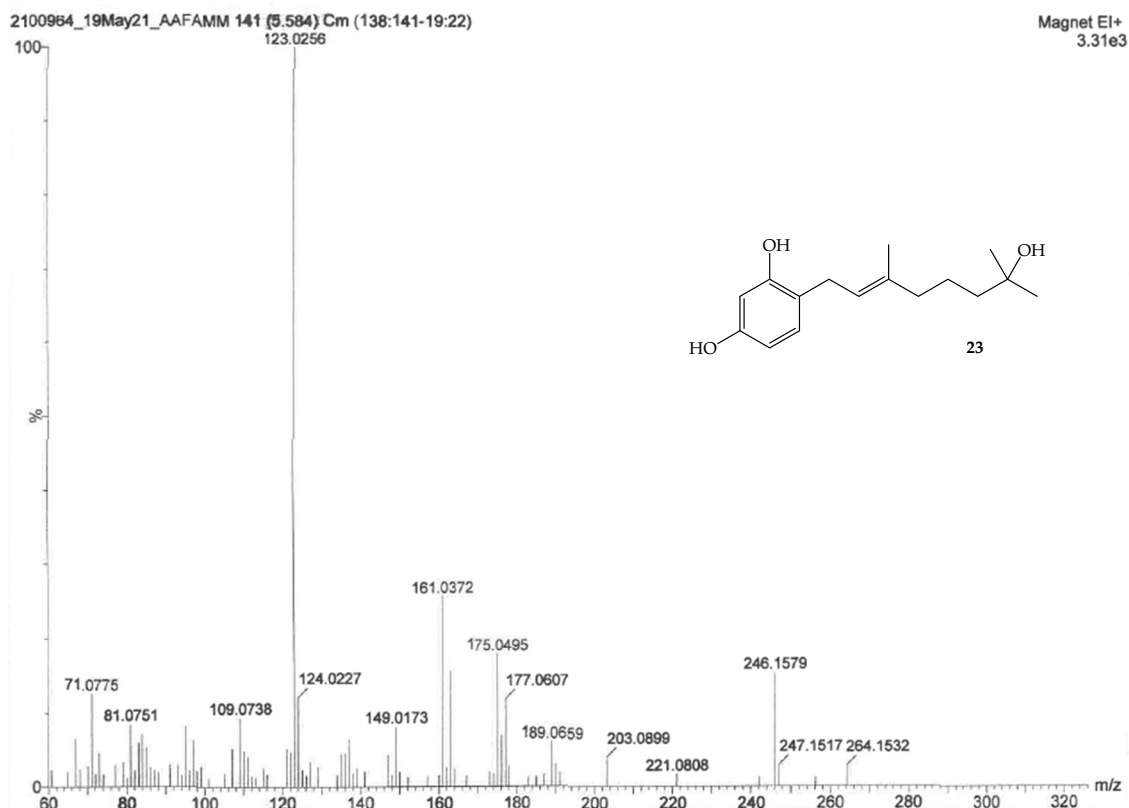


Figure S20: HRMS (EI⁺) spectrum of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (23)

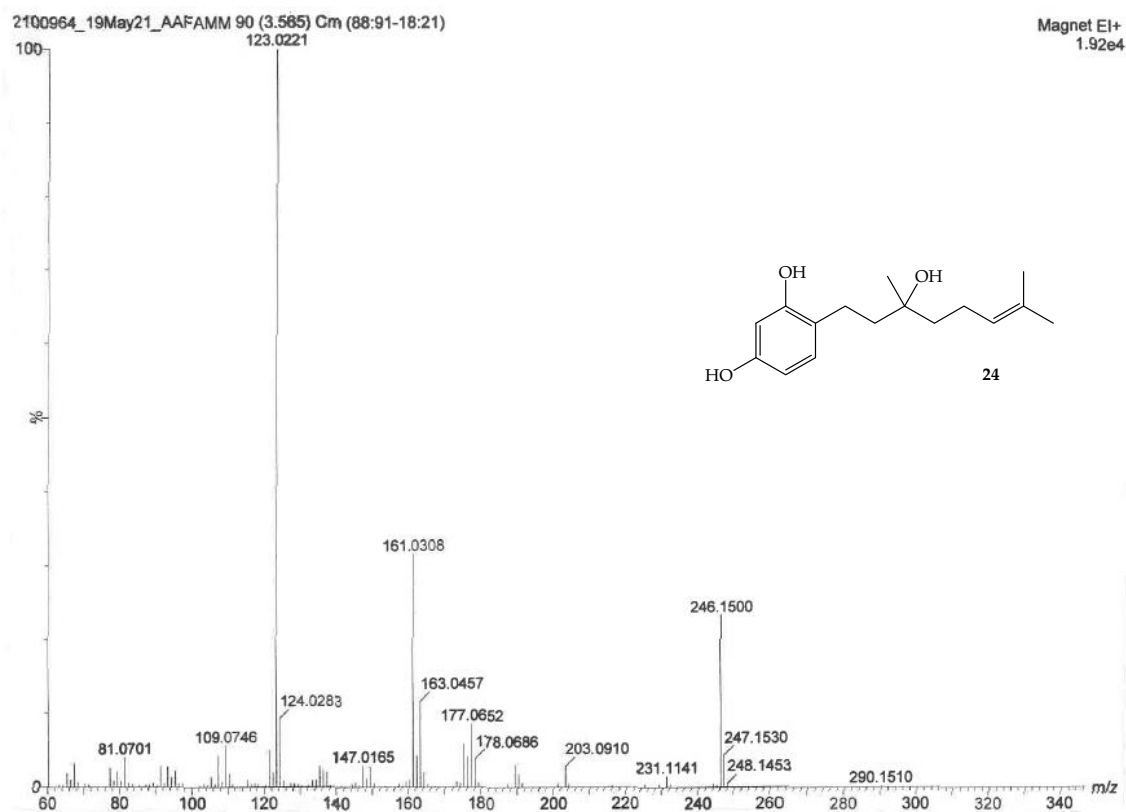


Figure S21: HRMS (EI⁺) spectrum of 4-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (24)

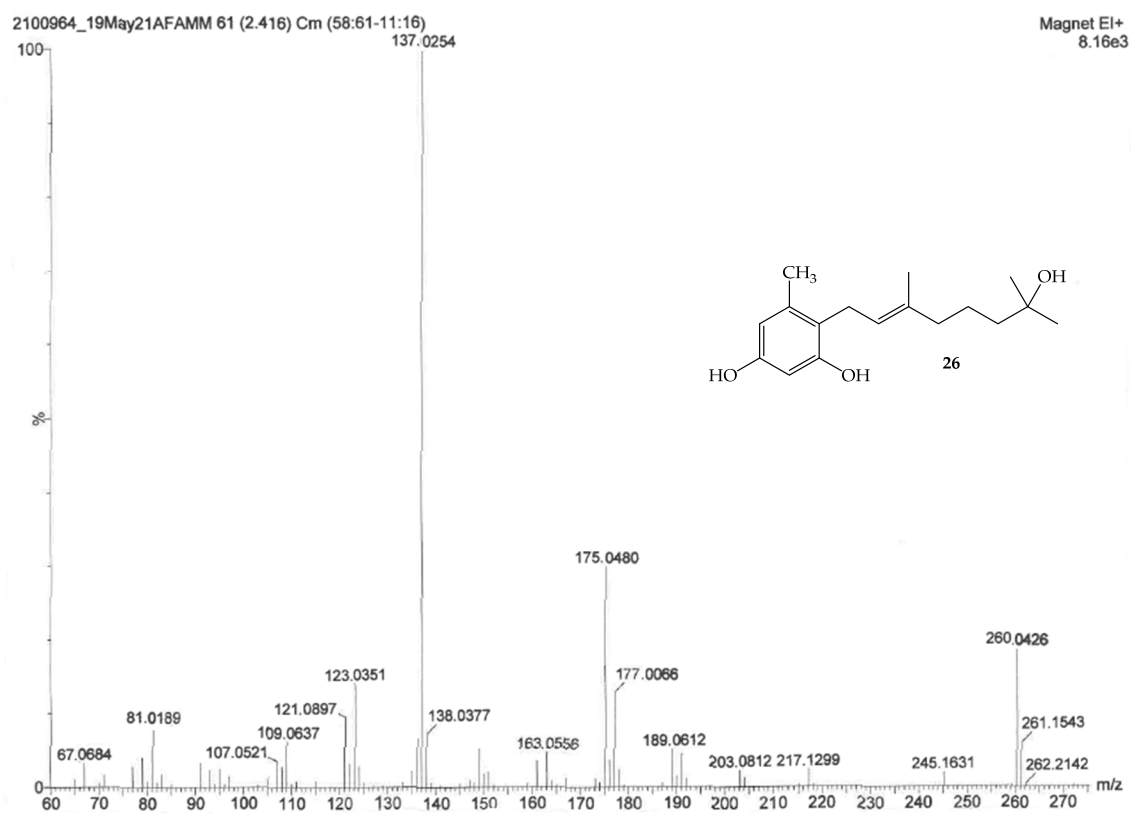
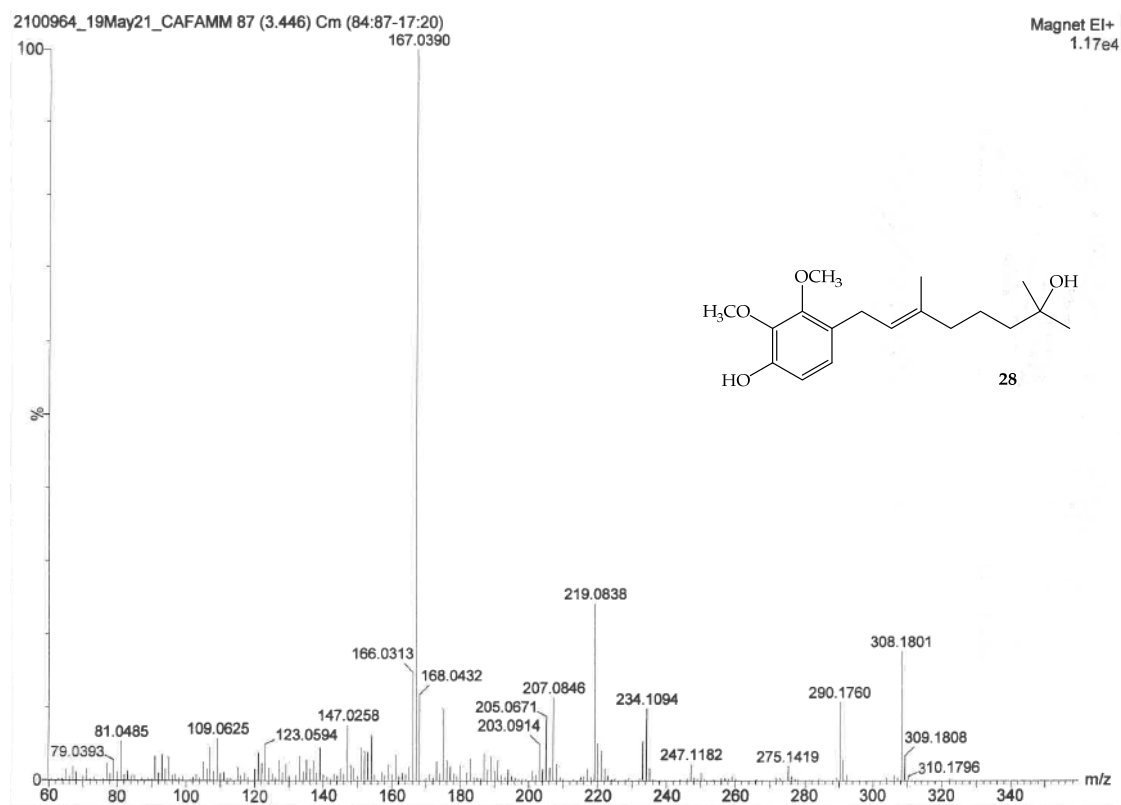
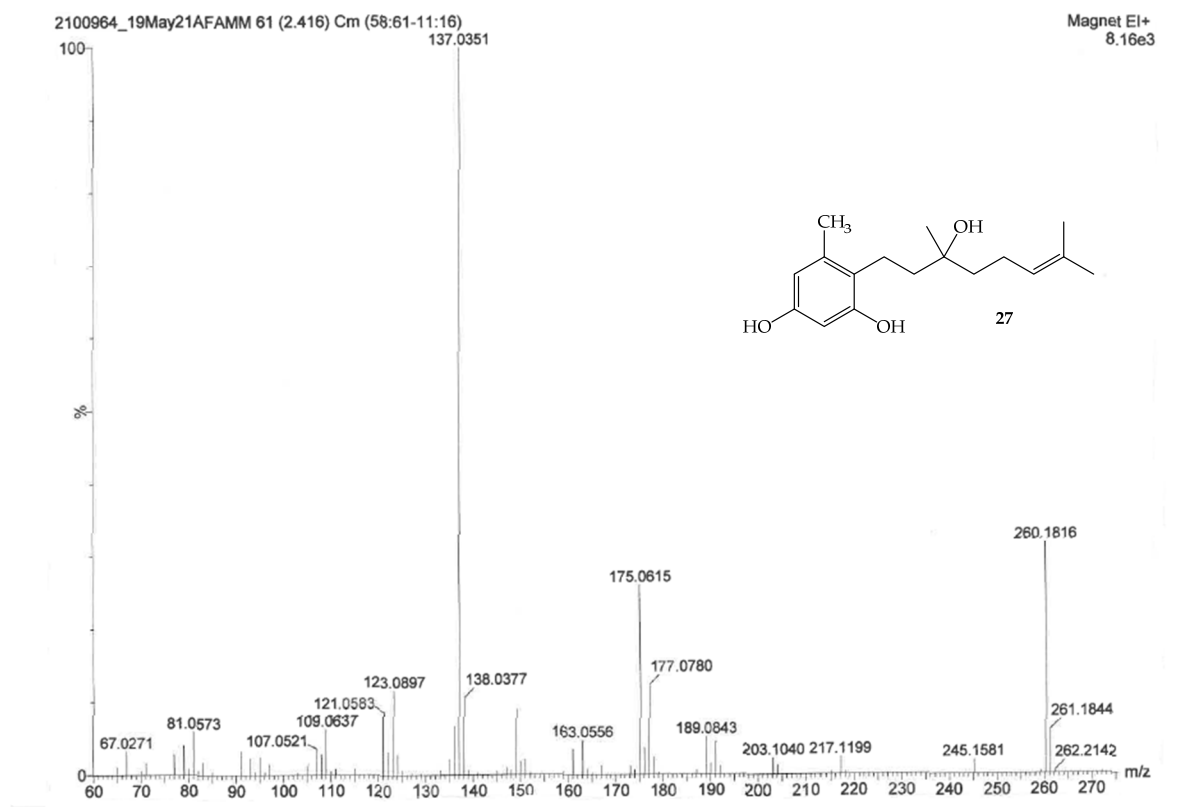


Figure S22: HRMS (EI⁺) spectrum of (E)-4-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-5-methylbenzene-1,3-diol (26)



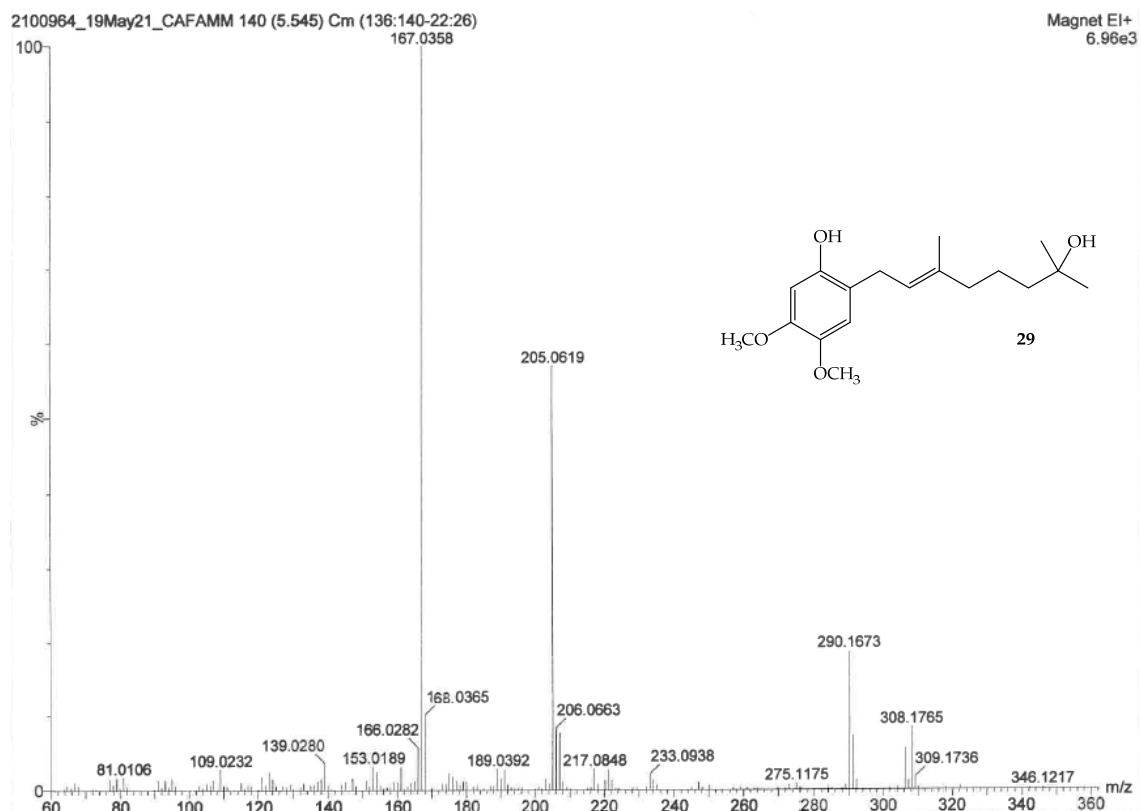


Figure S25: HRMS (EI⁺) spectrum of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-4,5-dimethoxyphenol (29)

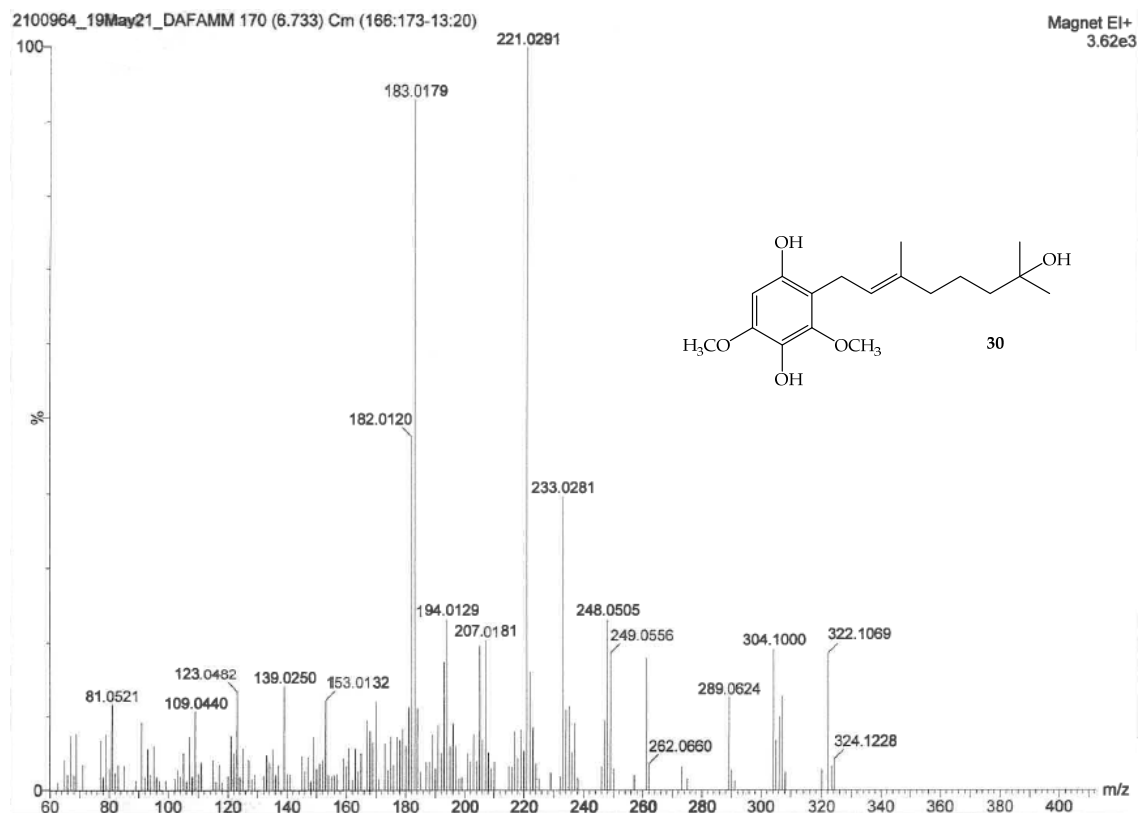


Figure S26: HRMS (EI⁺) spectrum of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxybenzene-1,4-diol (30)

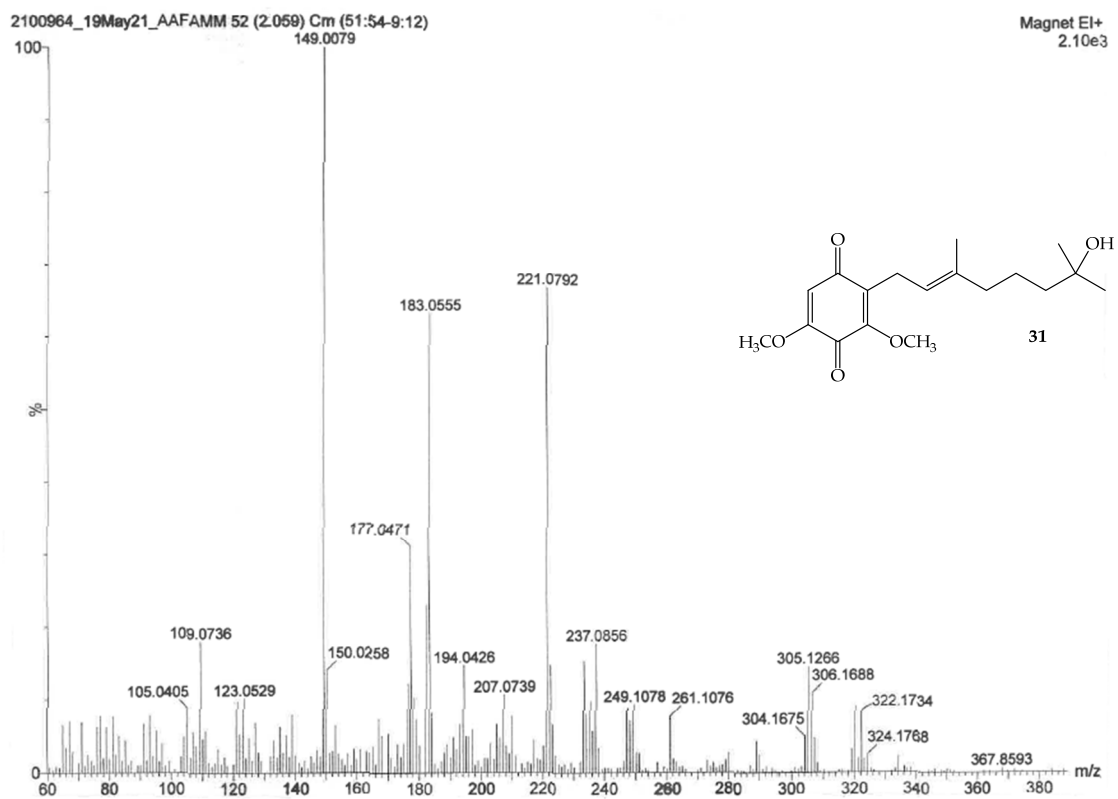


Figure S27: HRMS (EI⁺) spectrum of (E)-2-(7-hydroxy-3,7-dimethyloct-2-en-1-yl)-3,5-dimethoxycyclohexa-2,5-diene-1,4-dione (**31**)

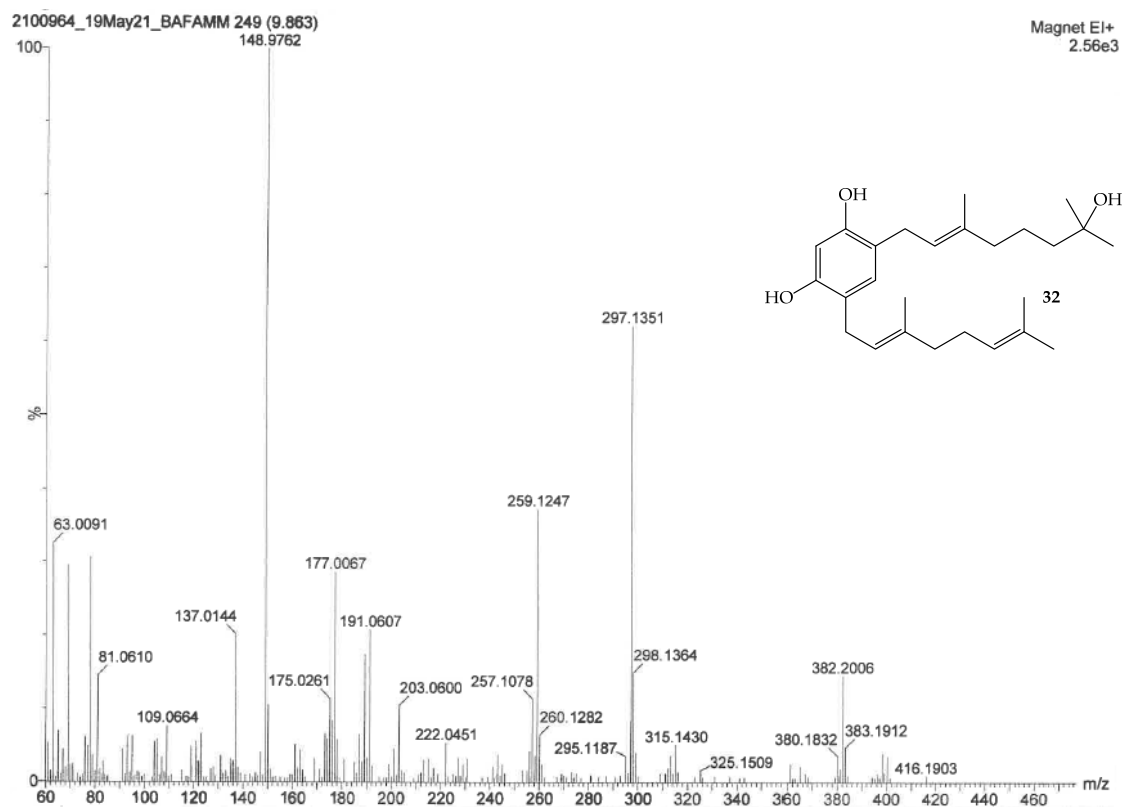


Figure S28: HRMS (EI⁺) spectrum of 4-((E)-3,7-dimethylocta-2,6-dien-1-yl)-6-((E)-7-hydroxy-3,7-dimethyloct-2-en-1-yl)benzene-1,3-diol (**32**)

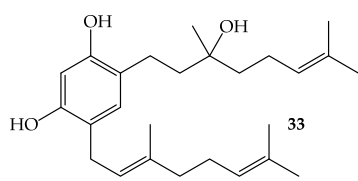


Figure S29: HRMS (EI⁺) spectrum of (E)-4-(3,7-dimethylocta-2,6-dien-1-yl)-6-(3-hydroxy-3,7-dimethyloct-6-en-1-yl)benzene-1,3-diol (**33**)

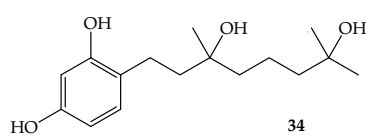


Figure S30: HRMS (EI⁺) spectrum of 4-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,3-diol (**34**)

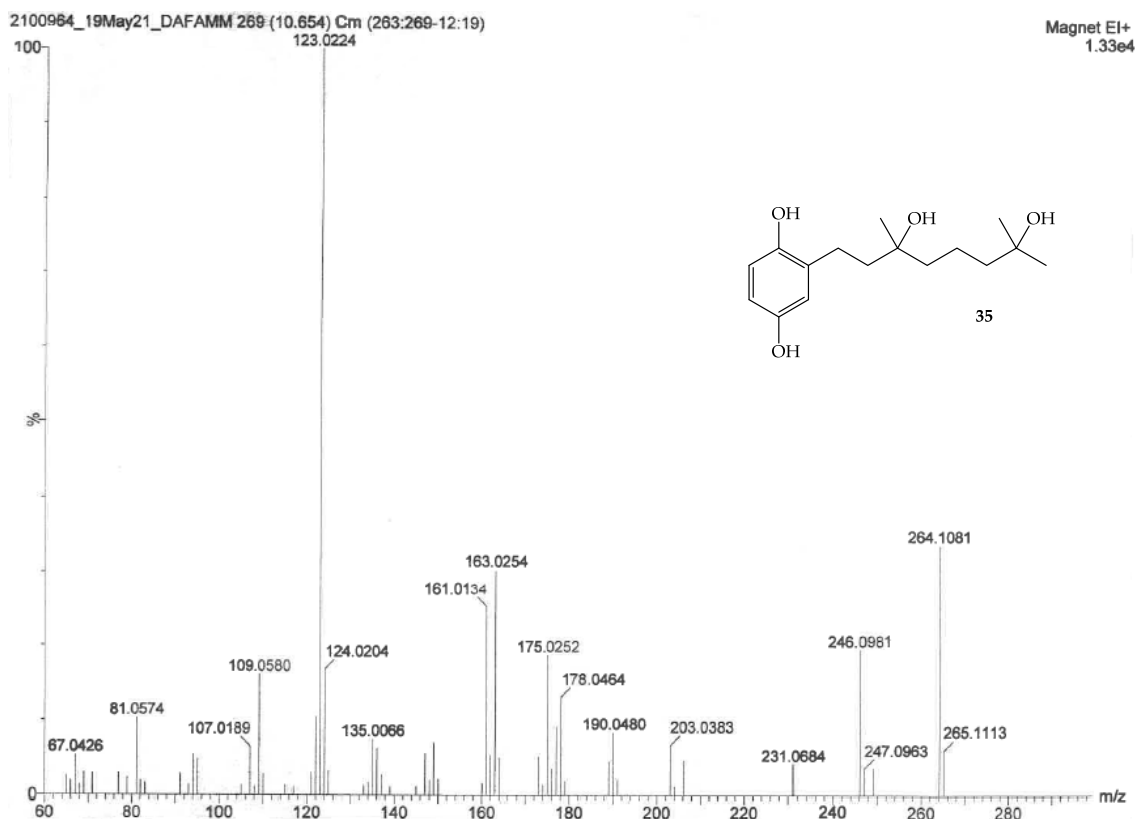


Figure S31: HRMS (EI⁺) spectrum of 2-(3,7-dihydroxy-3,7-dimethyloctyl)benzene-1,4-diol (35)

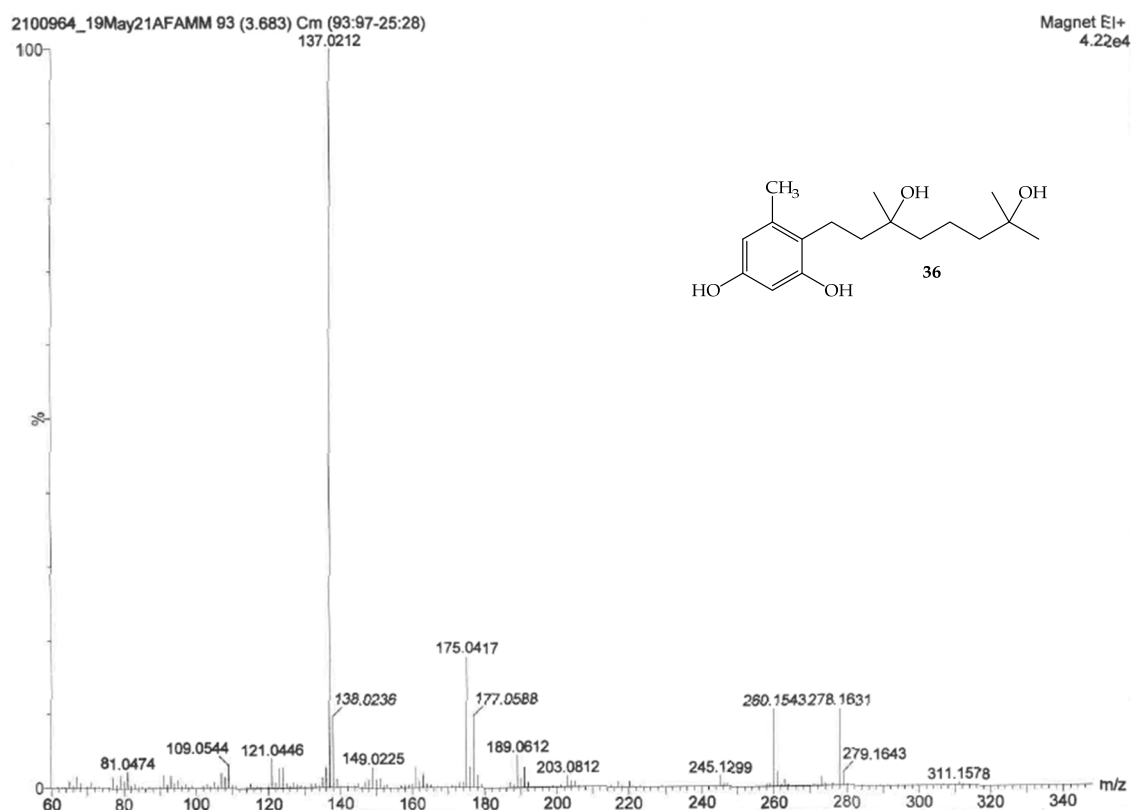


Figure S32: HRMS (EI⁺) spectrum of 4-(3,7-dihydroxy-3,7-dimethyloctyl)-5-methylbenzene-1,3-diol (36)

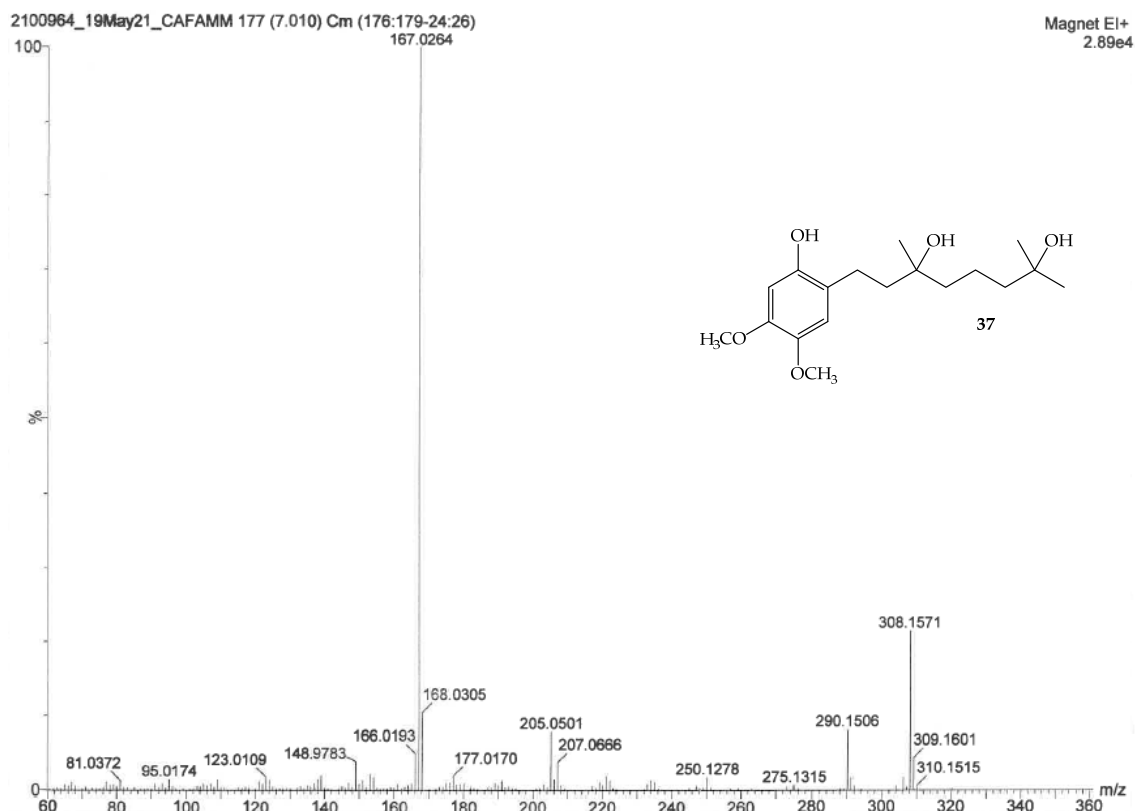


Figure S33: HRMS (EI⁺) spectrum of 8-(2-hydroxy-4,5-dimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (37)

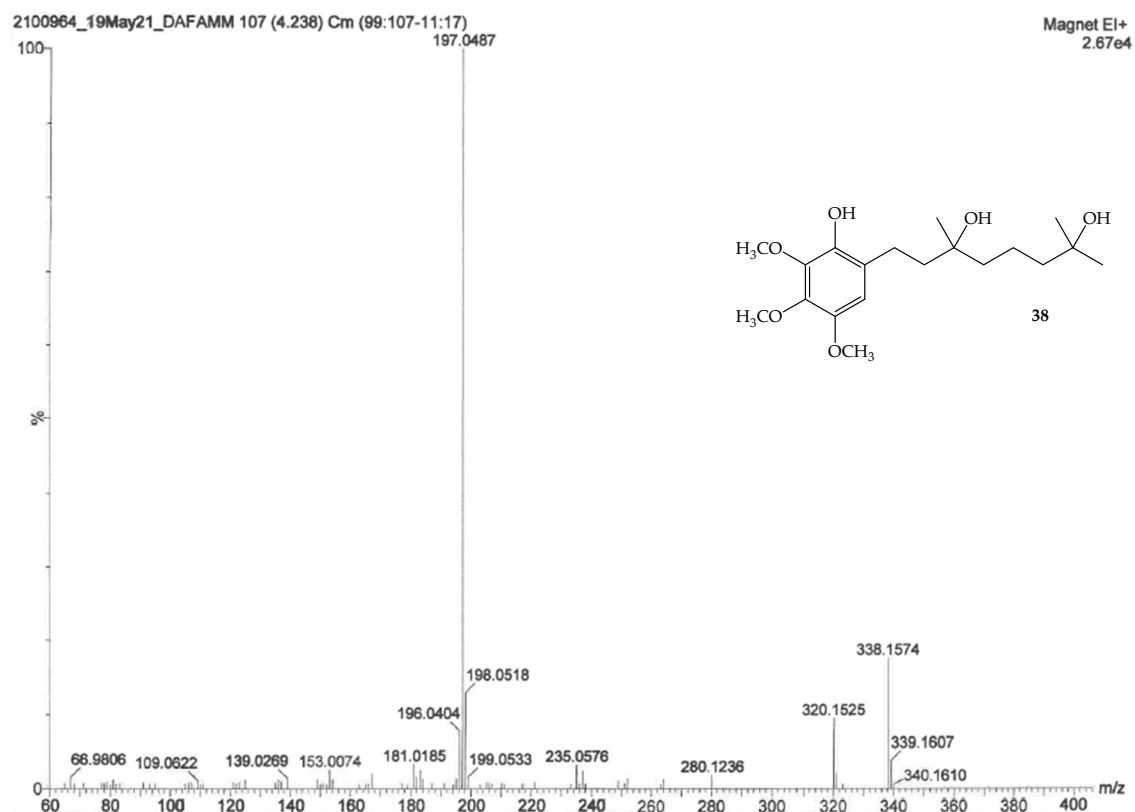


Figure S34: HRMS (EI⁺) spectrum of 8-(2-hydroxy-3,4,5-trimethoxyphenyl)-2,6-dimethyloctane-2,6-diol (38)



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