

Supporting Information

Synthesis, characterization and biological activities of 3-aryl-1,4-naphthoquinones – Green palladium-catalysed Suzuki cross couplings

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IV, ¹H and ¹³C NMR Spectra of the Products

2-Hydroxy-3-iodonaphthalene-1,4-dione (6)

Agilent Resolutions Pro

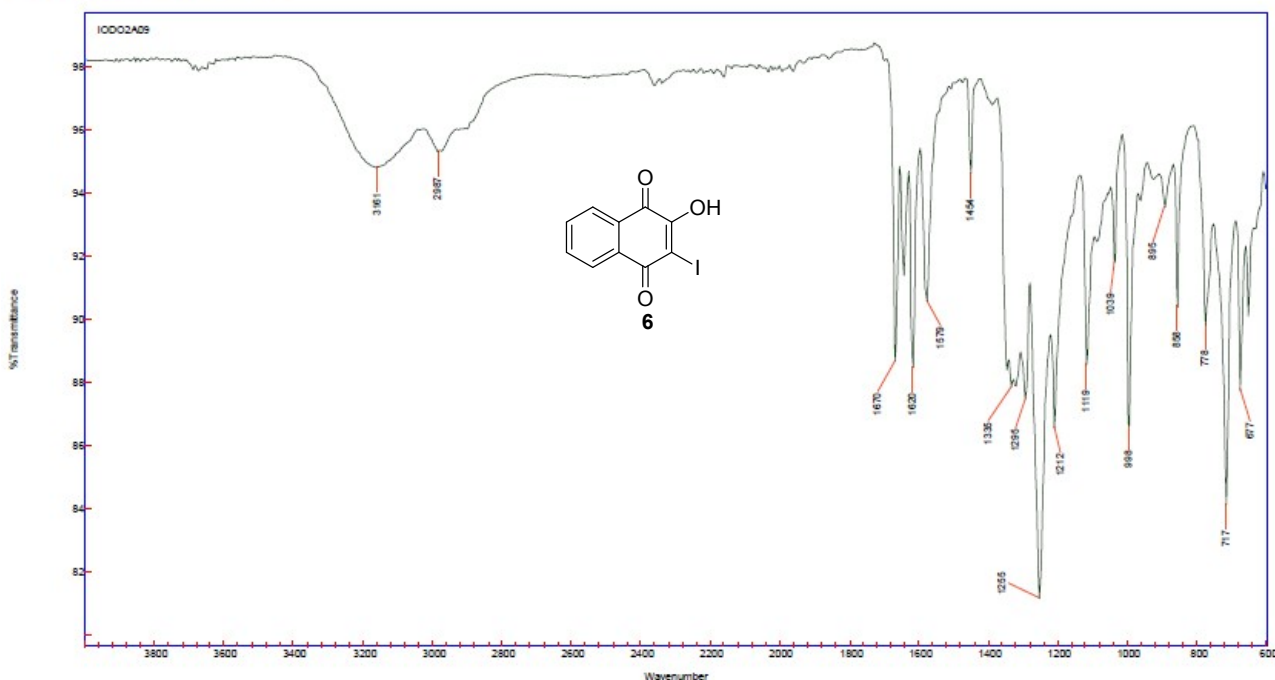


Figure S1 - Infrared spectrum of 2-hydroxy-3-iodonaphthalene-1,4-dione (6)

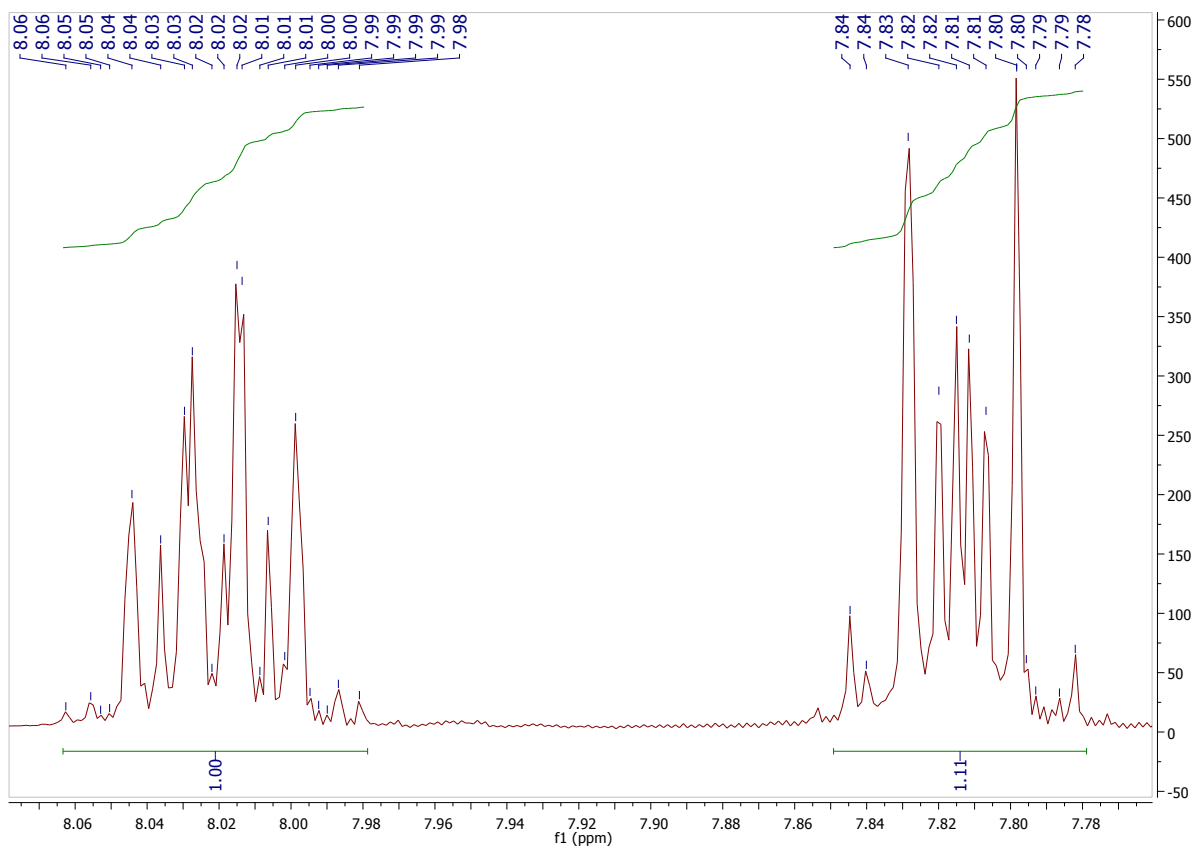
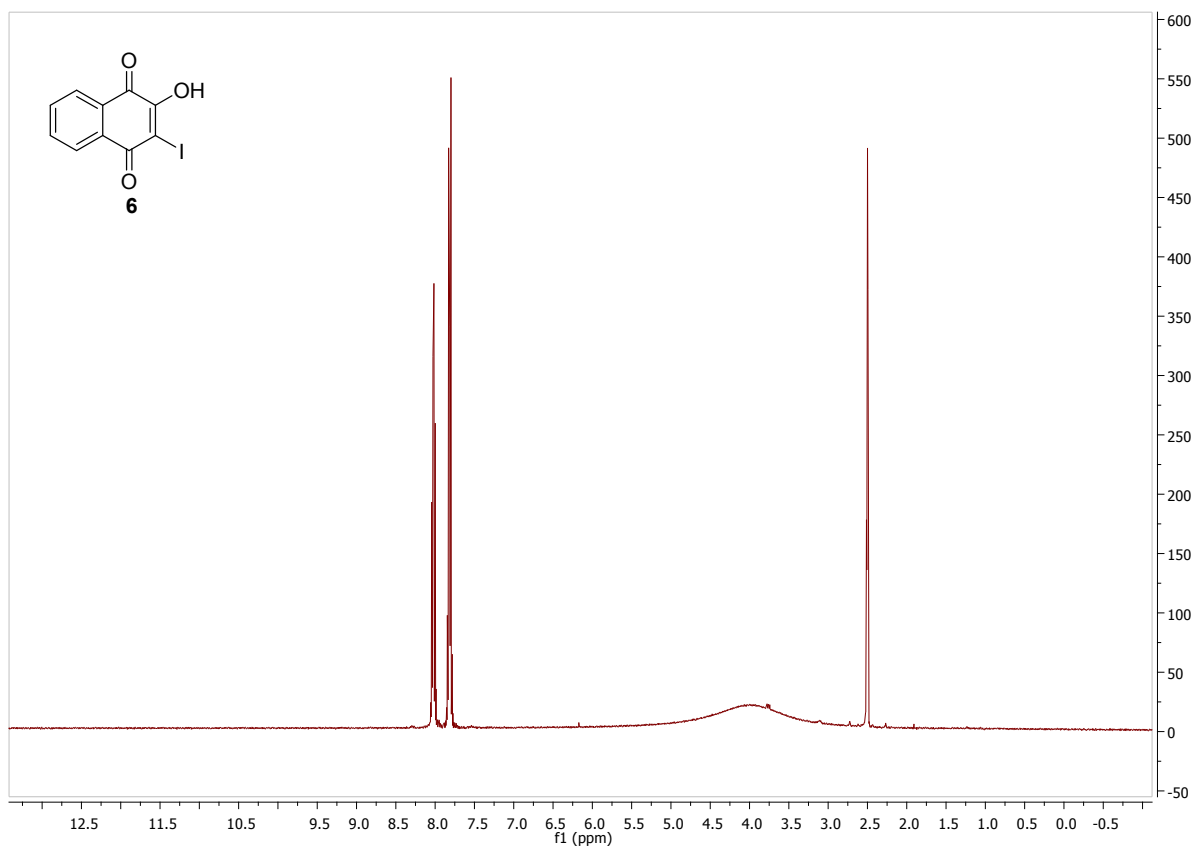


Figure S2 - ^1H NMR Spectra of 2-hydroxy-3-iodonaphthalene-1,4-dione (**6**)

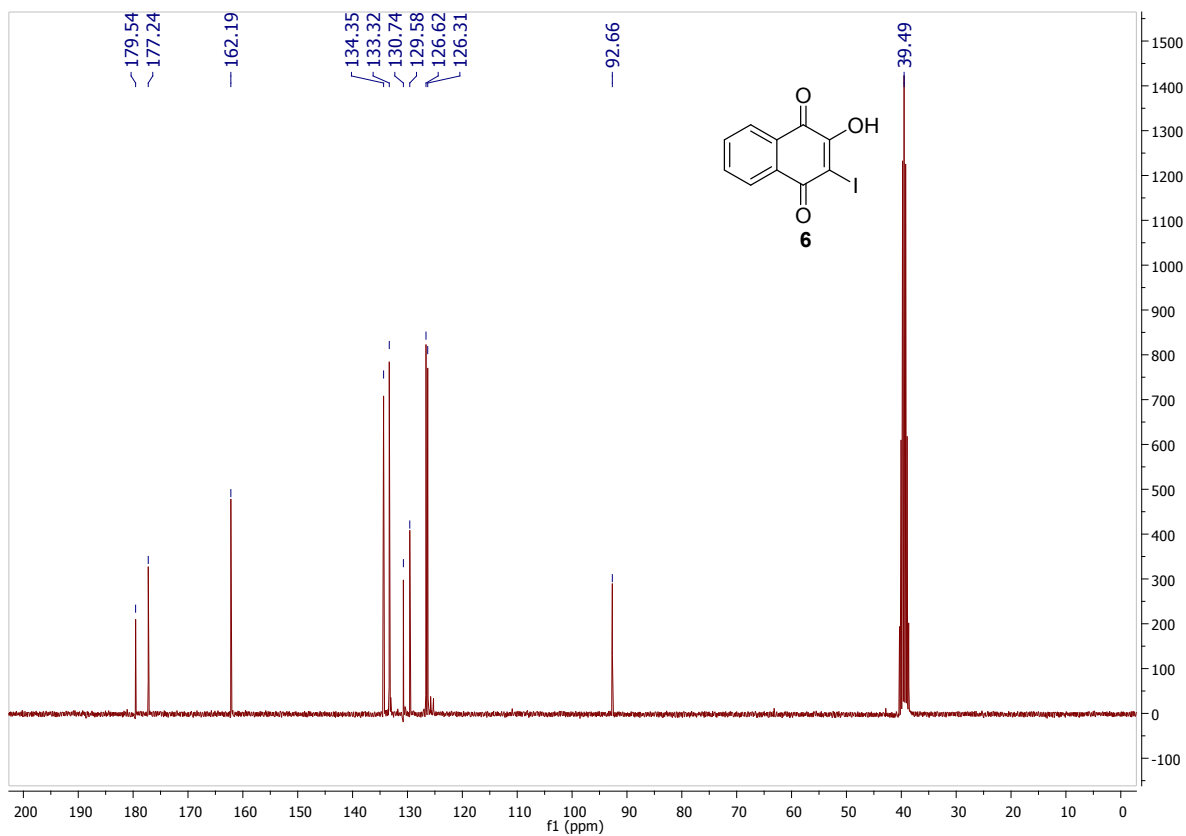


Figure S3 - ^{13}C NMR Spectra of 2-hydroxy-3-iodonaphthalene-1,4-dione (6)

2-Amino-3-iodonaphthalene-1,4-dione (7)

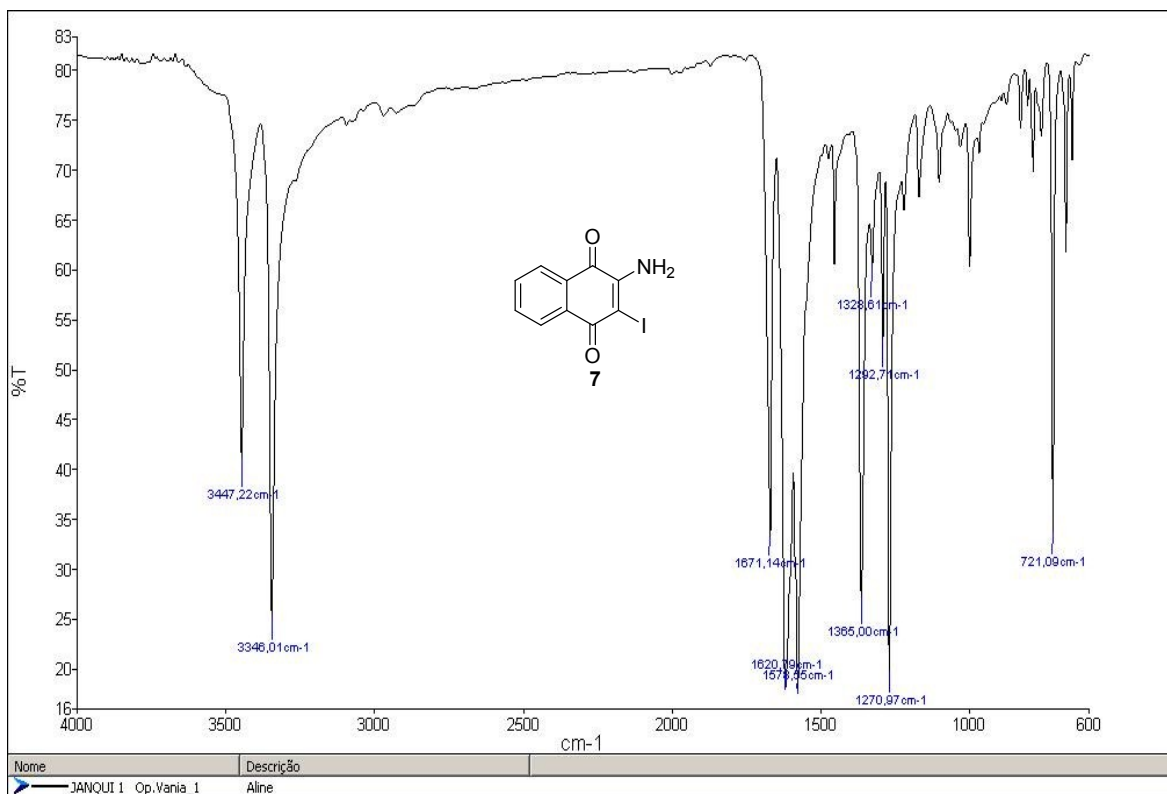


Figure S4 - Infrared spectrum of 2-amino-3-iodonaphthalene-1,4-dione (7)

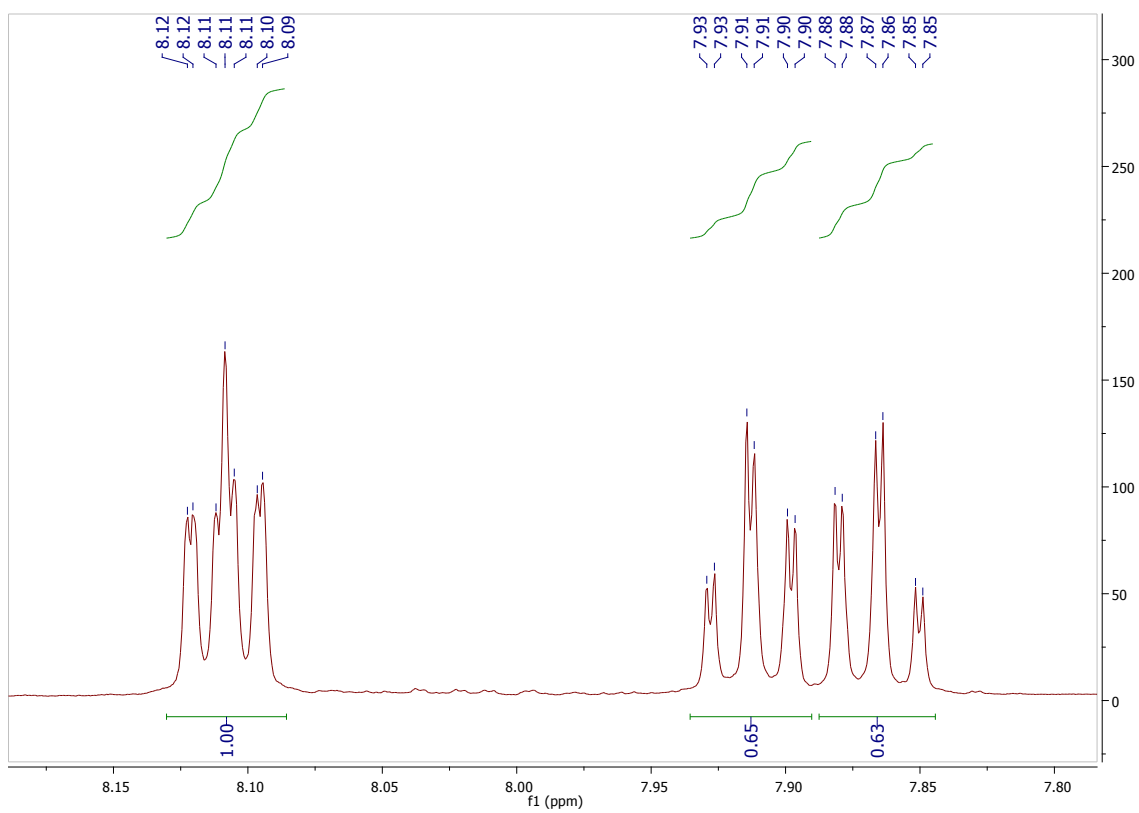
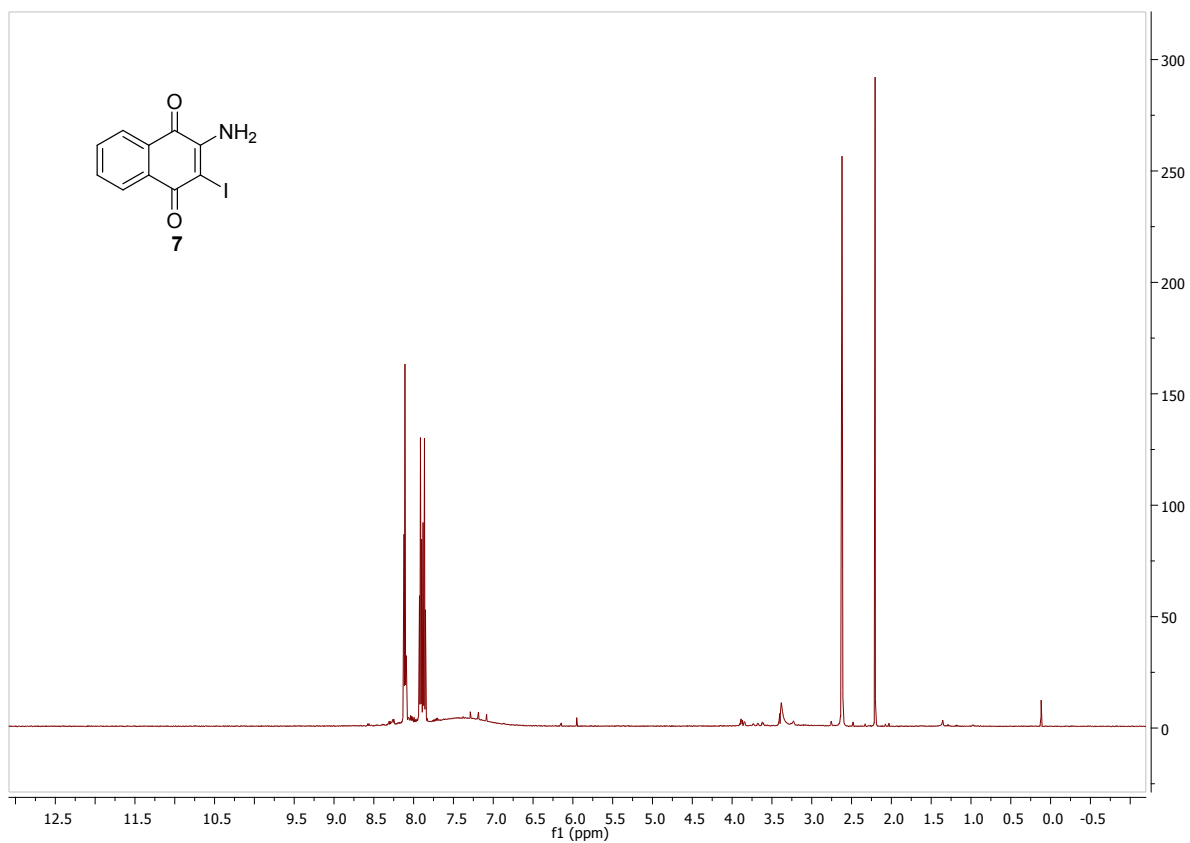


Figure S5 - ^1H NMR Spectra of 2-amino-3-iodonaphthalene-1,4-dione (**7**)

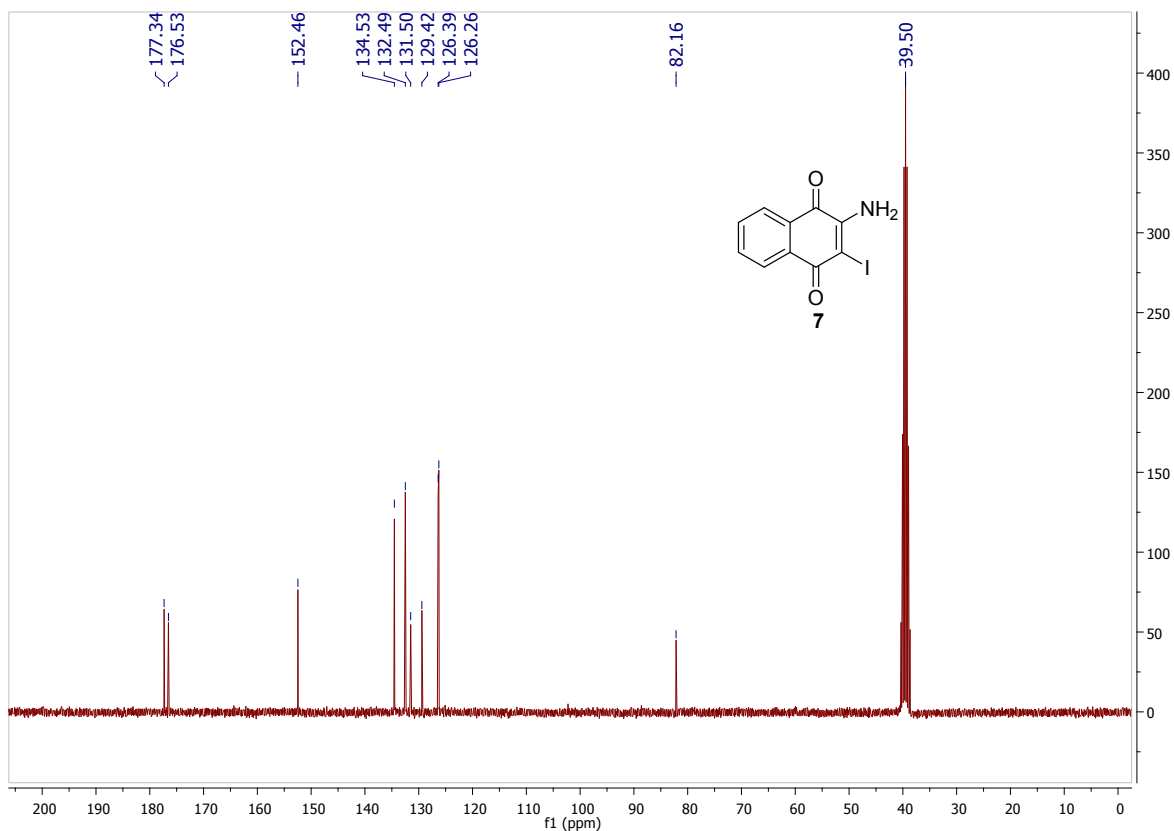


Figure S6 - ^{13}C NMR Spectra of 2-amino-3-iodonaphthalene-1,4-dione (7)

2-Bromo-3-hydroxynaphthalene-1,4-dione (8)

Agilent Resolutions Pro

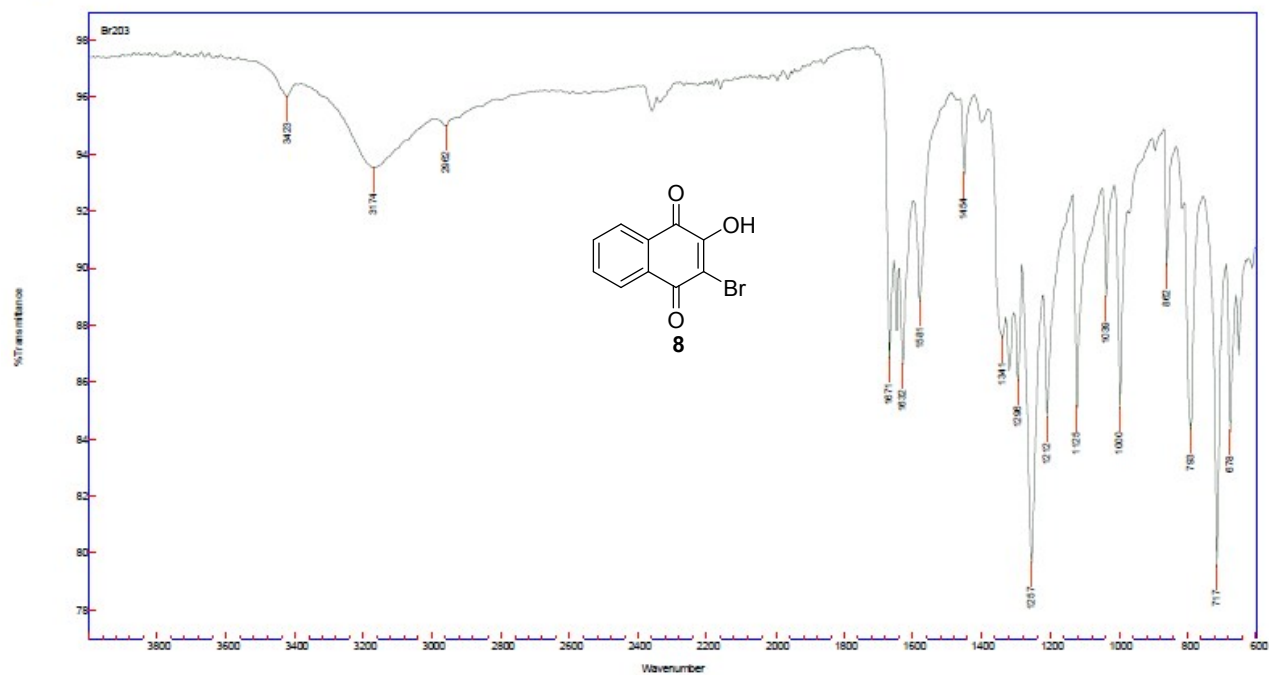


Figure S7 - Infrared spectrum of 2-bromo-3-hydroxynaphthalene-1,4-dione (8)

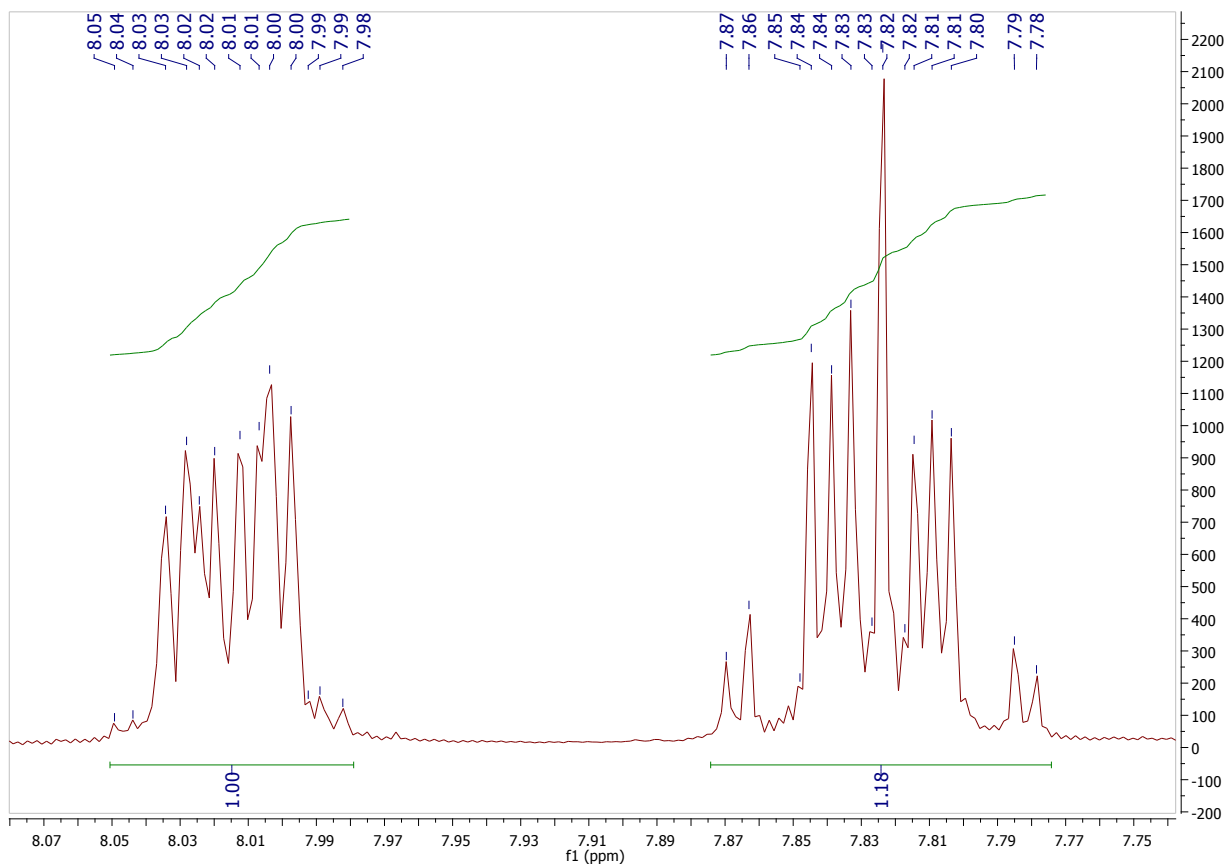
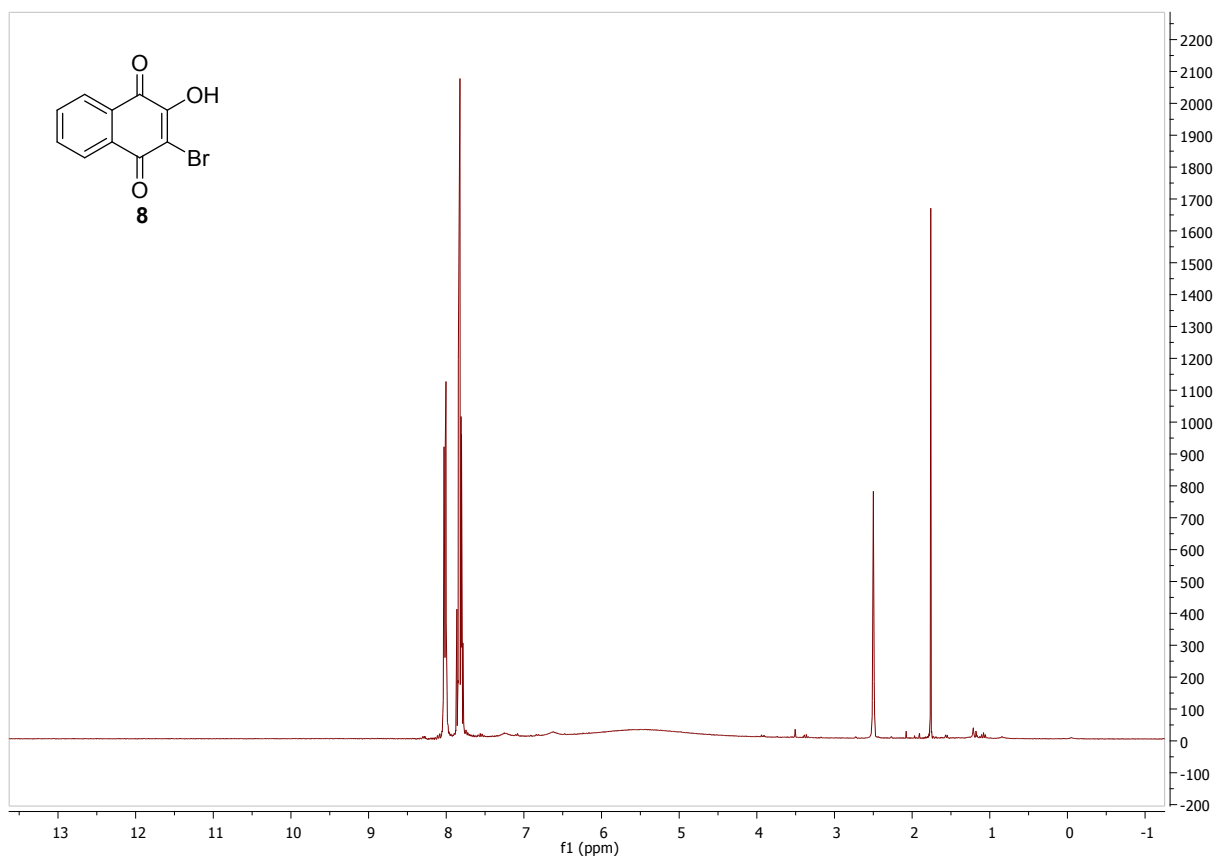


Figure S8 - ^1H NMR Spectra of 2-bromo-3-hydroxynaphthalene-1,4-dione (**8**)

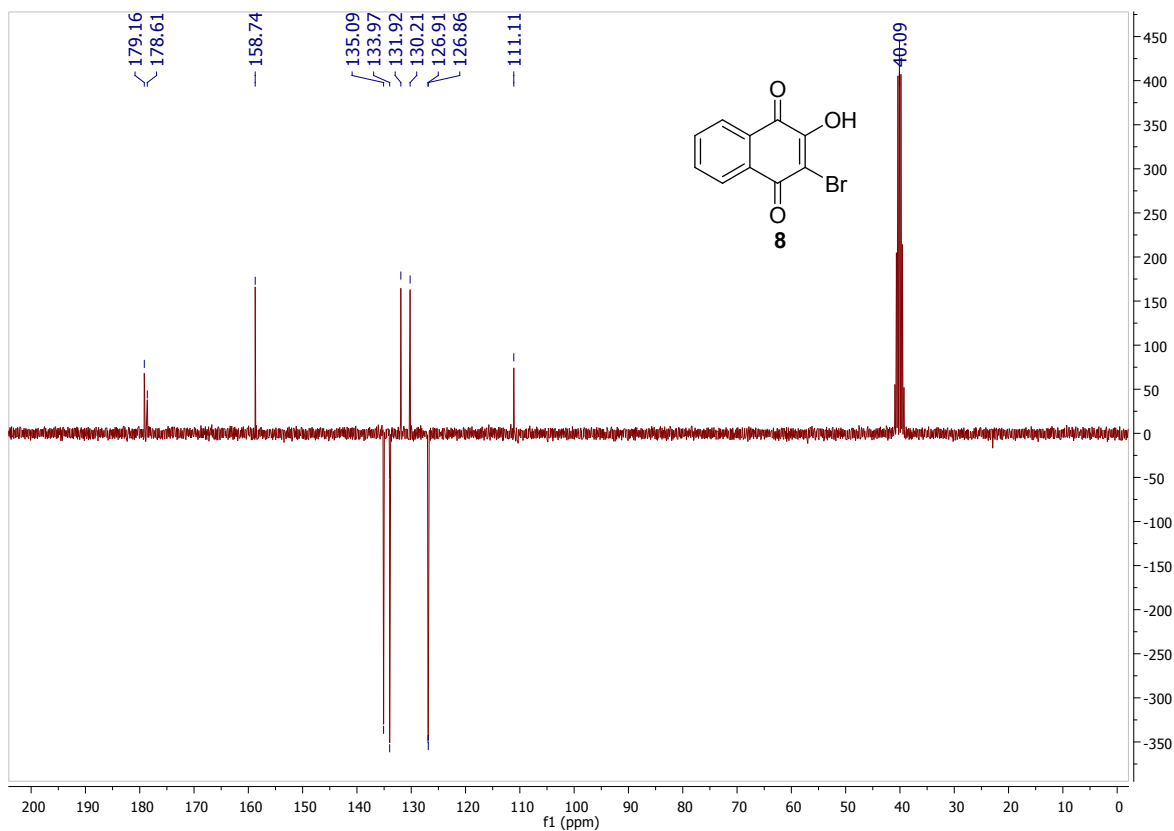


Figure S9 - ^{13}C NMR Spectra of 2-bromo-3-hydroxynaphthalene-1,4-dione (**8**)

2-Hydroxi-3-phenylnaphthalene-1,4-dione (**10a**)

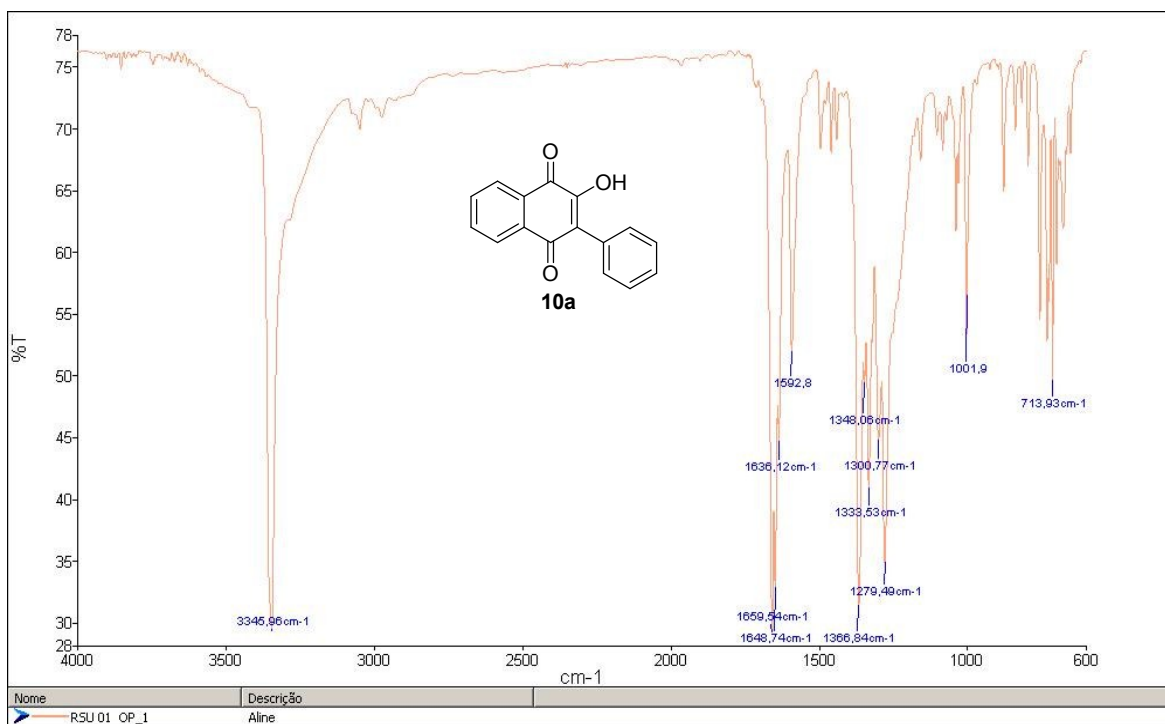


Figure S10 - Infrared Spectrum of 2-hydroxi-3-phenylnaphthalene-1,4-dione (**10a**)

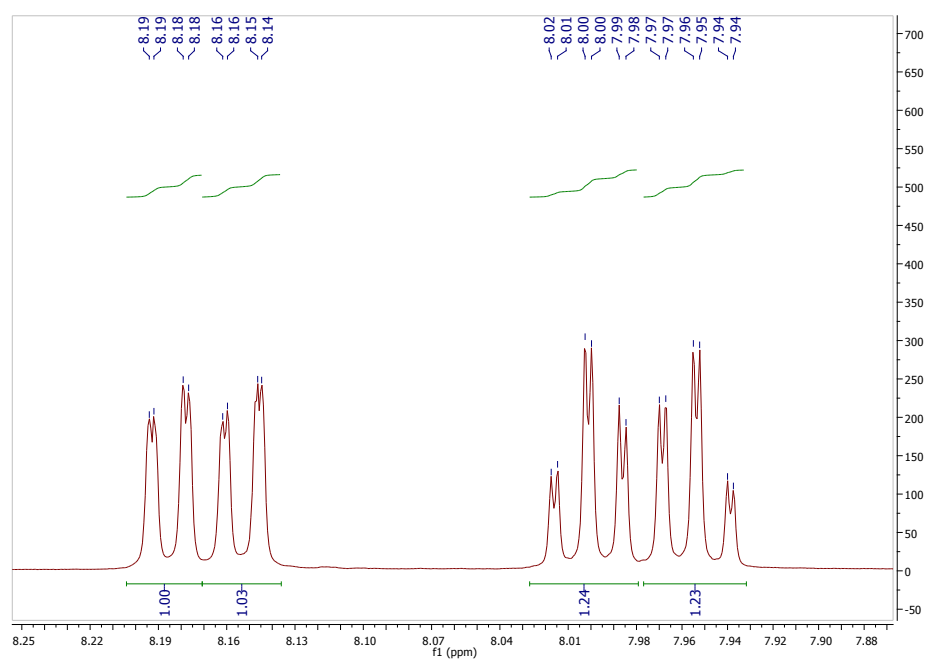
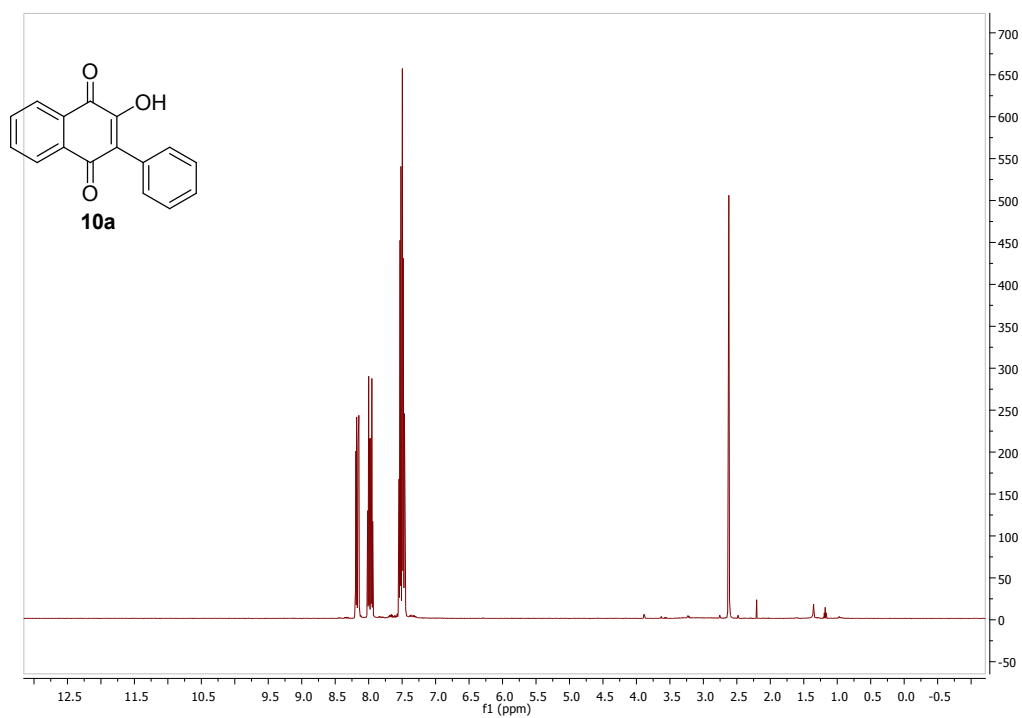


Figure S11 – ^1H NMR Spectrum of 2-hydroxy-3-phenylnaphthalene-1,4-dione (**10a**)

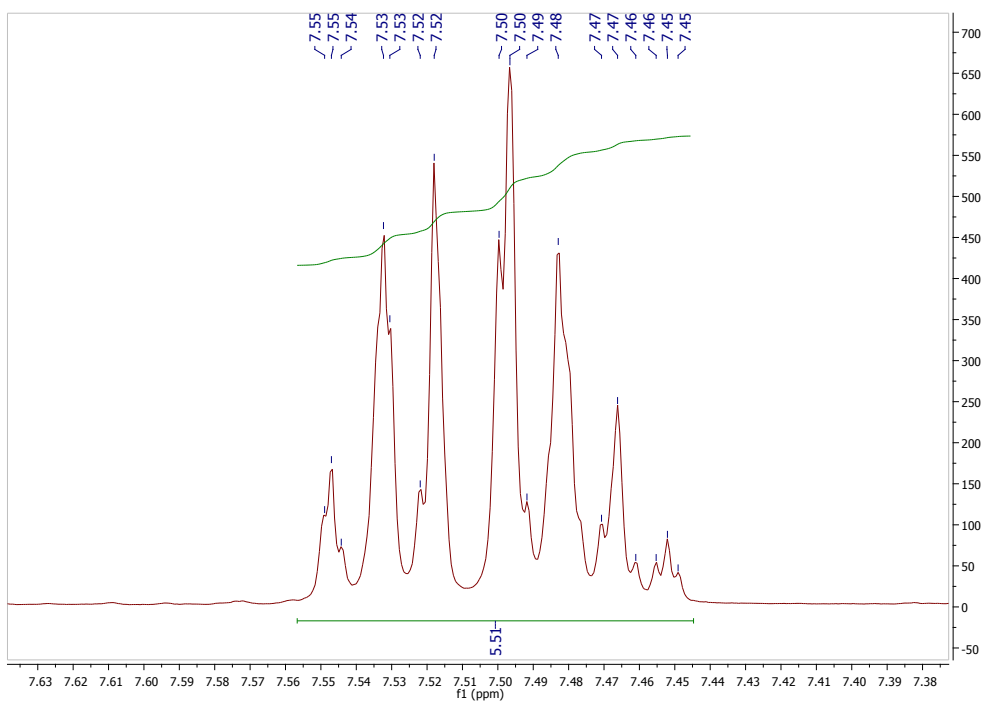


Figure S12 ^1H NMR Spectra of 2-hydroxy-3-phenylnaphthalene-1,4-dione (**10a**)

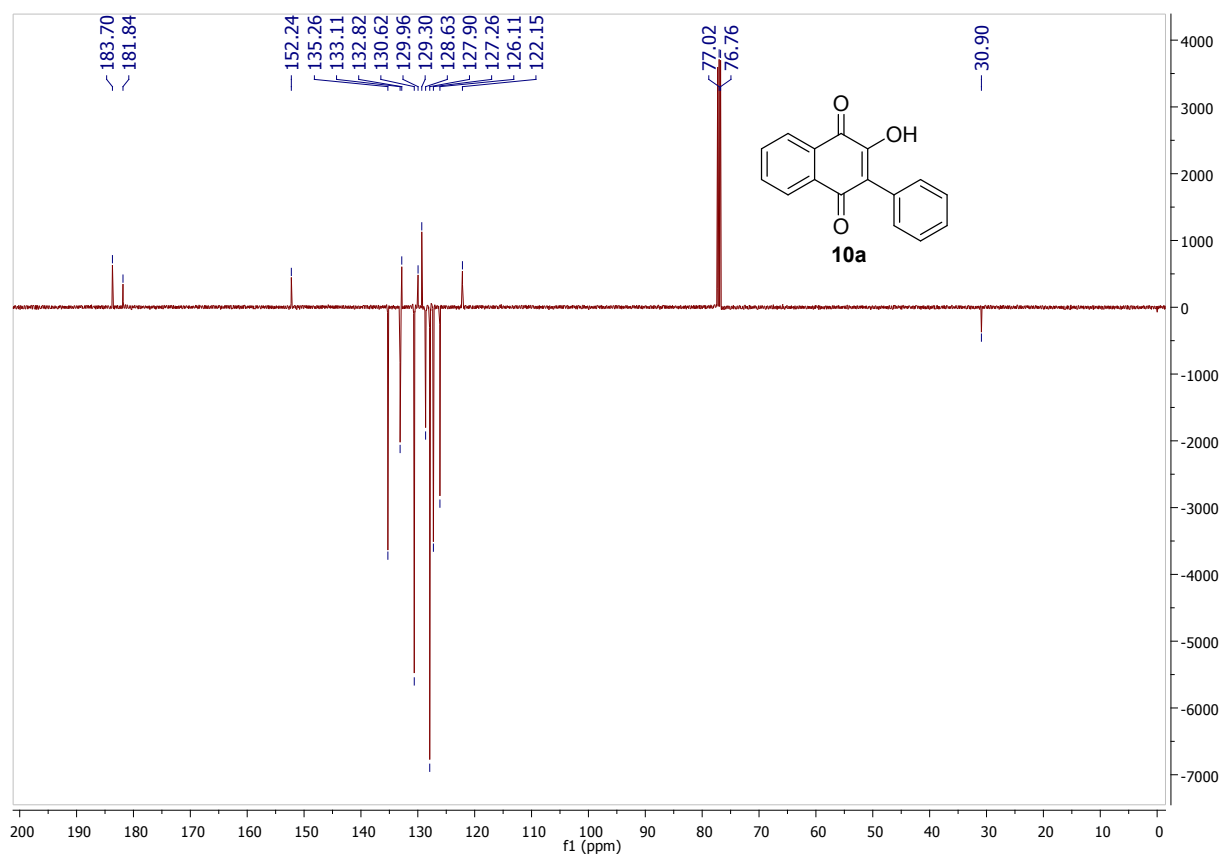


Figure S13 ^{13}C NMR Spectra of 2-hydroxy-3-phenylnaphthalene-1,4-dione (**10a**)

2-(4-Fluorophenyl)-3-phenylnaphthalene-1,4-dione (10b)

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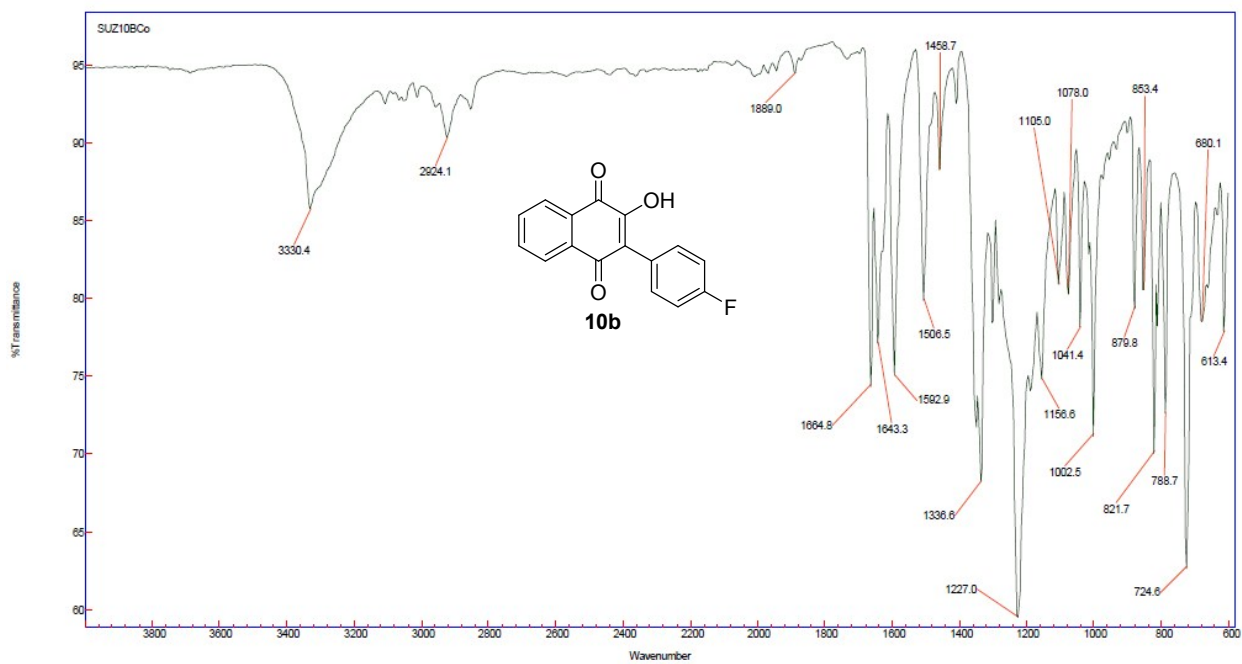
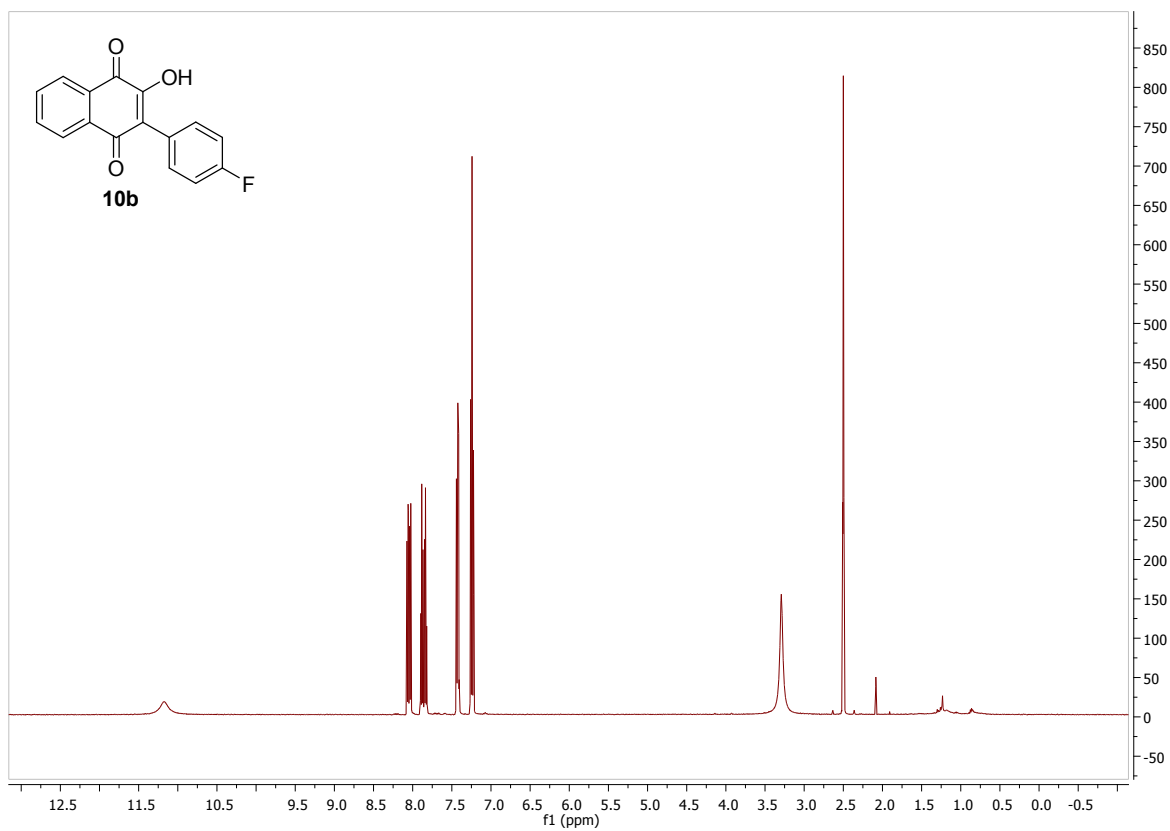


Figure S14 Infrared spectrum of 2-(4-fluorophenyl)-3-phenylnaphthalene-1,4-dione (10b)



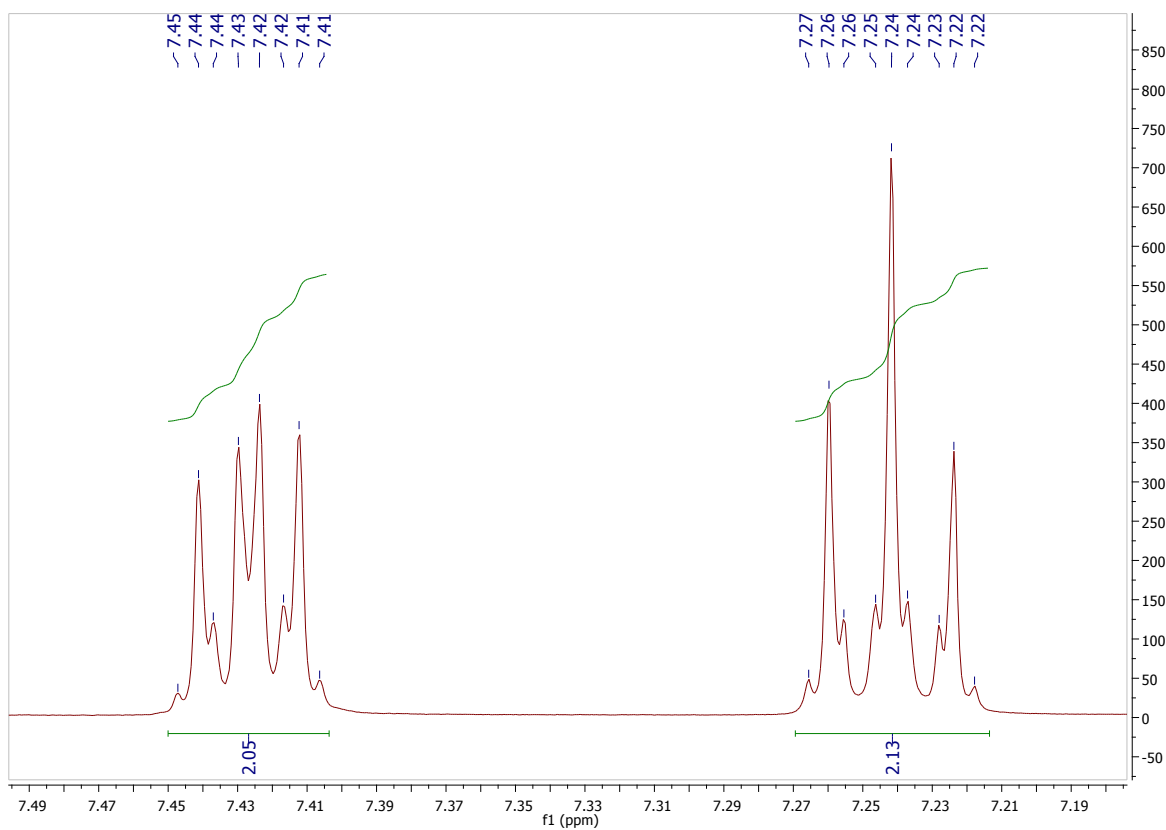
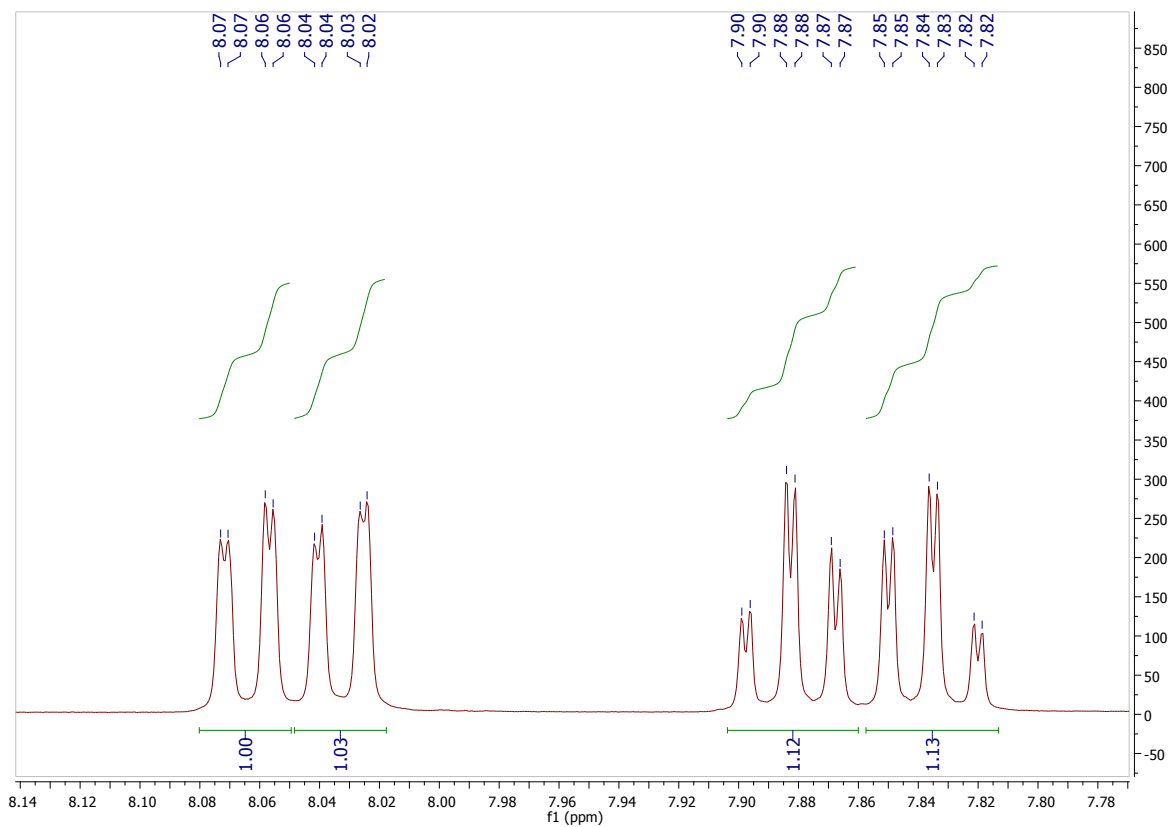


Figure S15 - ^1H NMR Spectra of 2-(4-fluorophenyl)-3-phenylnaphthalene-1,4-dione (**10b**)

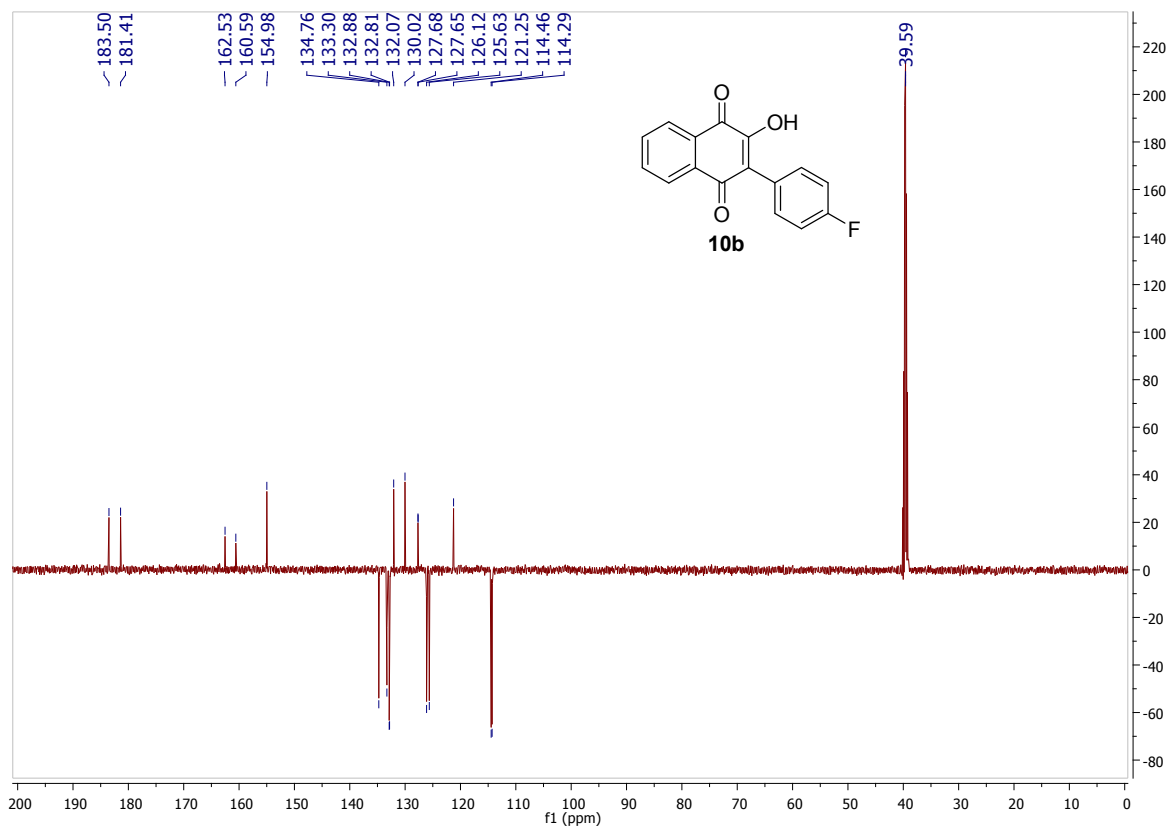


Figure S16 - ¹³C NMR Spectra of 2-(4-fluorophenyl)-3-phenylnaphthalene-1,4-dione (**10b**)

2-(3-Fluorophenyl)-3-phenylnaphthalene-1,4-dione (**10c**)

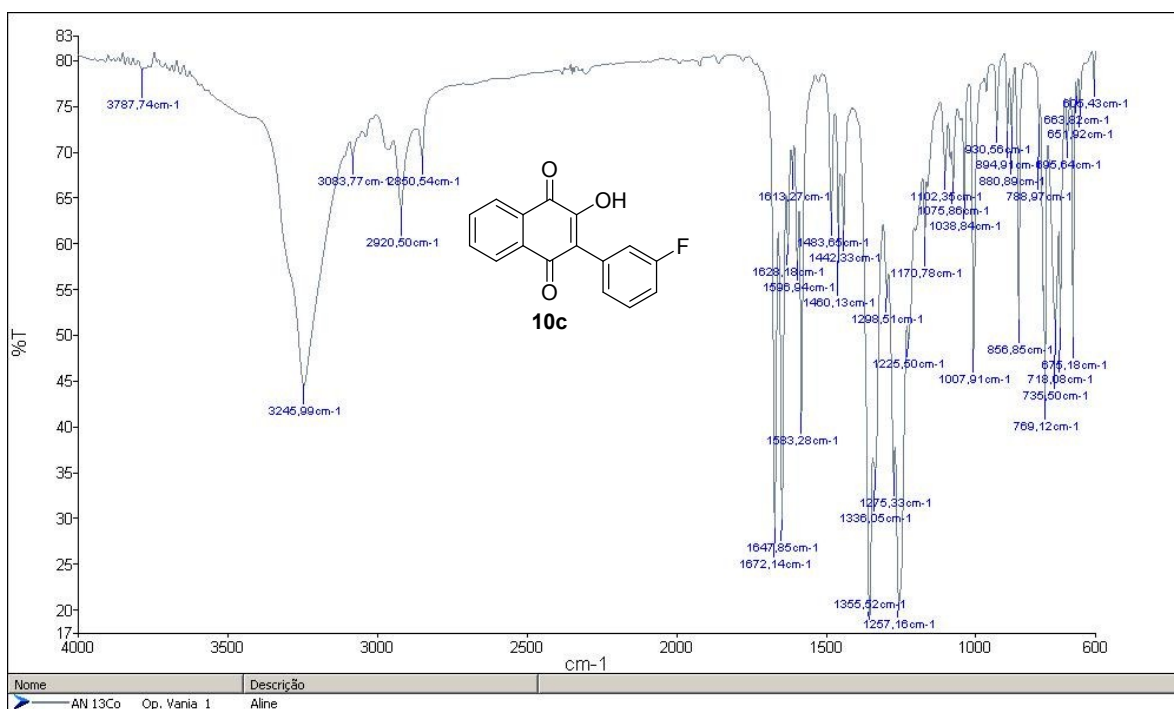
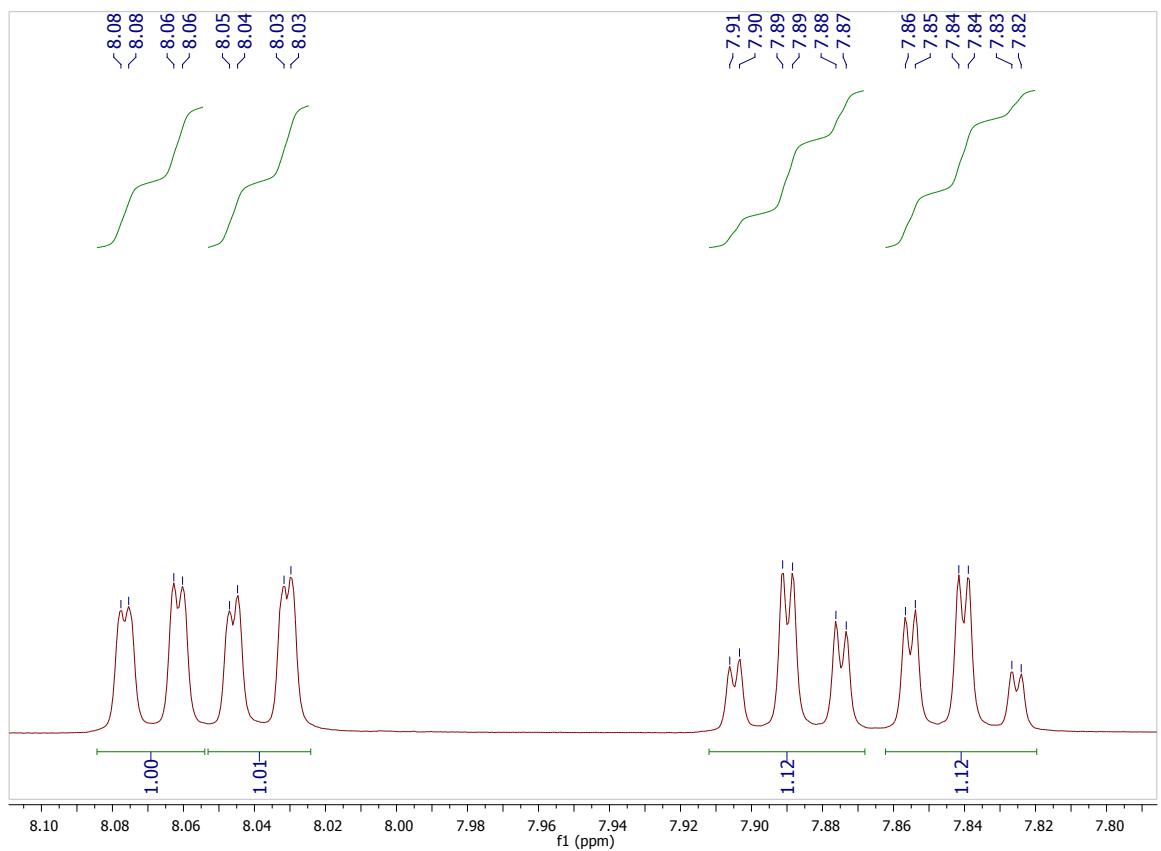
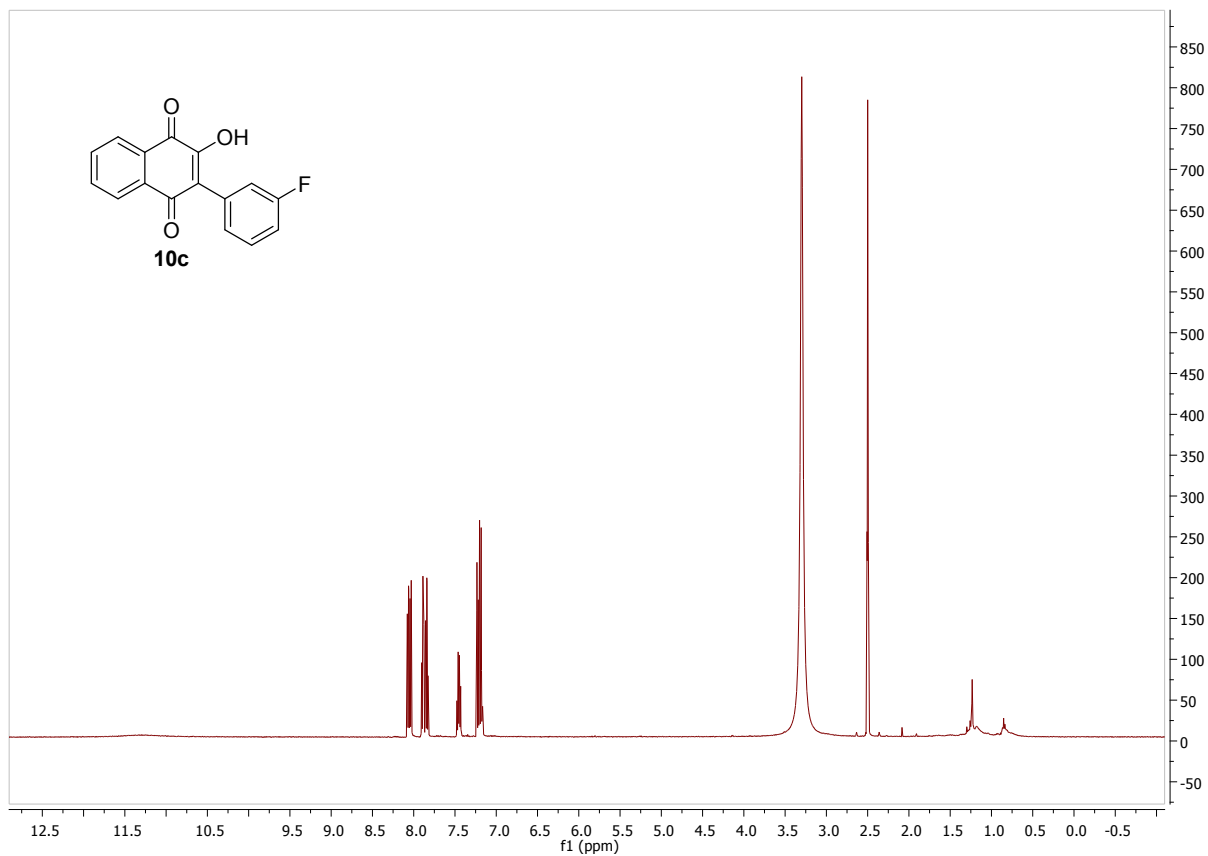


Figure S17 Infrared spectrum of 2-(3-fluorophenyl)-3-phenylnaphthalene-1,4-dione (**10c**)



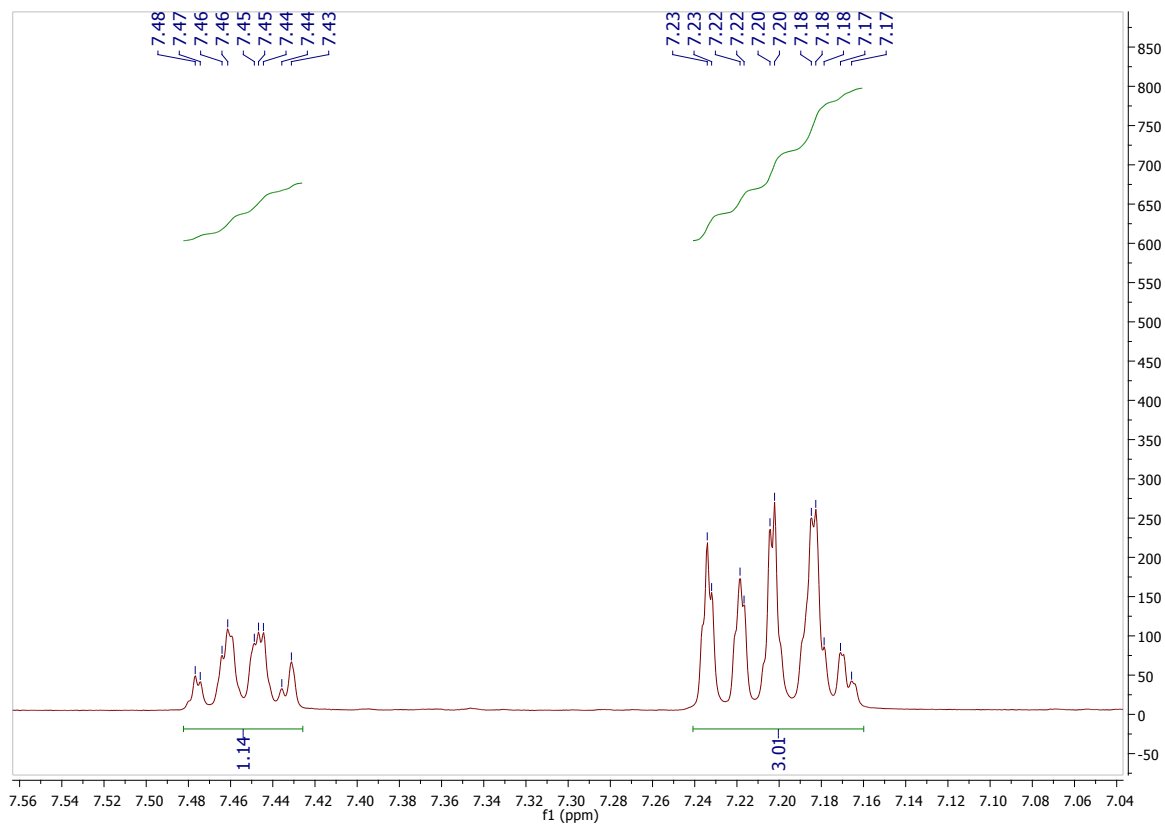


Figure S18 - ^1H NMR Spectra of 2-(3-fluorophenyl)-3-phenylnaphthalene-1,4-dione (**10c**)

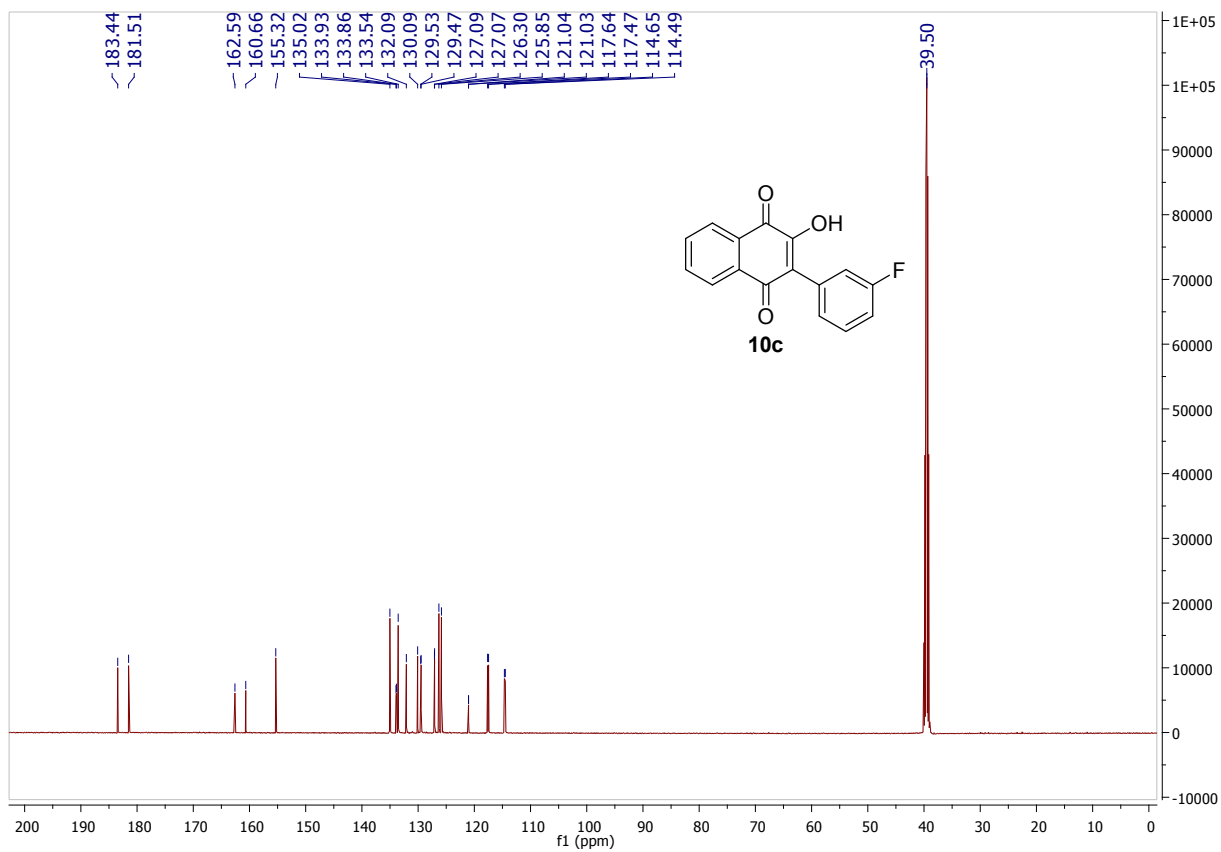


Figure S19 - ^{13}C NMR Spectra of 2-(3-fluorophenyl)-3-phenylnaphthalene-1,4-dione (**10c**)

2-Hydroxy-3-(thiophen-2-yl)naphthalene-1,4-dione (10d)

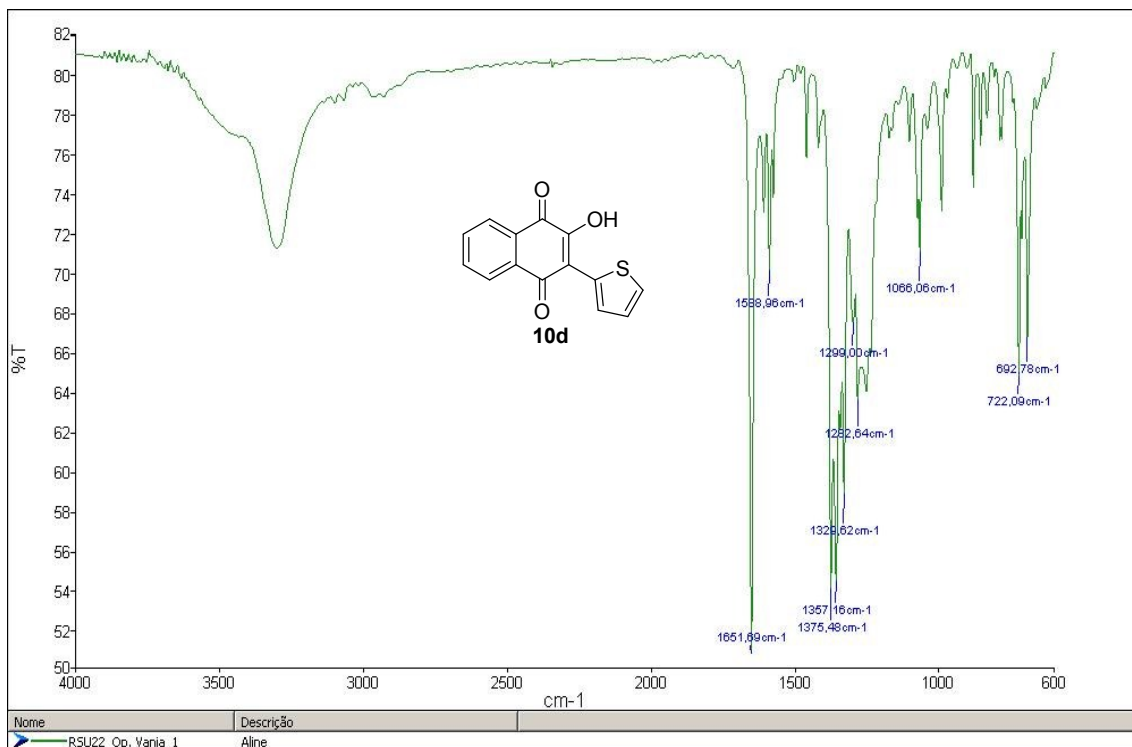
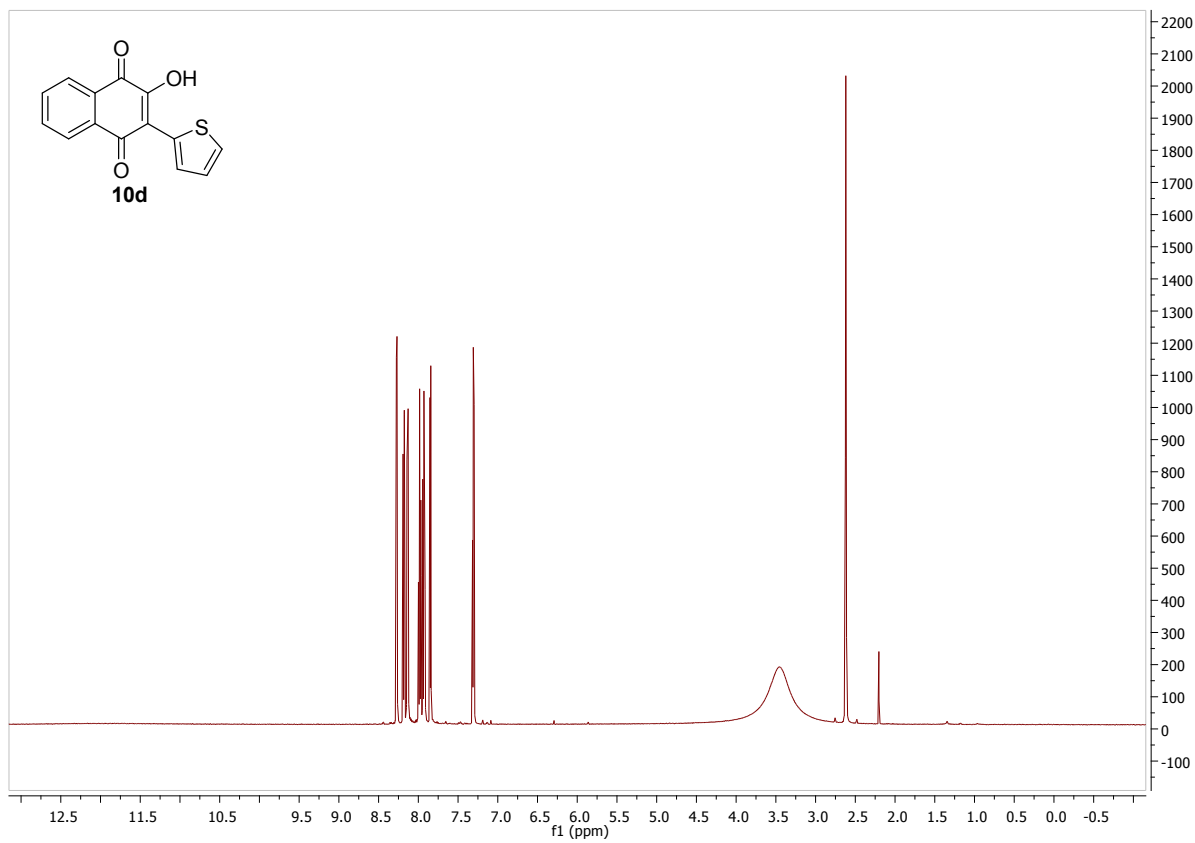


Figure S20 - Infrared spectrum of 2-hydroxy-3-(thiophen-2-yl)naphthalene-1,4-dione (10d)



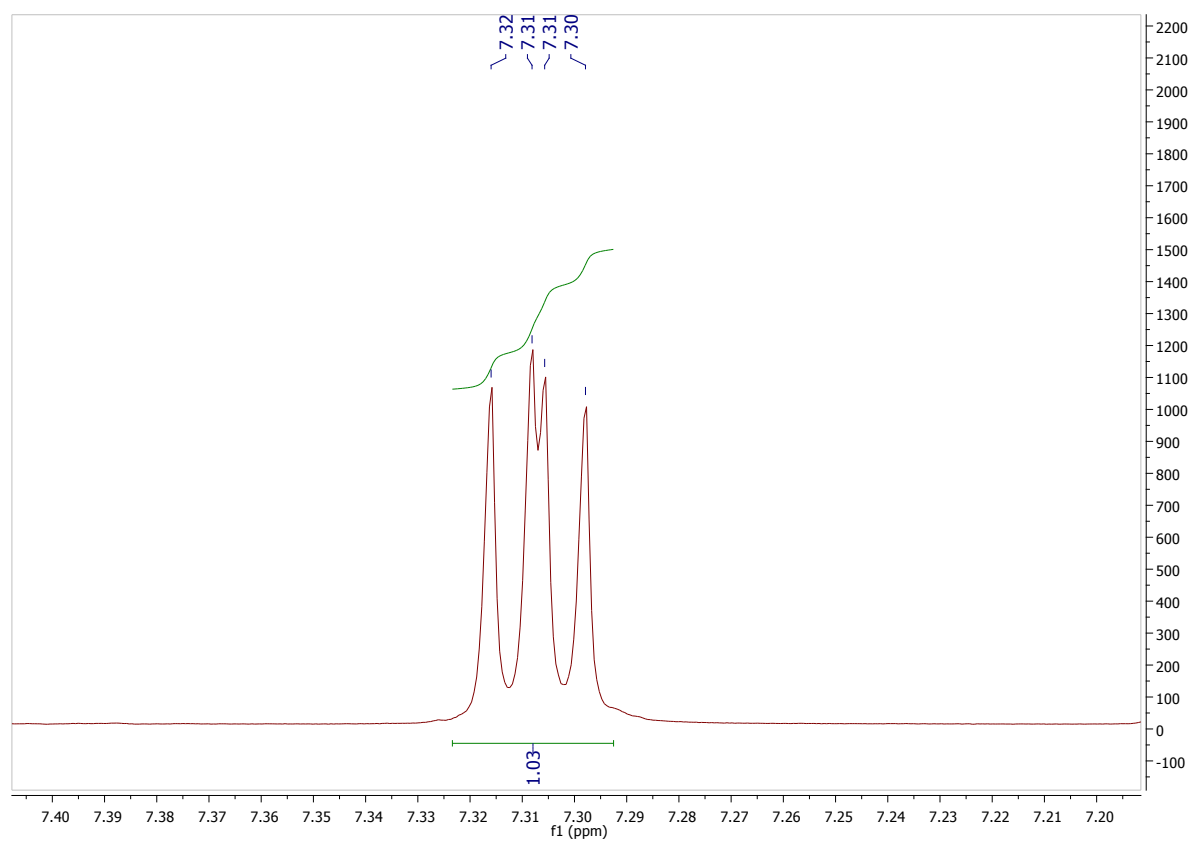
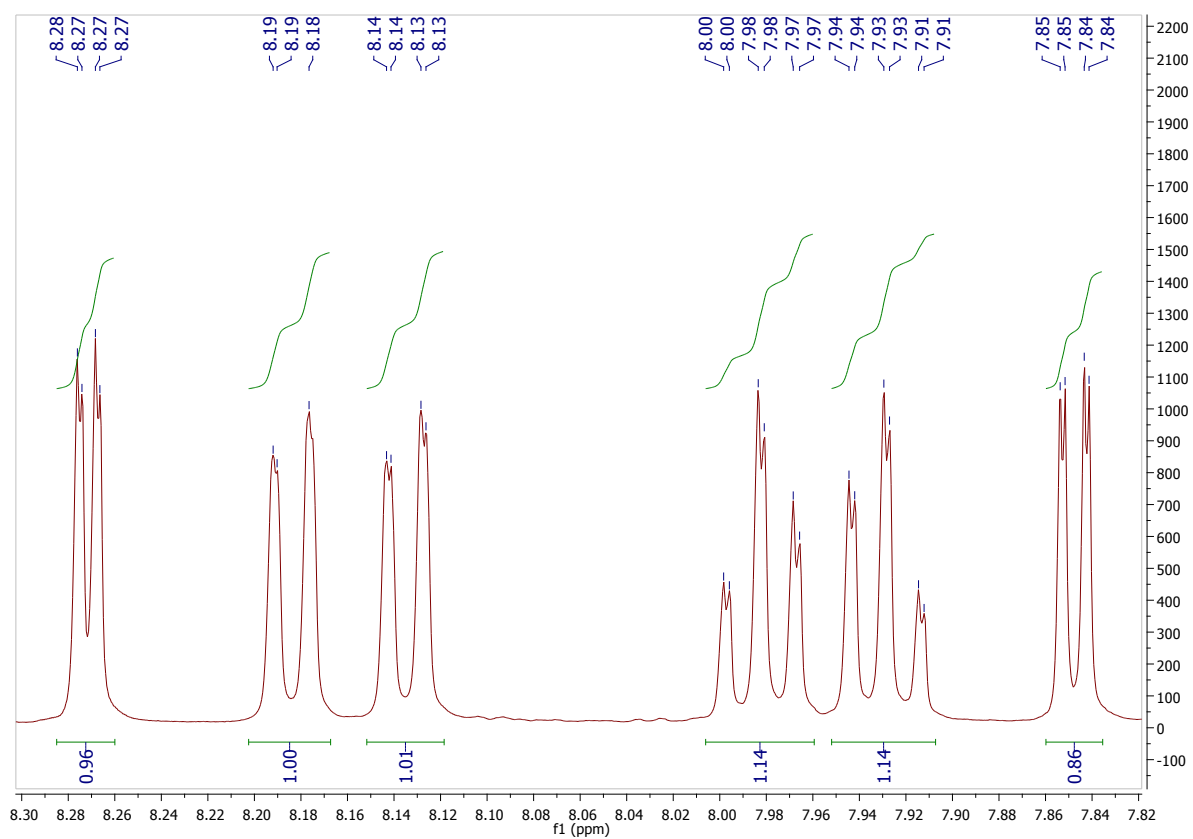


Figure S21 - ¹H NMR Spectra of 2-hydroxy-3-(thiophen-2-yl)naphthalene-1,4-dione (**10d**)

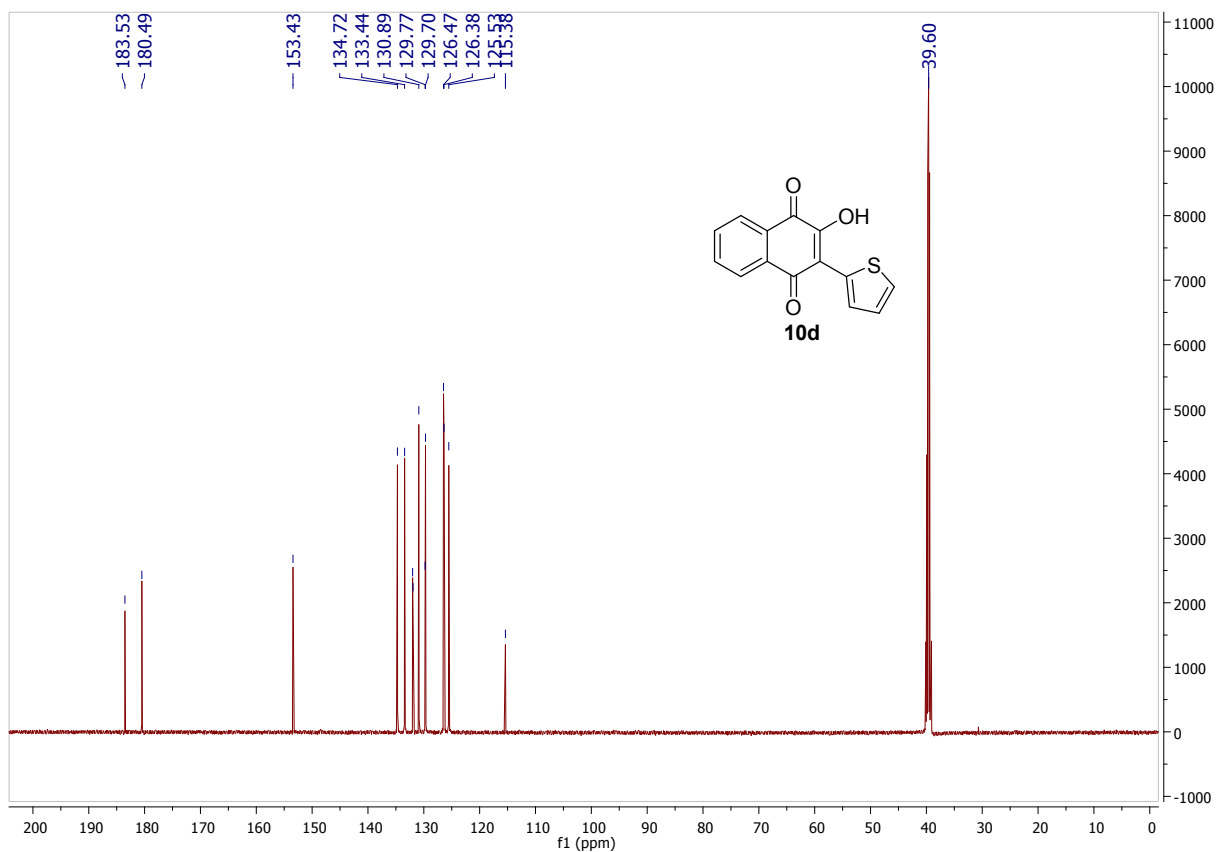


Figure S22 - ¹³C NMR Spectra of 2-hydroxy-3-(thiophen-2-yl)naphthalene-1,4-dione (**10d**)

2-Hydroxy-3-(thiophen-3-yl)naphthalene-1,4-dione (**10e**)

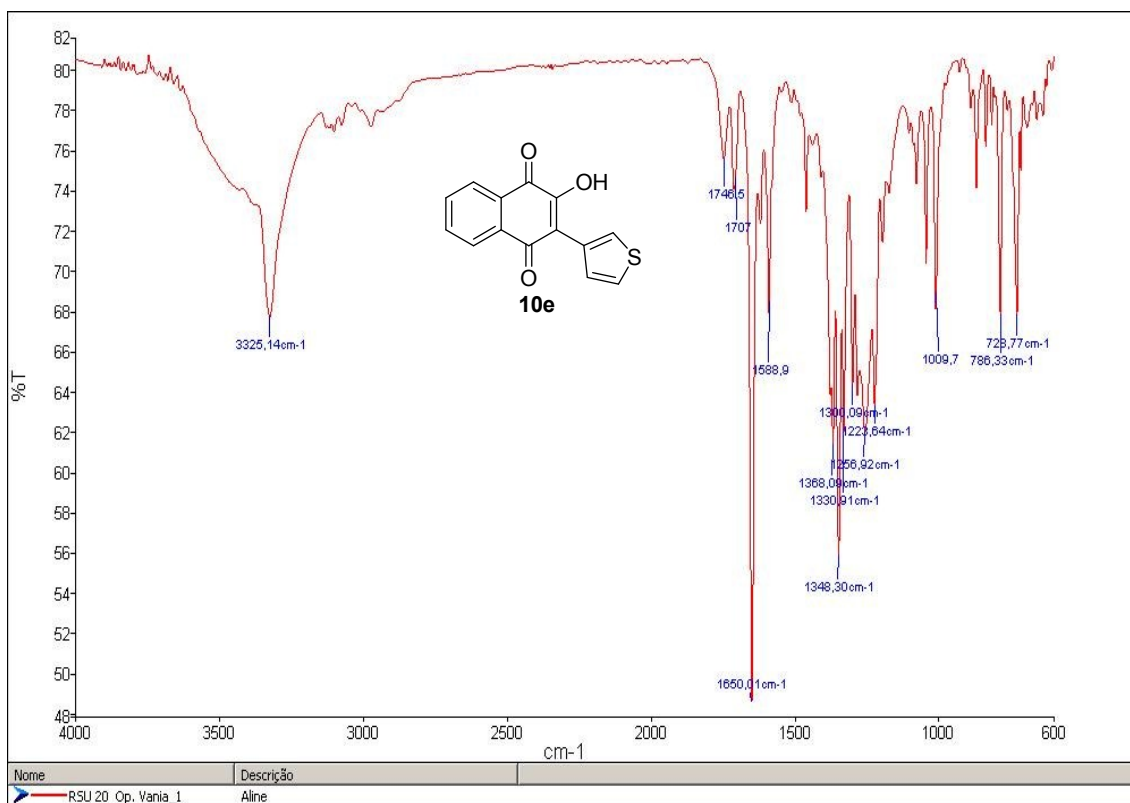
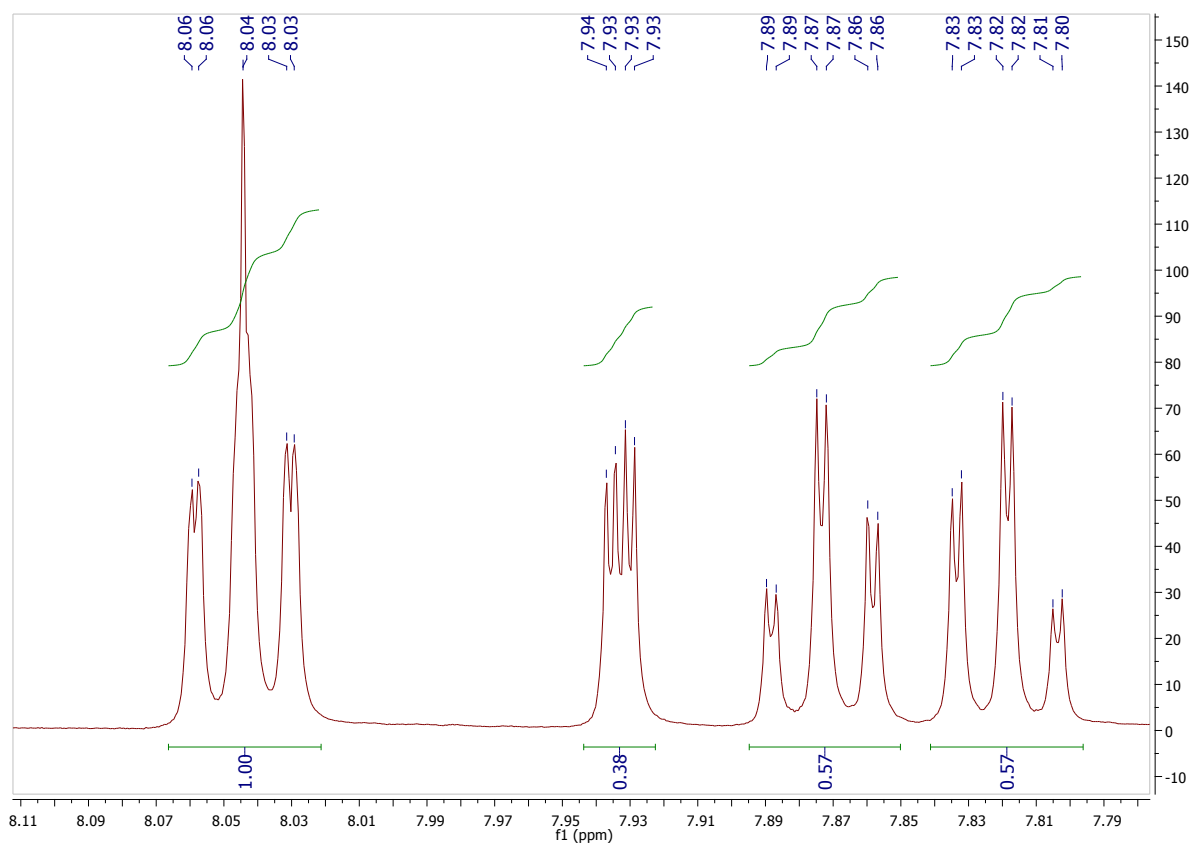
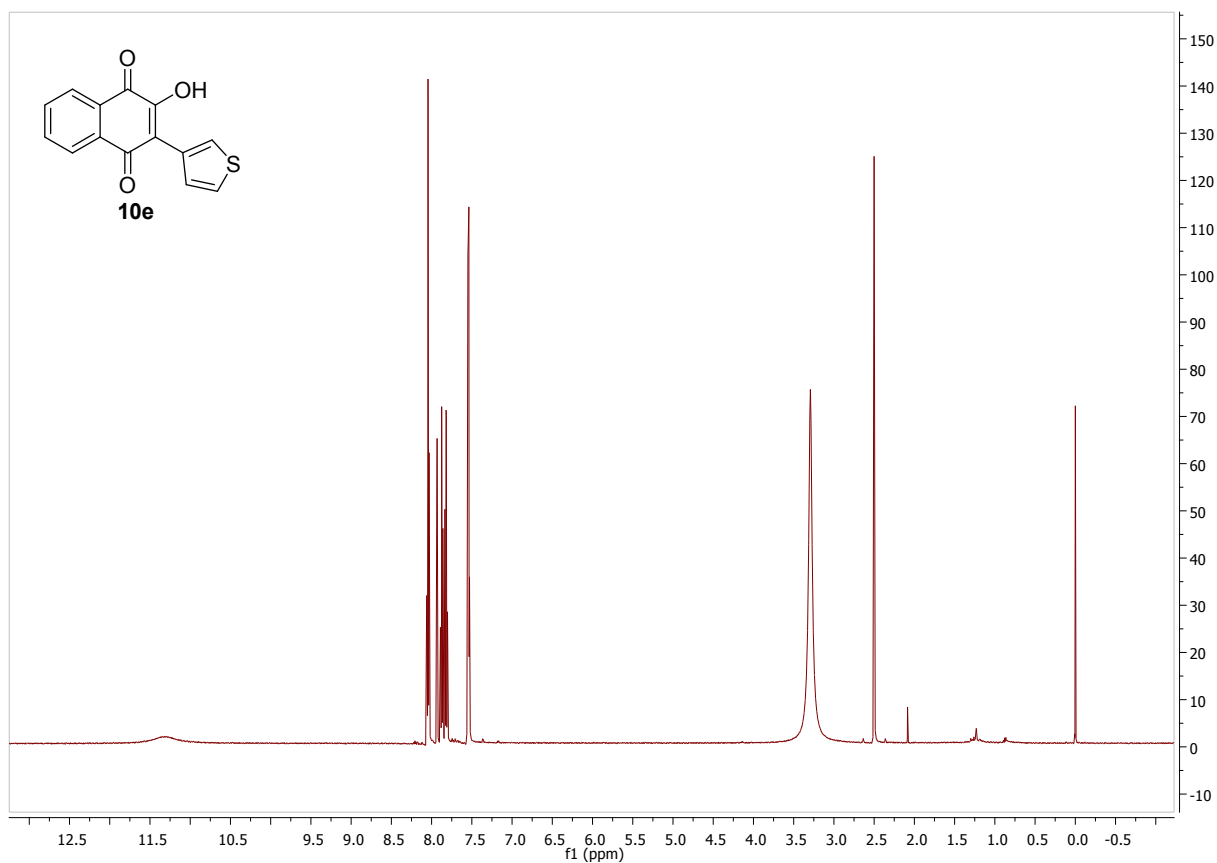


Figure S23 - Infrared spectrum of 2-hydroxy-3-(thiophen-3-yl)naphthalene-1,4-dione (**10e**)



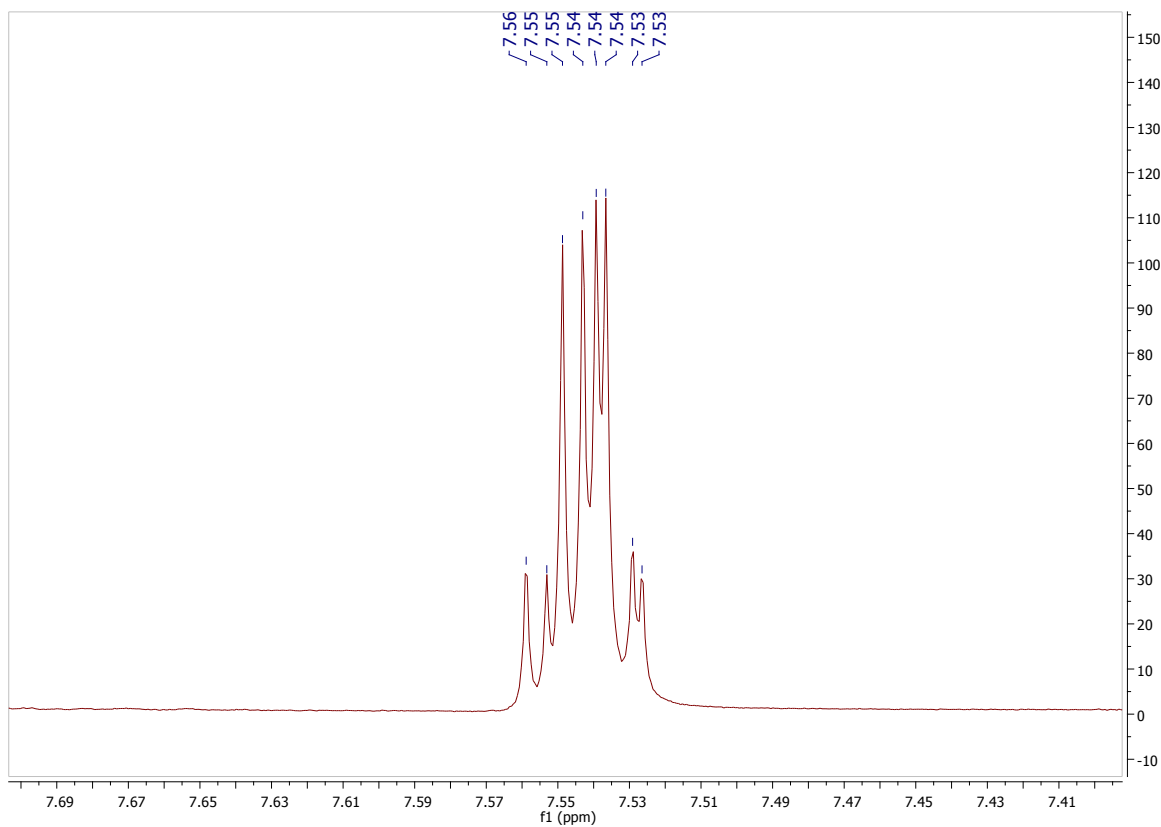


Figure S24 - ^1H NMR Spectra of 2-hydroxy-3-(thiophen-3-yl)naphthalene-1,4-dione (**10e**)

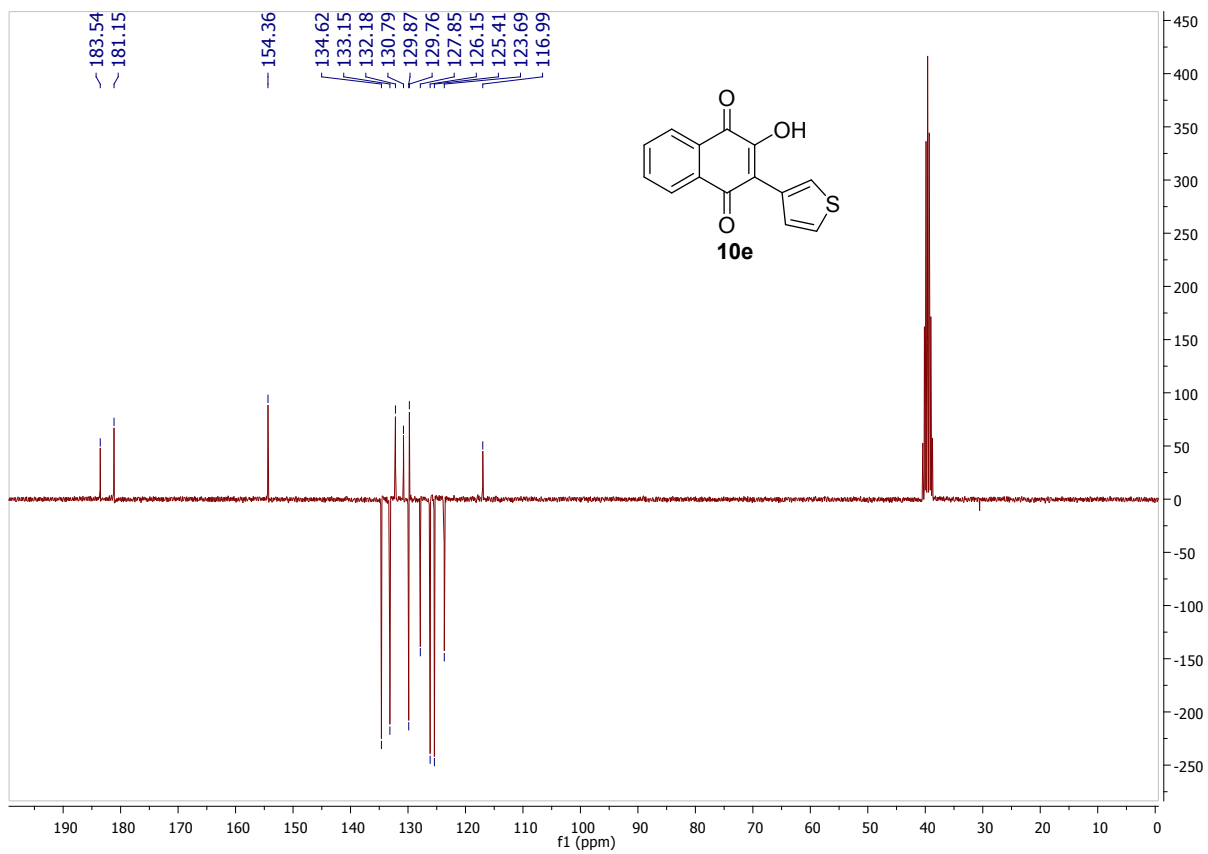


Figure S25 - ^{13}C NMR Spectra of 2-hydroxy-3-(thiophen-3-yl)naphthalene-1,4-dione (**10e**)

3-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (10f)

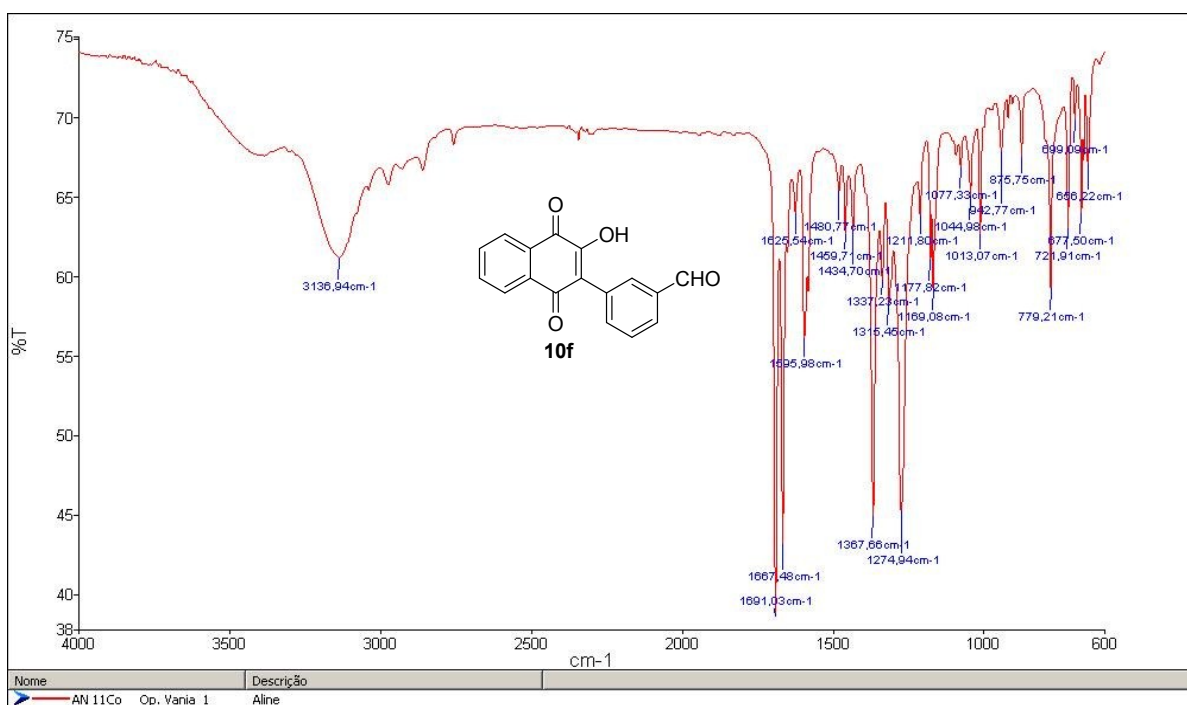
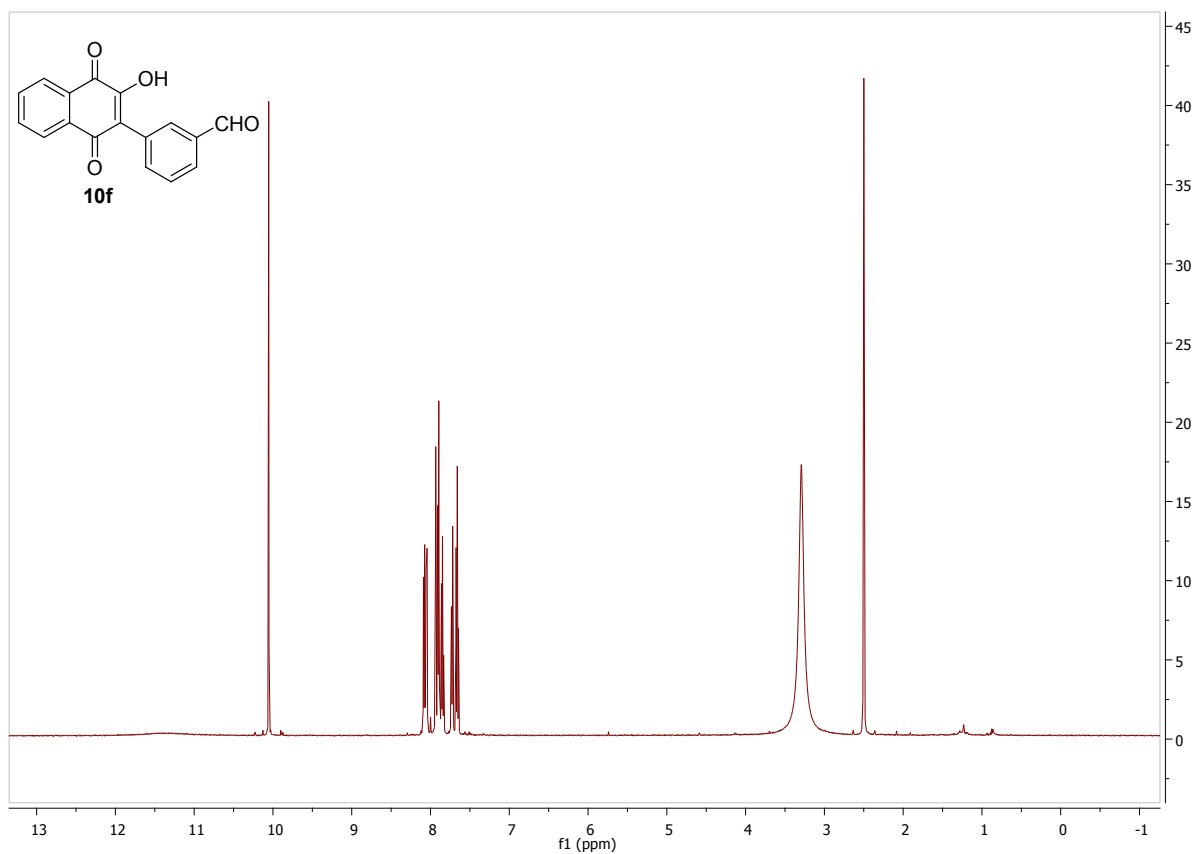


Figure S26 - Infrared spectrum of 3-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (10f)



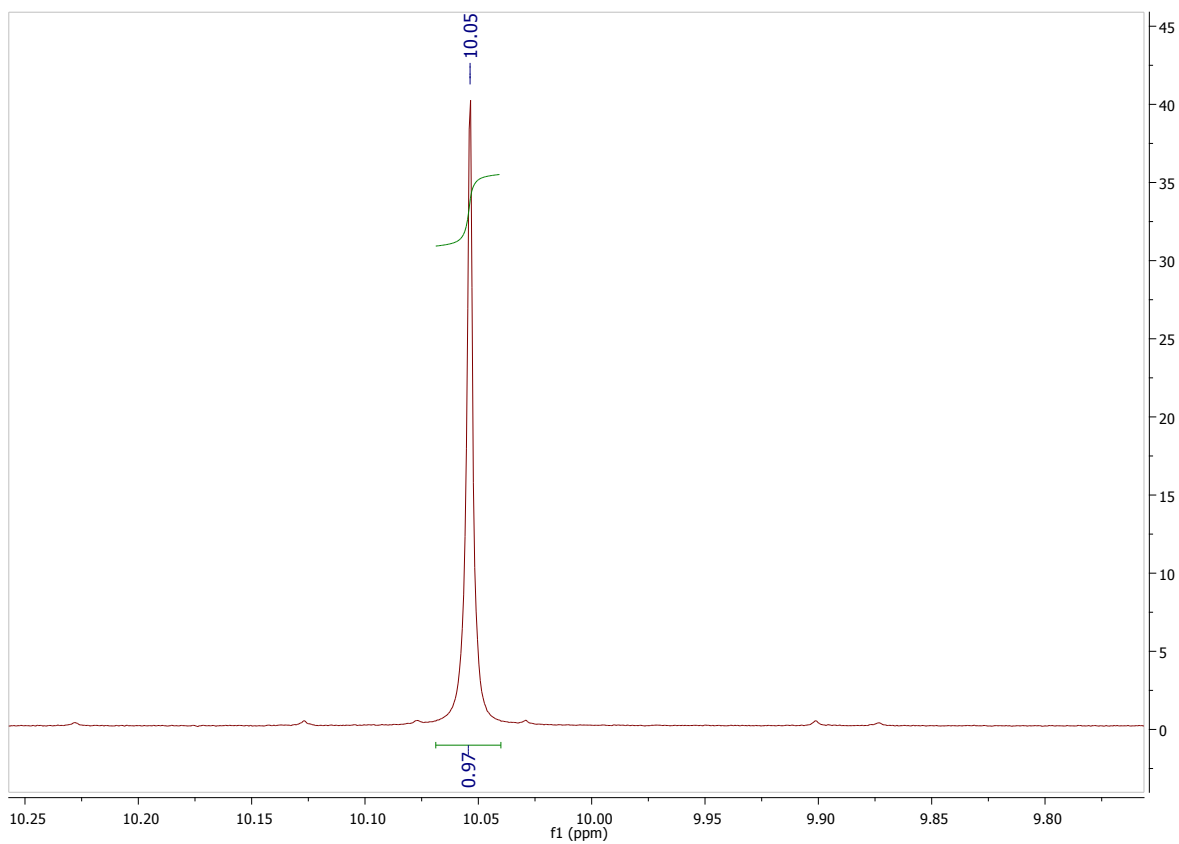
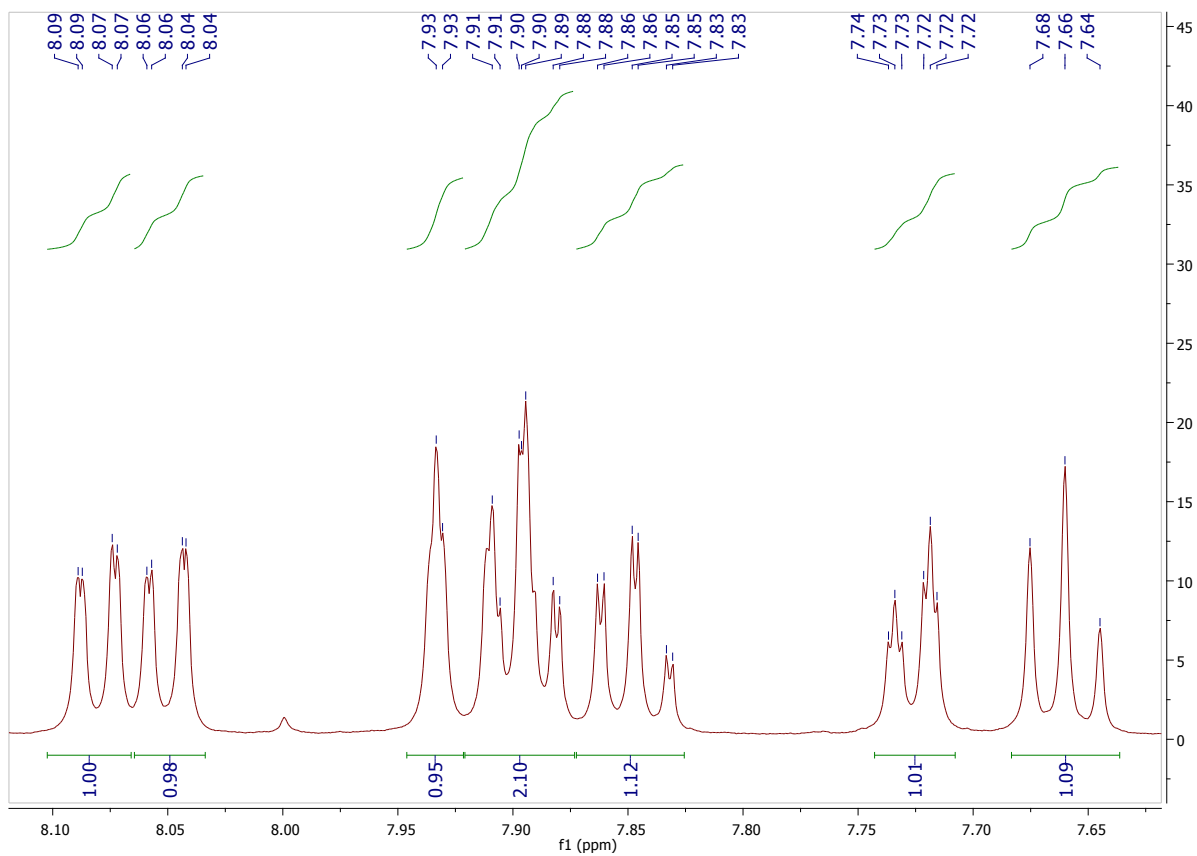


Figure S27 - ^1H NMR Spectra of of 3-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (10f)

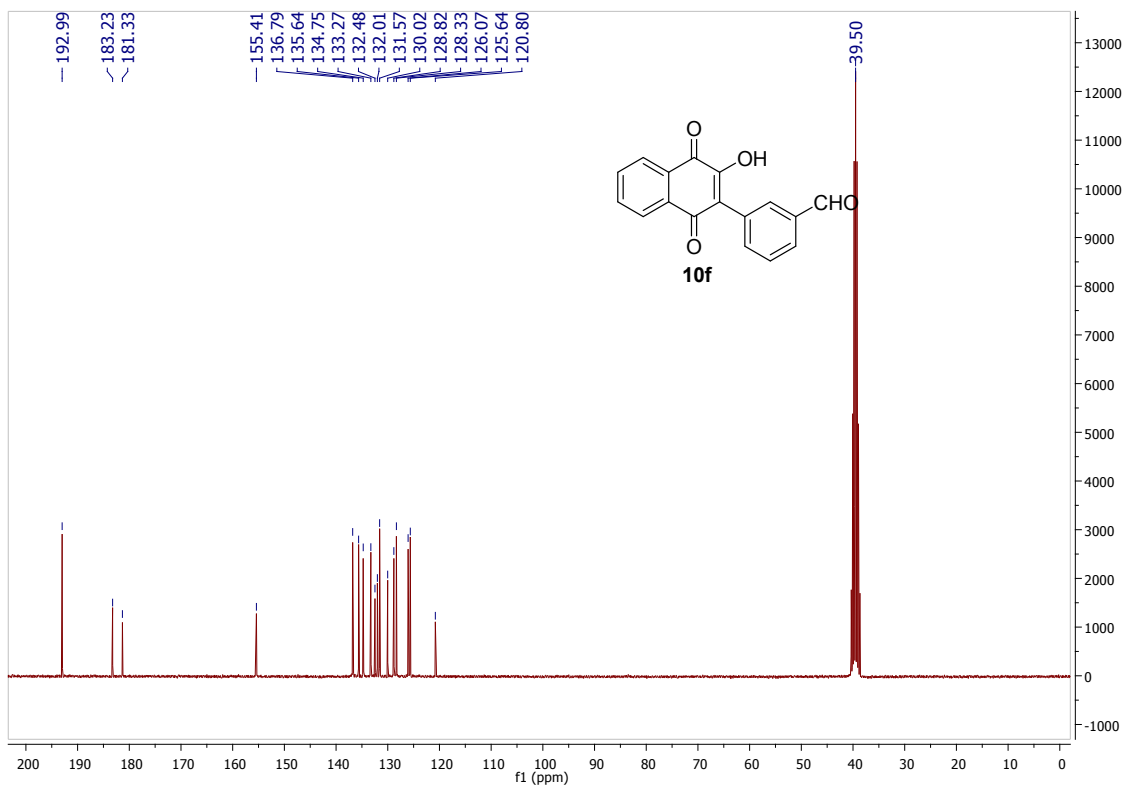


Figure S28 ¹³C NMR Spectra of 3-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (**10f**)

4-(3-hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (**10g**)

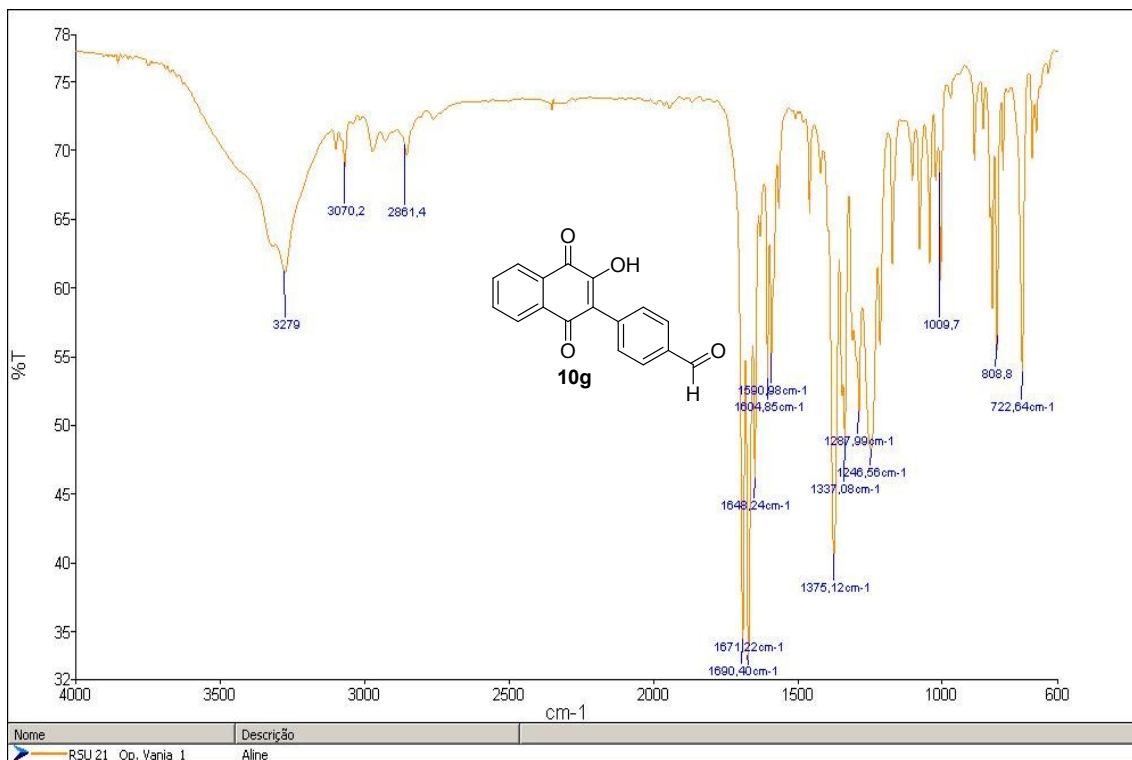
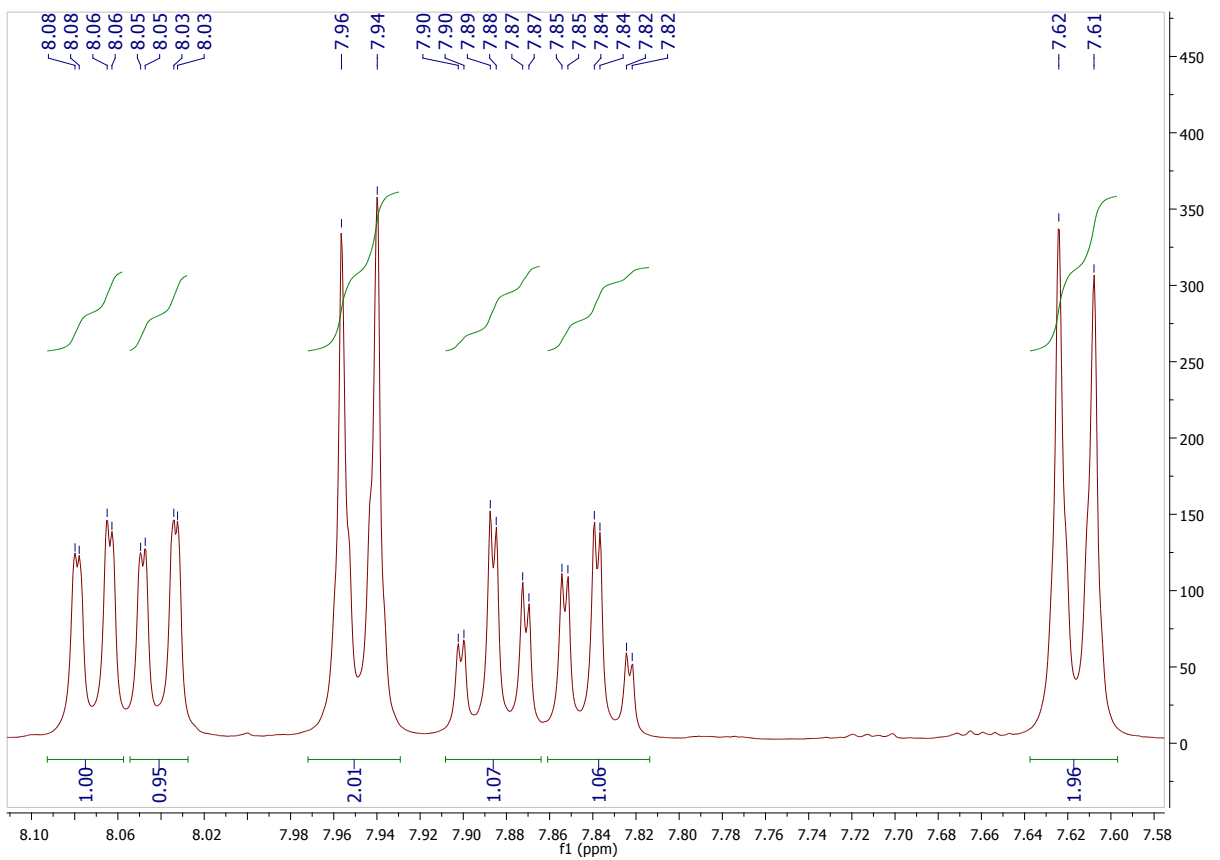
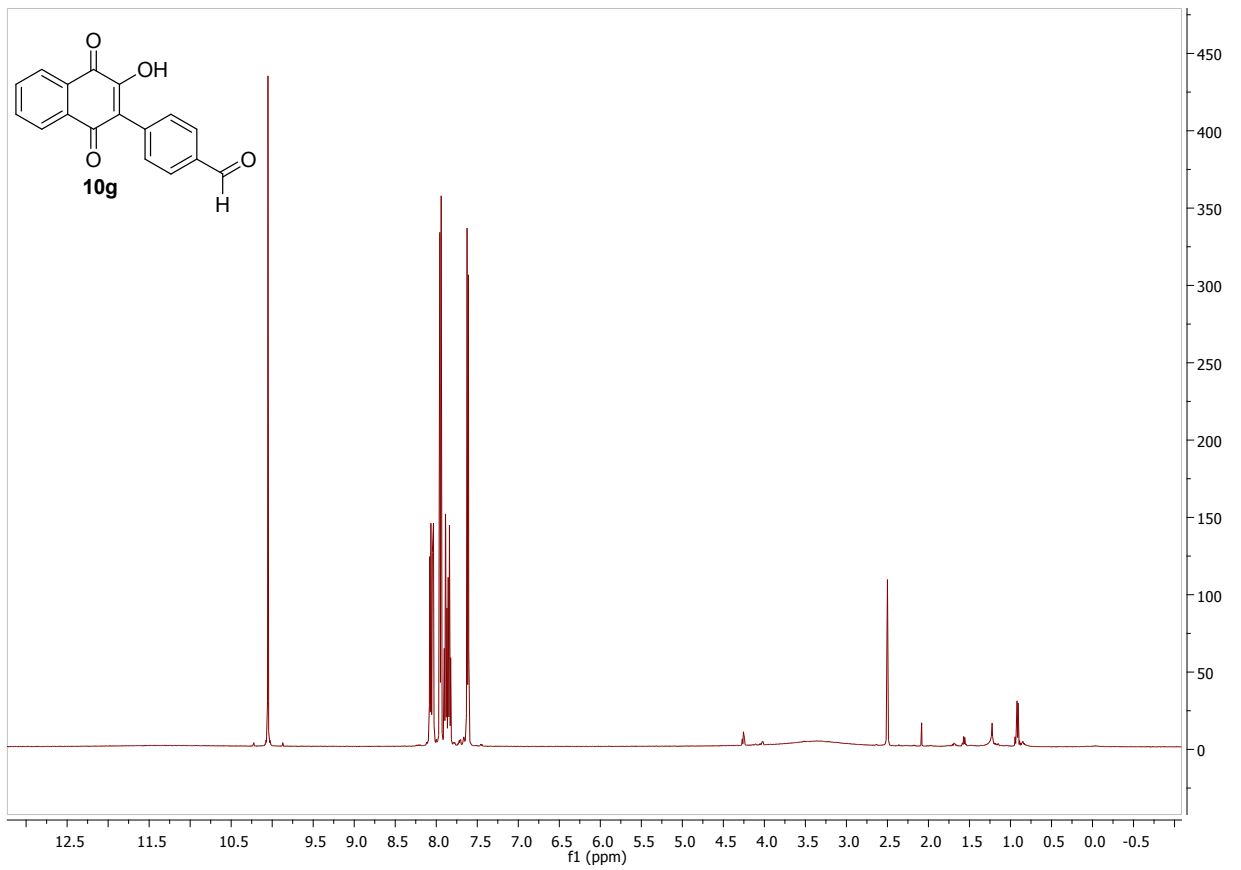


Figure S29 - Infrared spectrum of 4-(3-hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (**10g**)



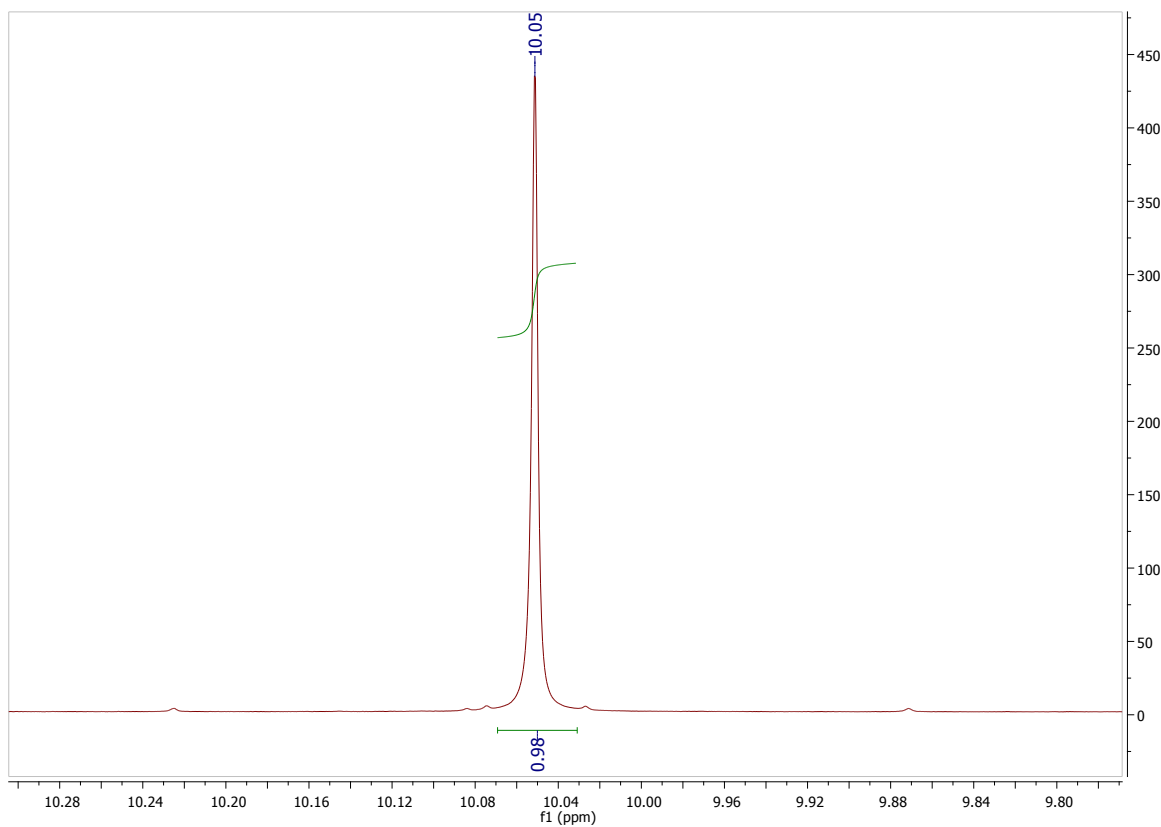


Figure S30 - ^1H NMR Spectra of 4-(3-hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (**10g**)

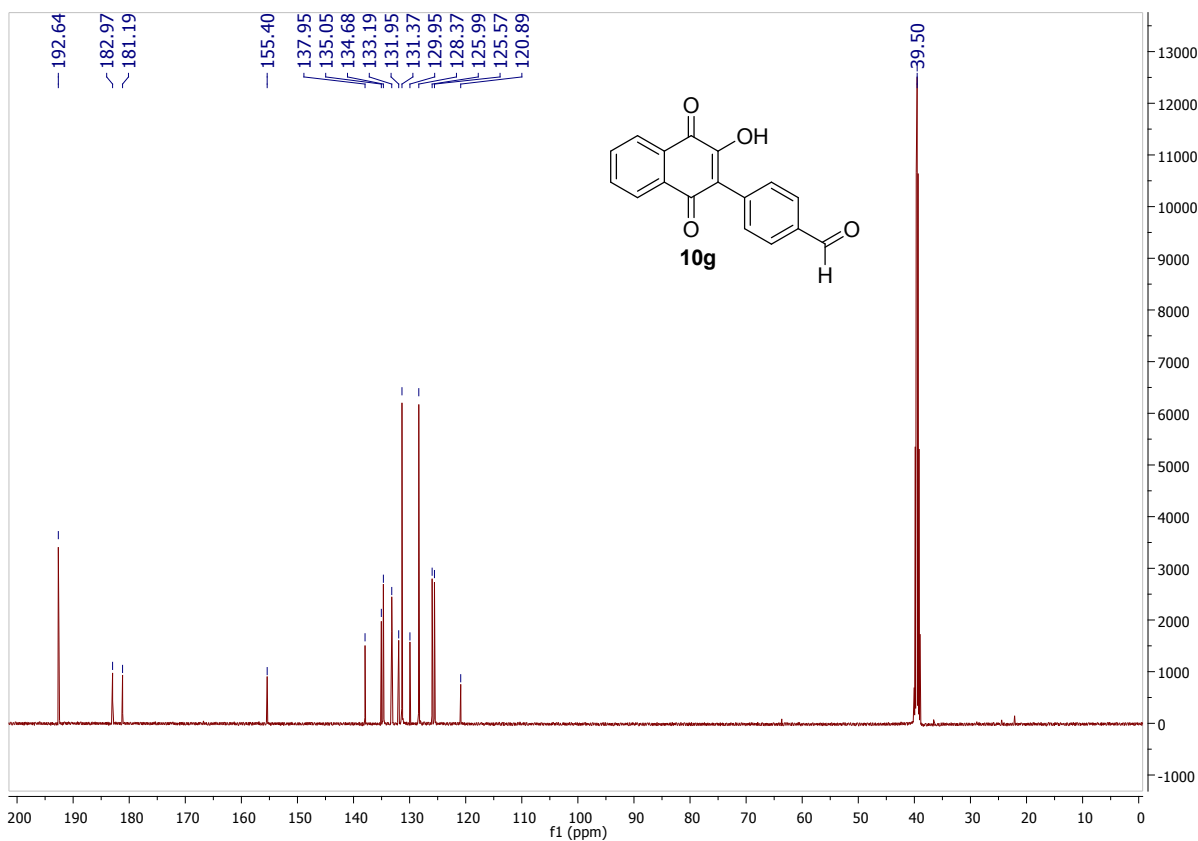


Figure S31 - ^{13}C NMR Spectra of 4-(3-hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzaldehyde (**10g**)

2-Hydroxy-3-(4-methoxyphenyl)naphthalene-1,4-dione (10h)

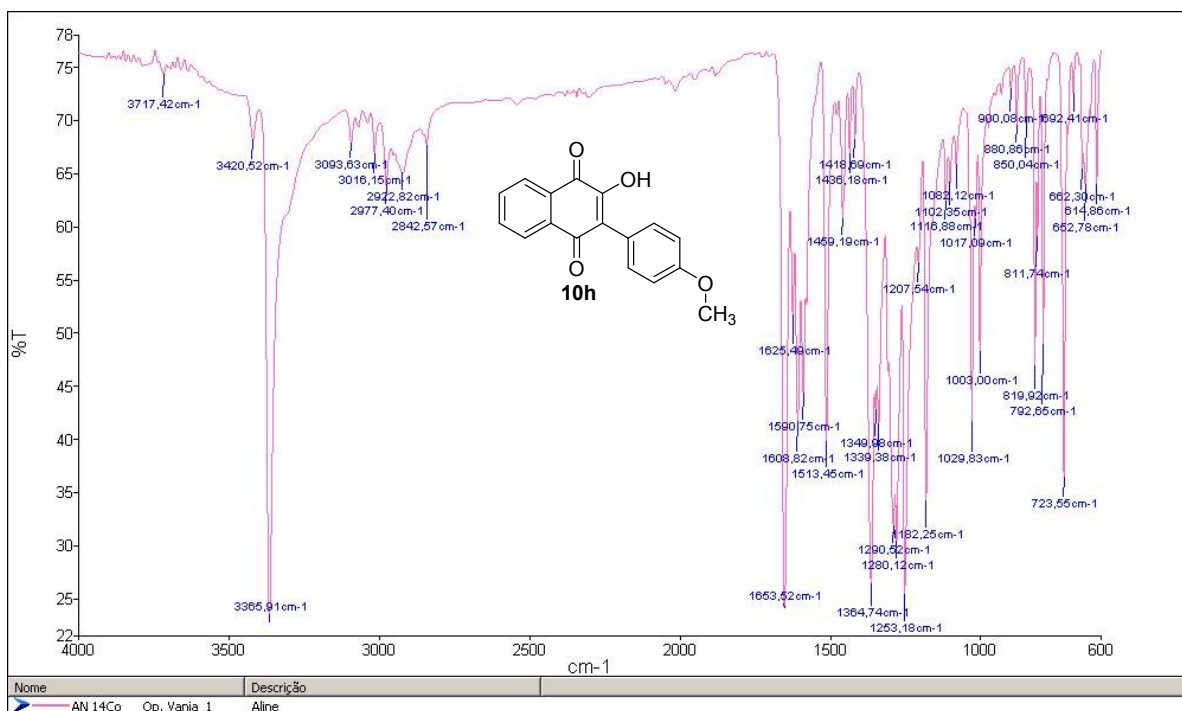
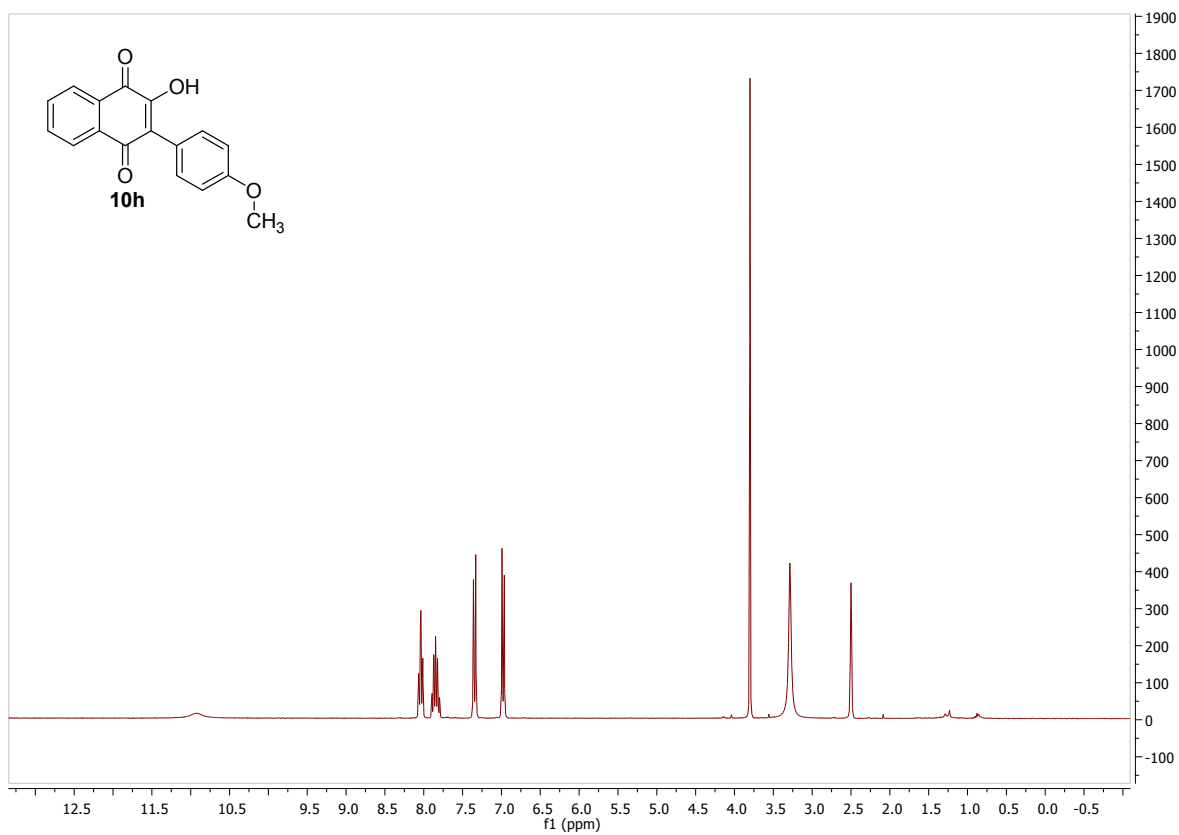


Figure S32 Infrared spectrum of 2-hydroxy-3-(4-methoxyphenyl)naphthalene-1,4-dione (10h)



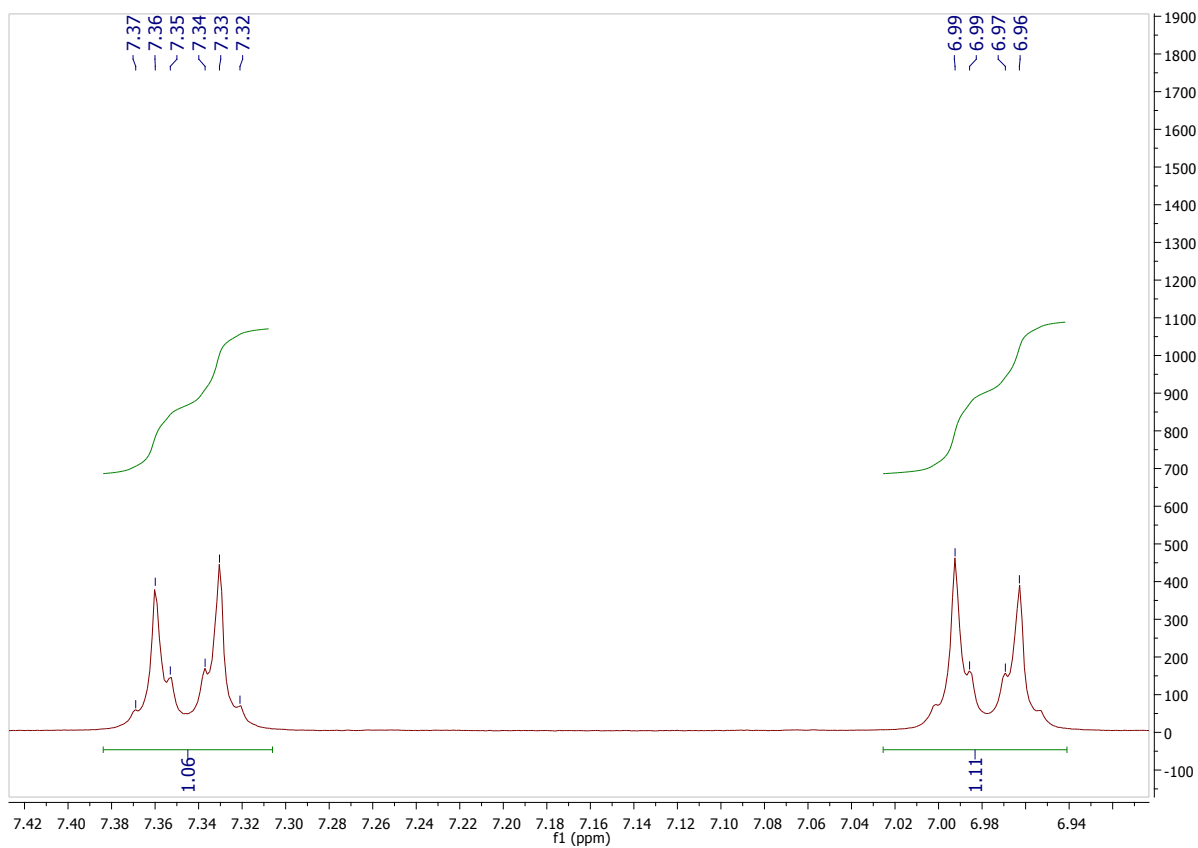
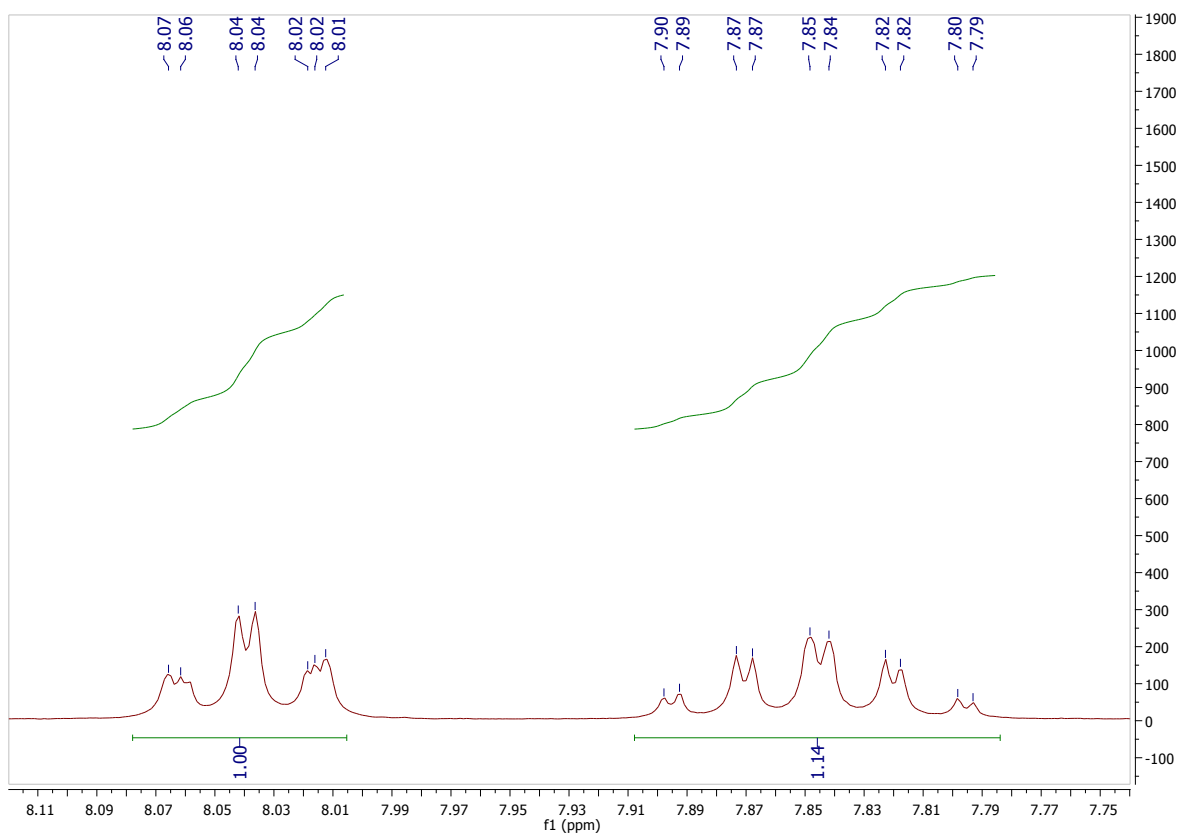


Figure S33 - ^1H NMR Spectra of 2-hydroxy-3-(4-methoxyphenyl)naphthalene-1,4-dione (**10h**)

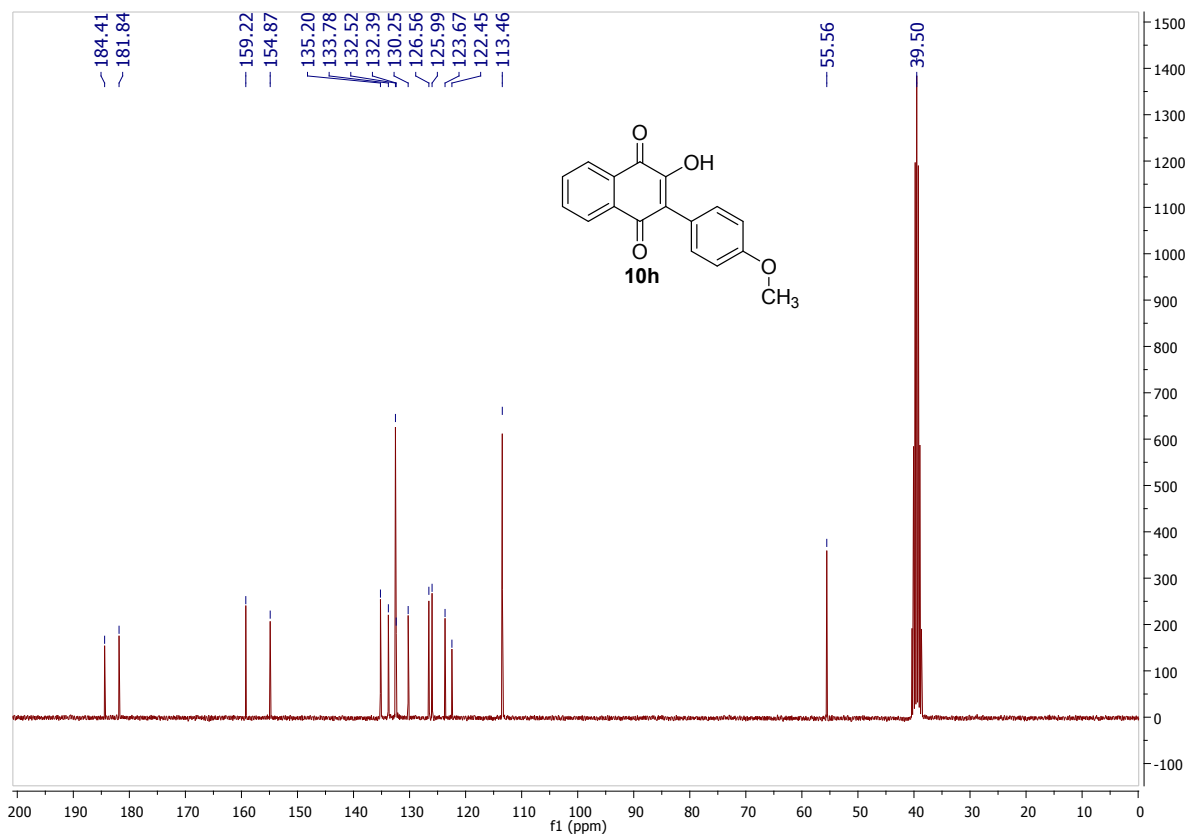


Figure S34 - ^1H NMR Spectra of 2-hydroxy-3-(4-methoxyphenyl)naphthalene-1,4-dione (10h)

2-Hydroxy-3-(3-methoxyphenyl)naphthalene-1,4-dione (10i)

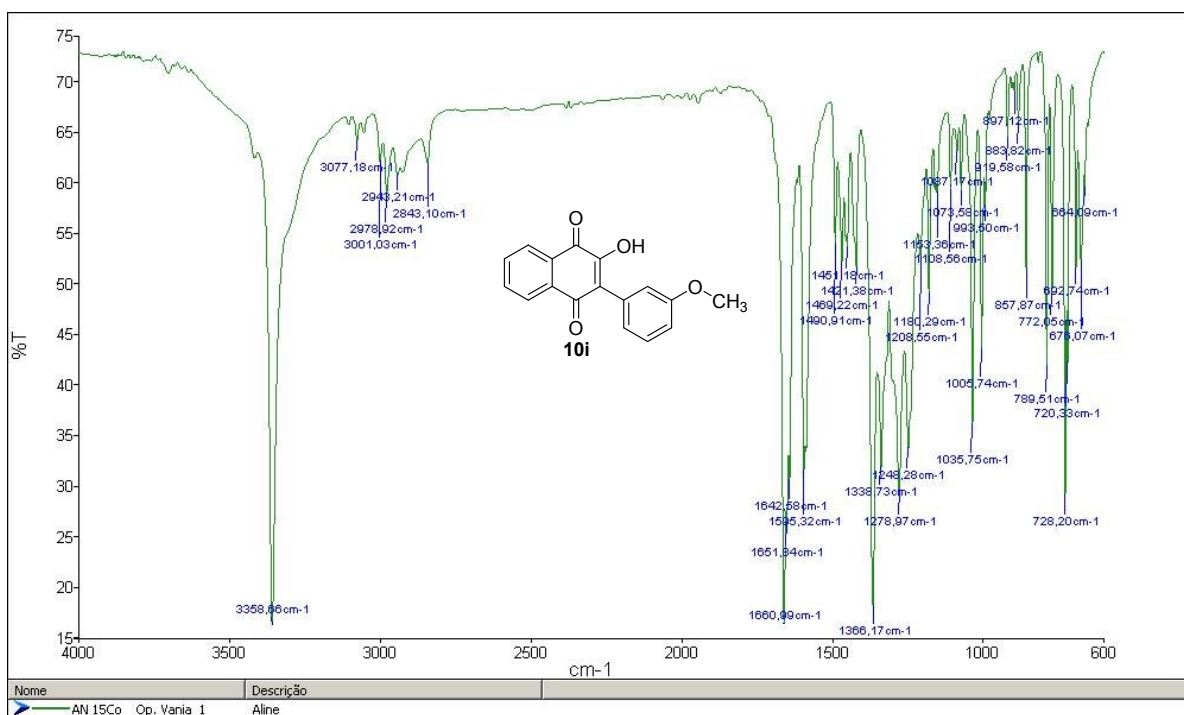
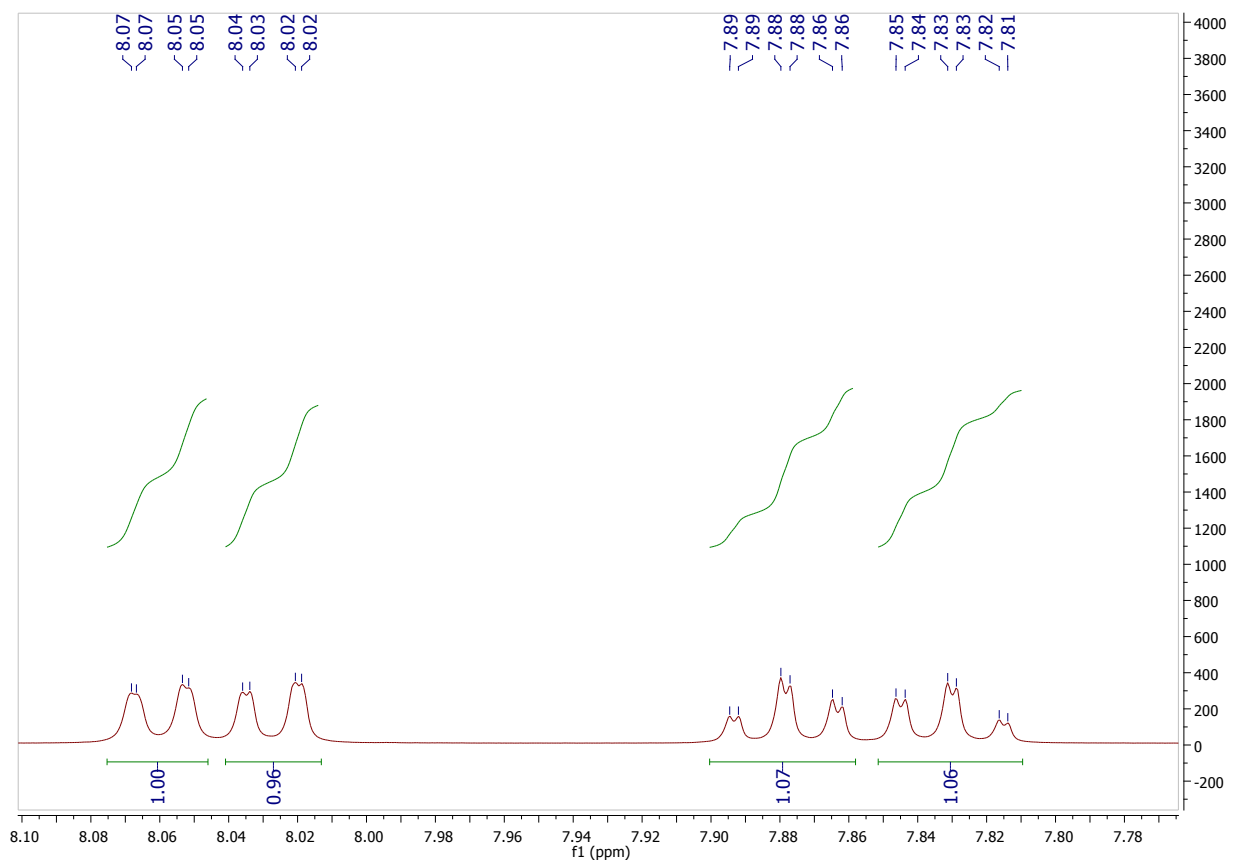
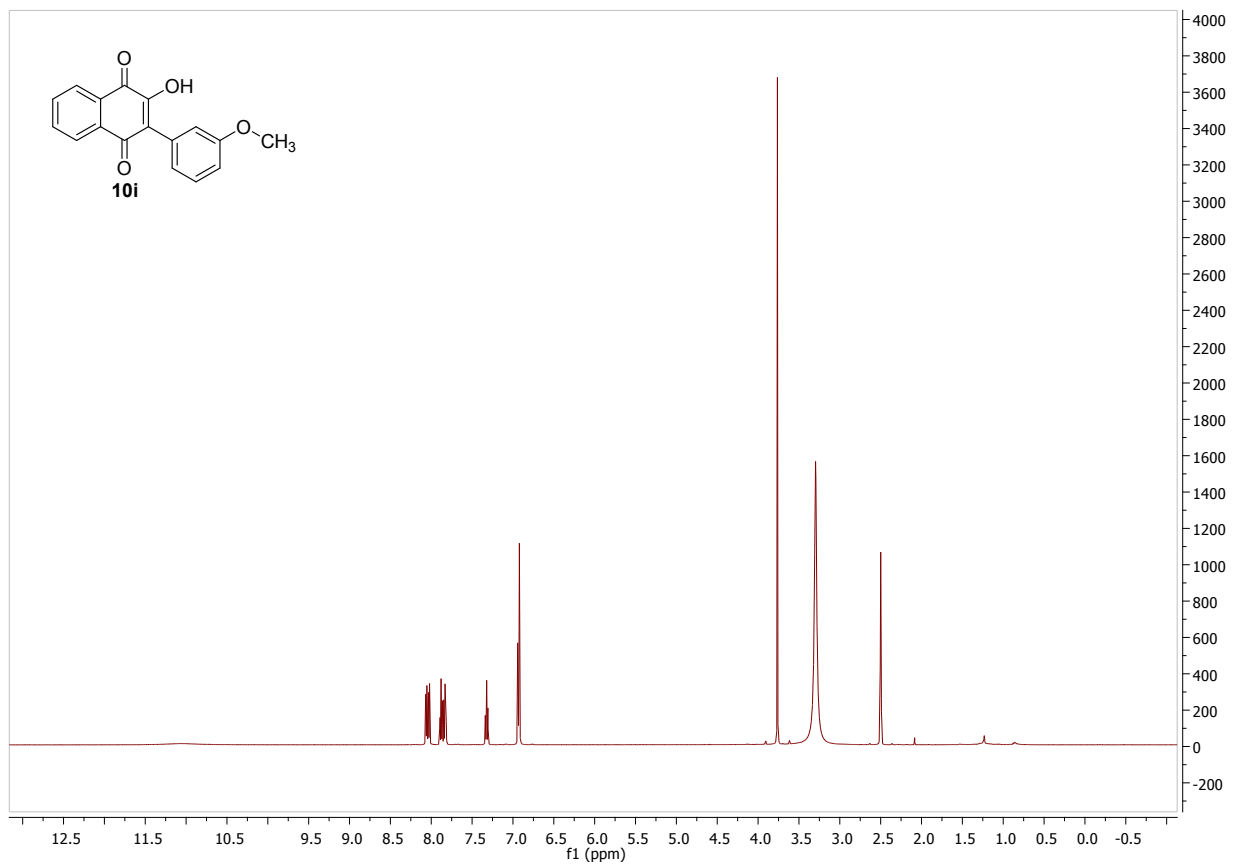


Figure S35 - Infrared spectrum of 2-hydroxy-3-(3-methoxyphenyl)naphthalene-1,4-dione (10i)



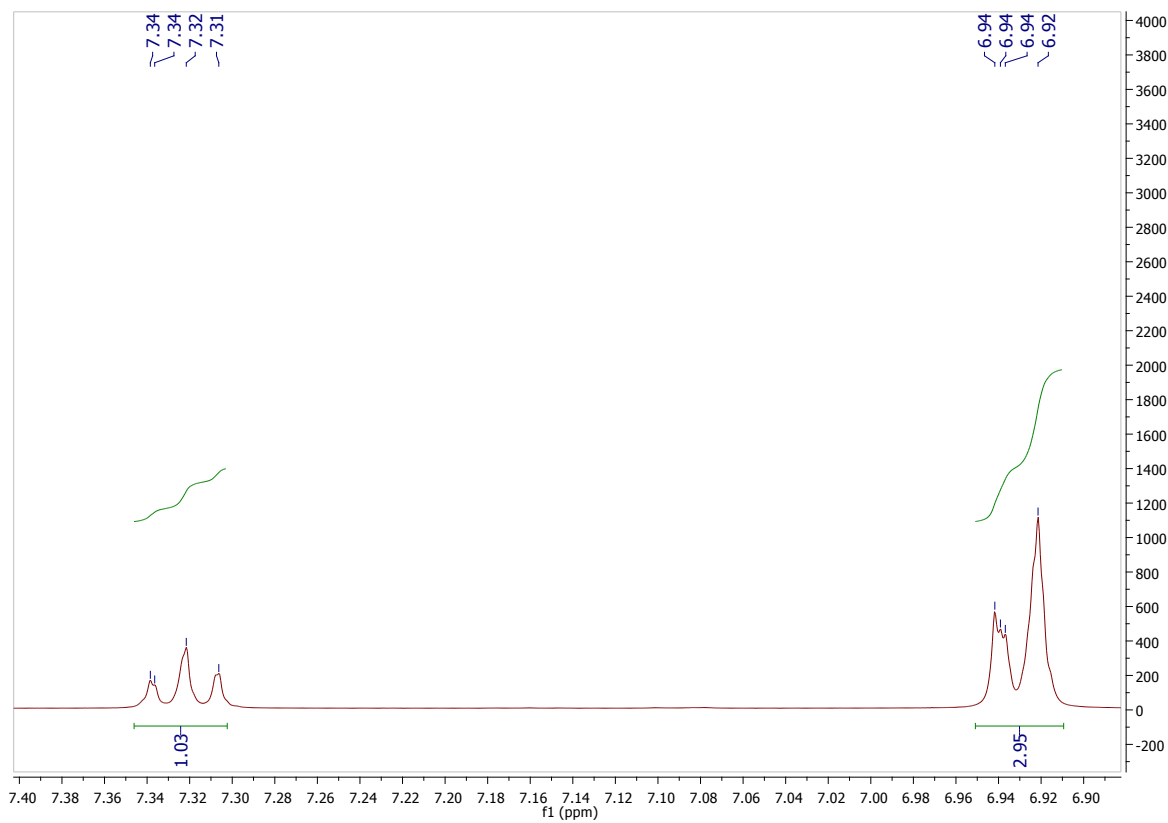


Figure S36 - ^1H NMR Spectra of 2-hydroxy-3-(3-methoxyphenyl)naphthalene-1,4-dione (**10i**)

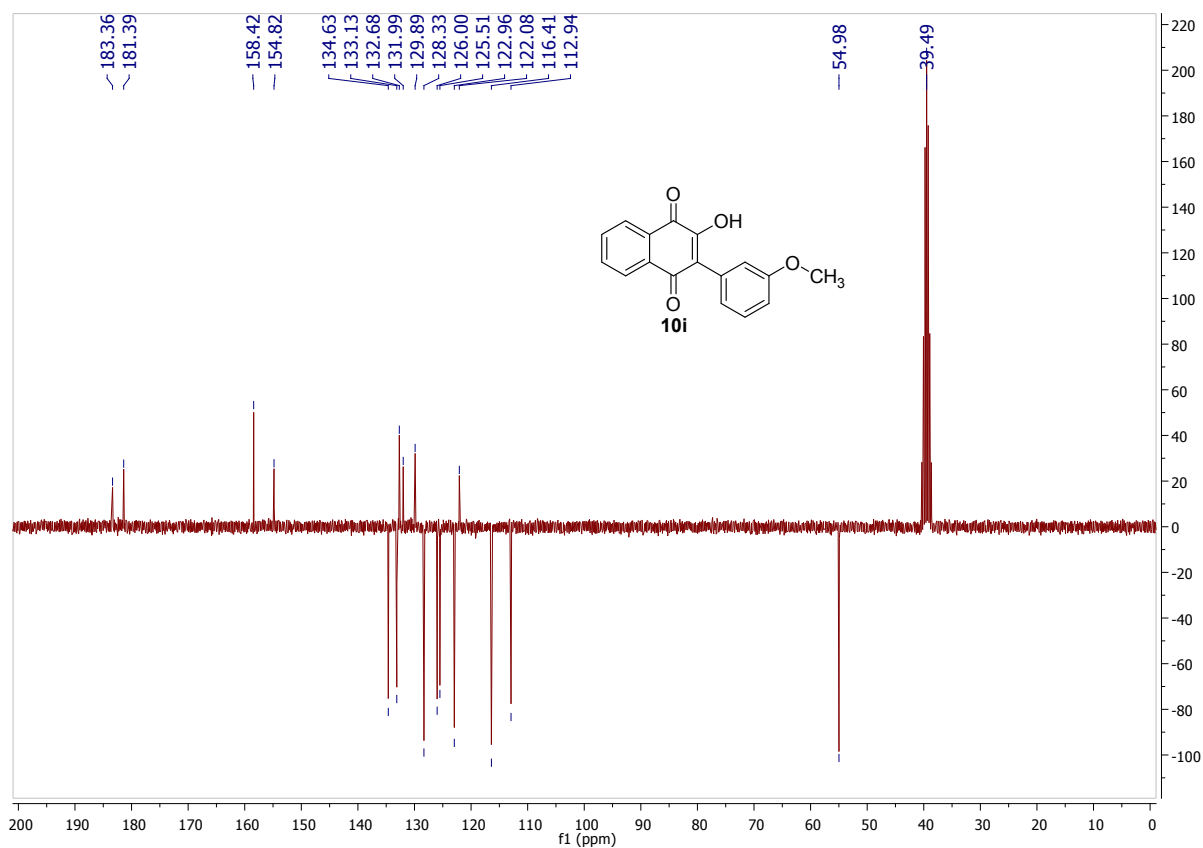


Figure S37 - ^{13}C NMR Spectra of 2-hydroxy-3-(3-methoxyphenyl)naphthalene-1,4-dione (**10i**)

4-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzotrile (10j)

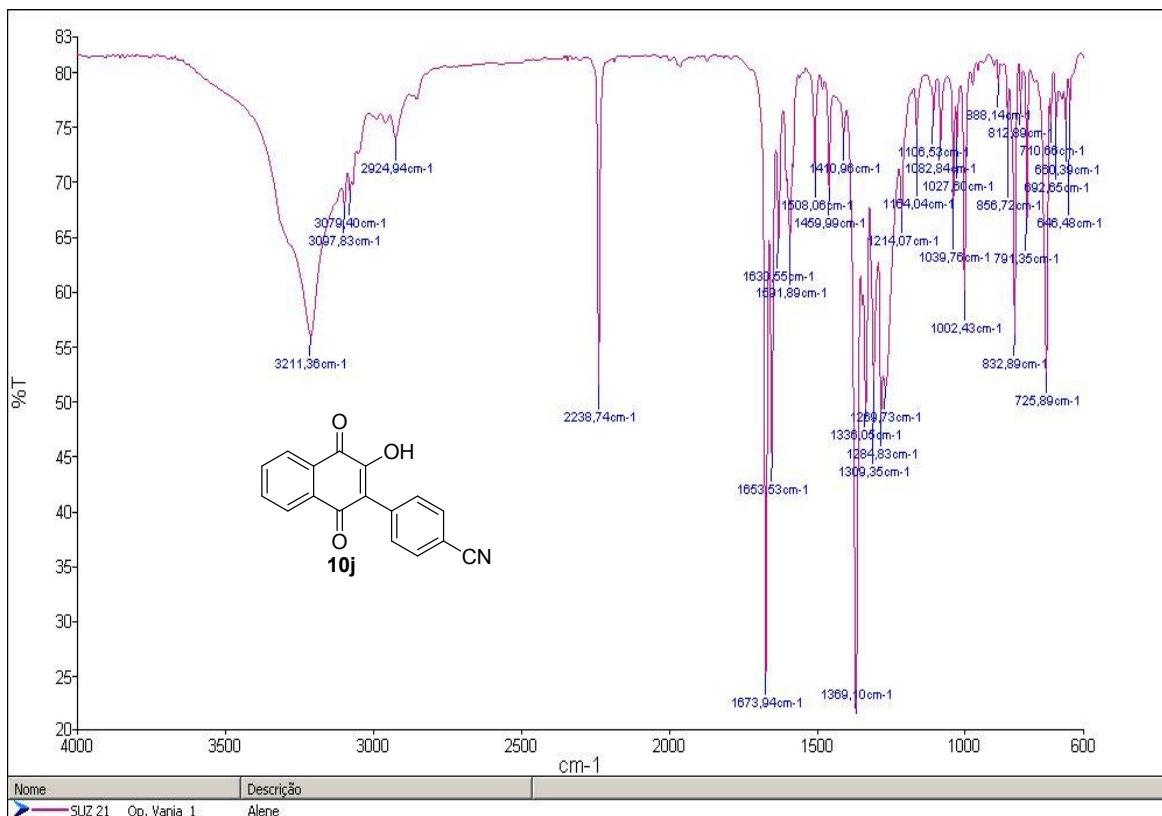
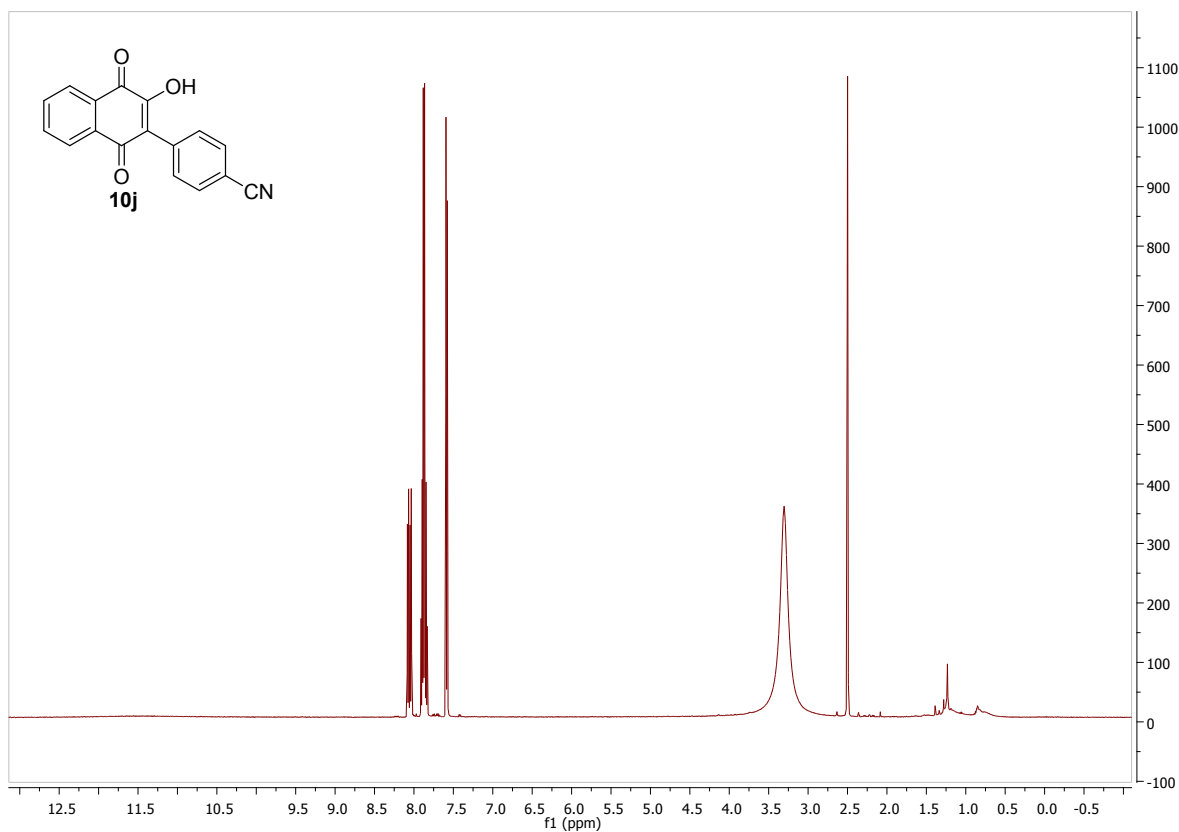


Figure S38 - Infrared spectrum of 4-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzotrile (10j)



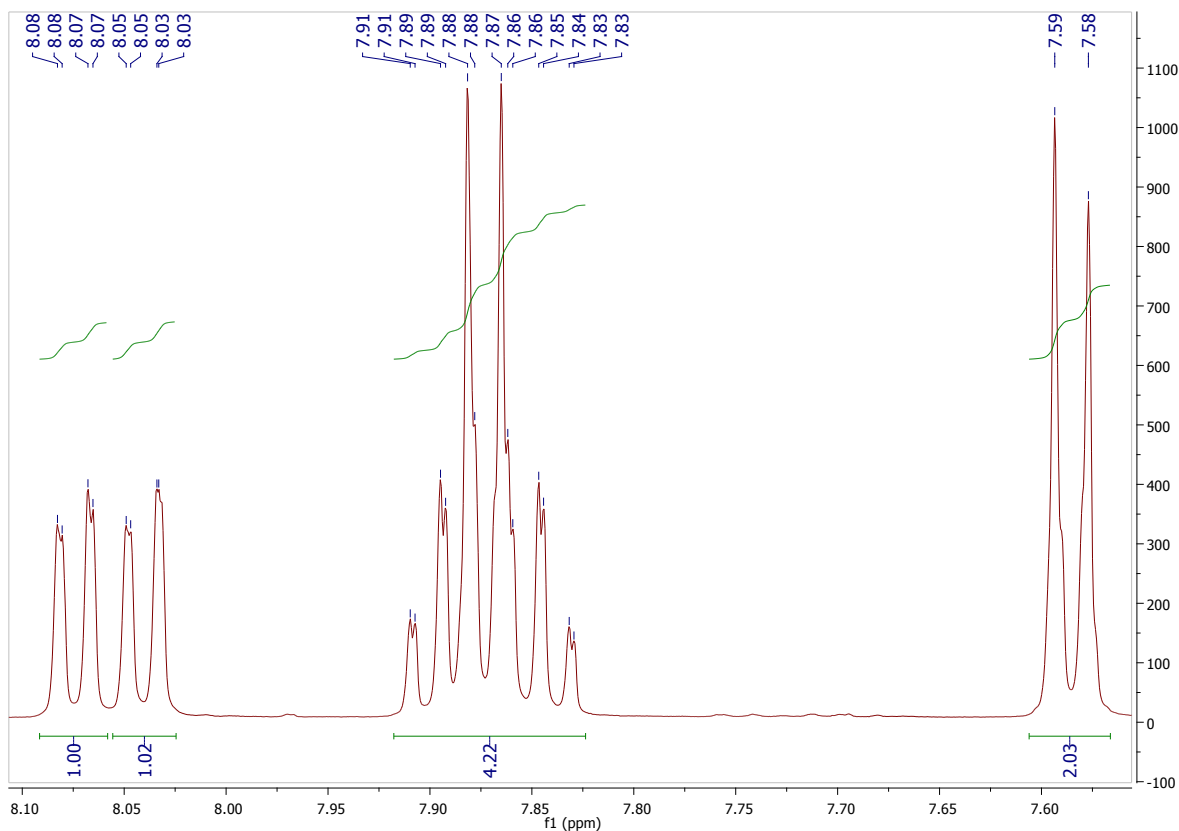


Figure S39 - ^1H NMR Spectra of 4-(3-Hydroxy-1,4-dioxo-1,4-dihydronaphthalen-2-yl)benzotrile (**10j**)

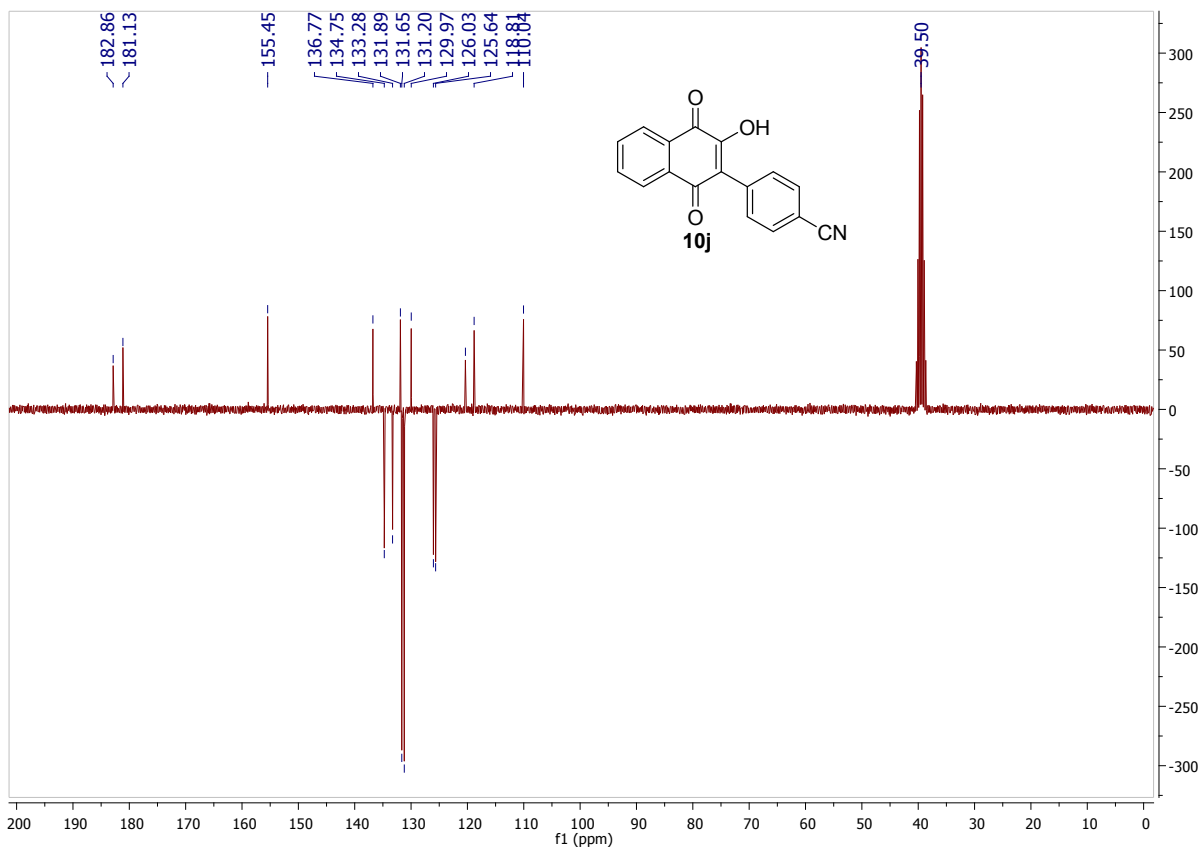


Figure S40 - ^{13}C NMR Spectra of 4-(1,4-dihydro-2-hydroxy-1,4-dioxonphtalen-3-yl)benzotrile (**10j**)

2-Hydroxy-3-(*p*-tolyl)naphthalene-1,4-dione (10k)

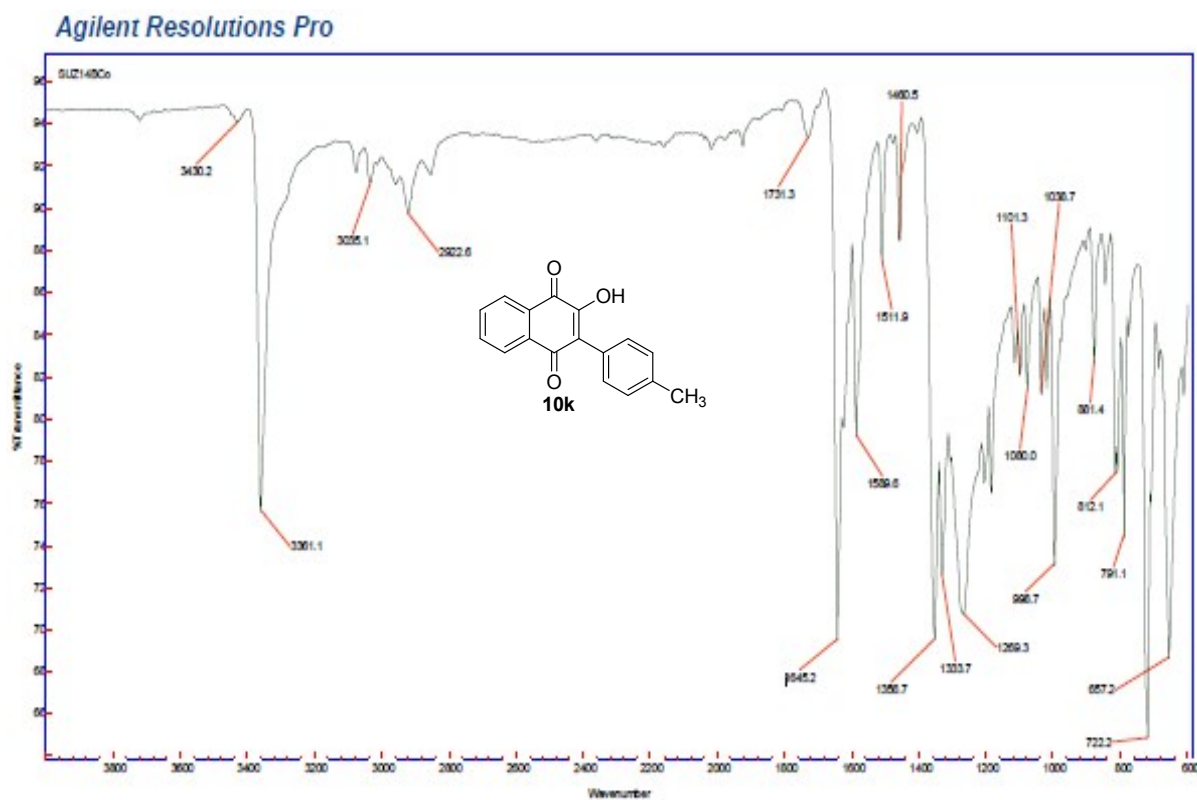
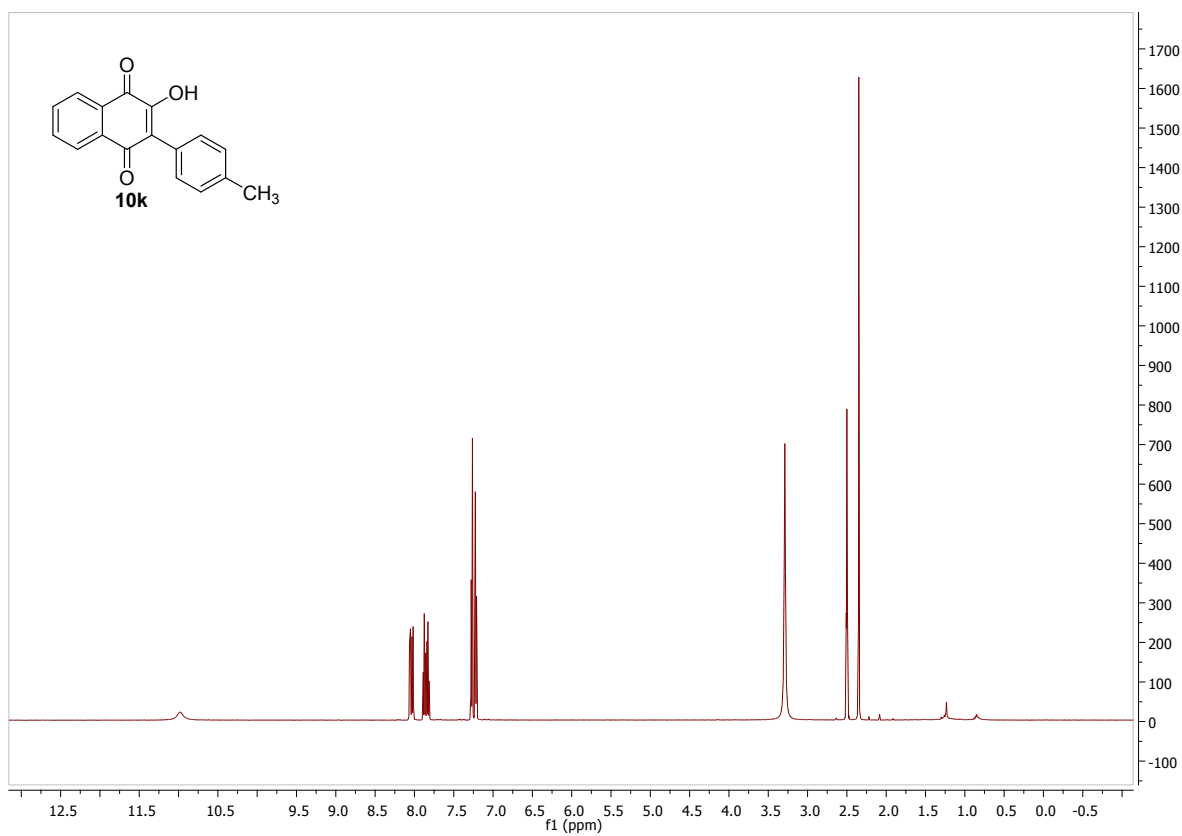


Figure S41 - Infrared spectrum of 2-Hydroxy-3-(*p*-tolyl)naphthalene-1,4-dione (10k)



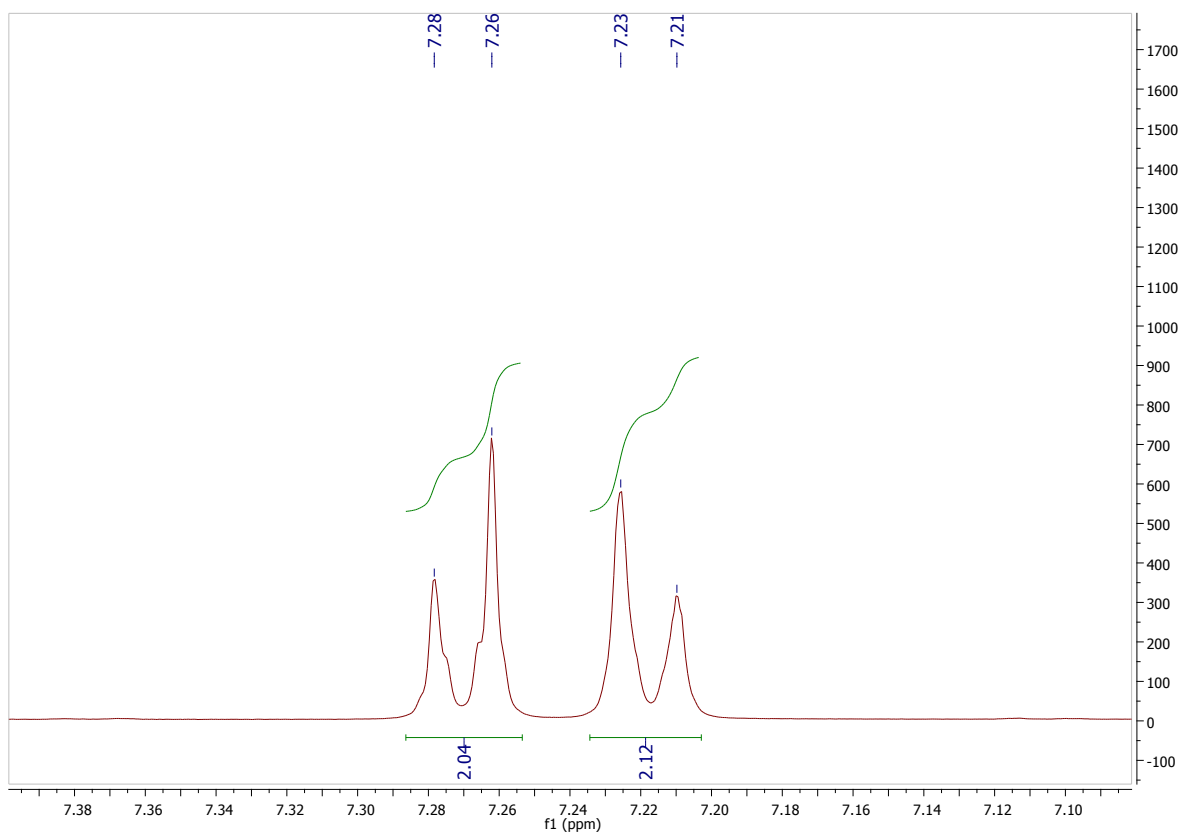
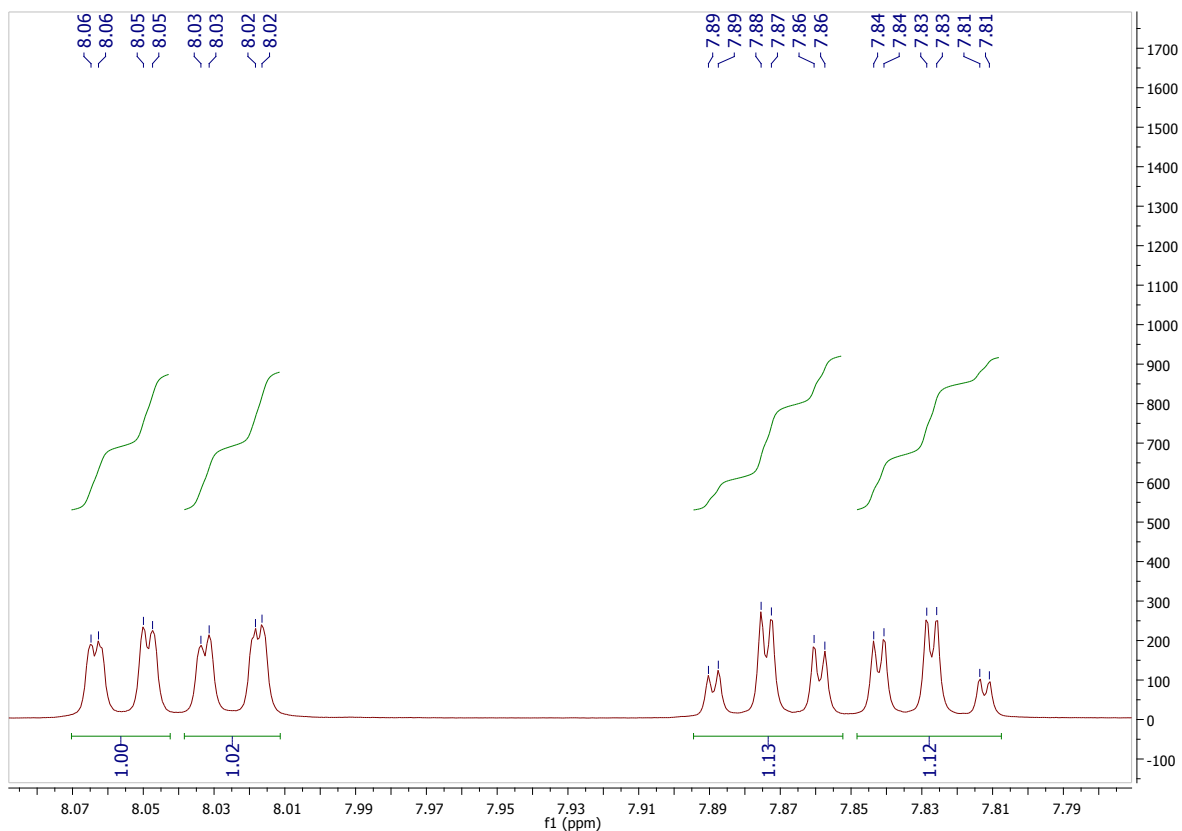


Figure S42 - ^1H NMR Spectra of 2-Hydroxy-3-(*p*-tolyl)naphthalene-1,4-dione (**10k**)

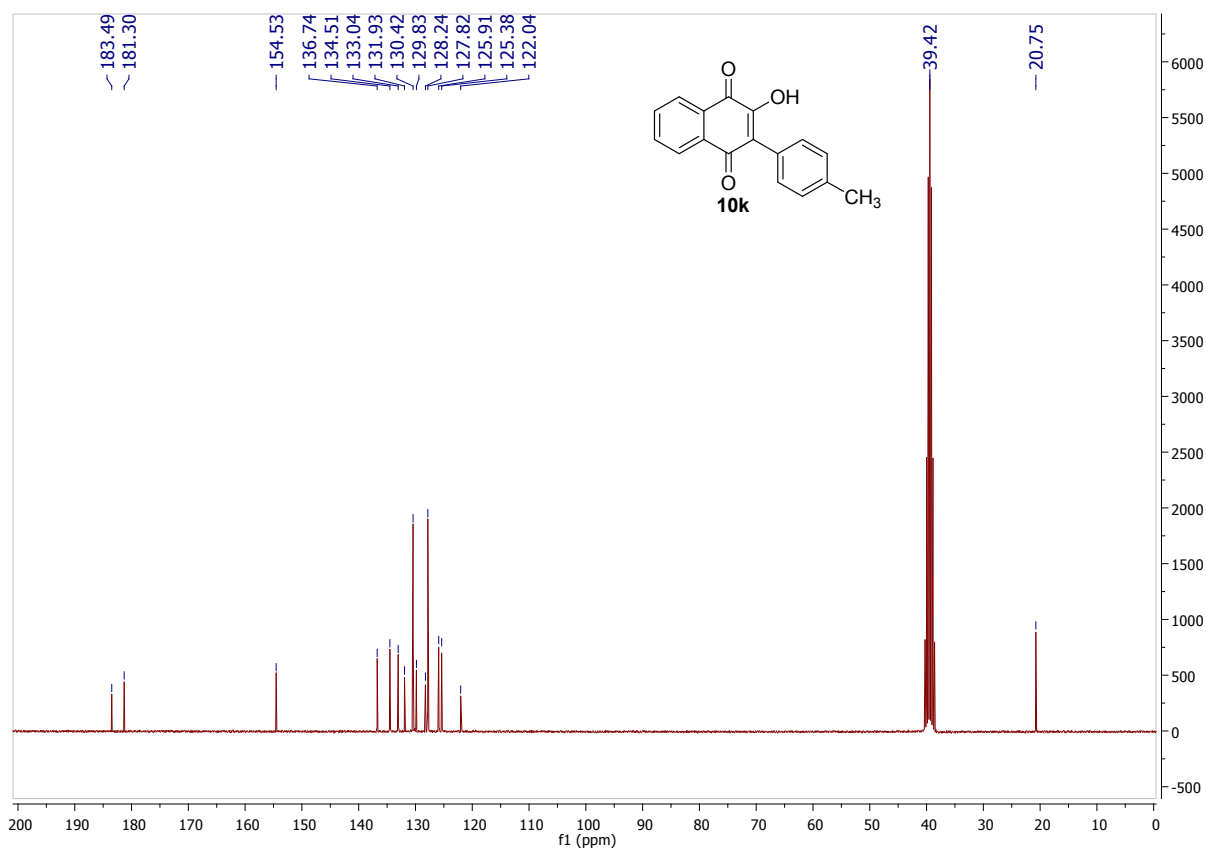


Figure S43 - ¹³C NMR Spectra of 2-Hydroxy-3-(*p*-tolyl)naphthalene-1,4-dione (**10k**)

2-Amino-3-phenylnaphthalene-1,4-dione (**11**)

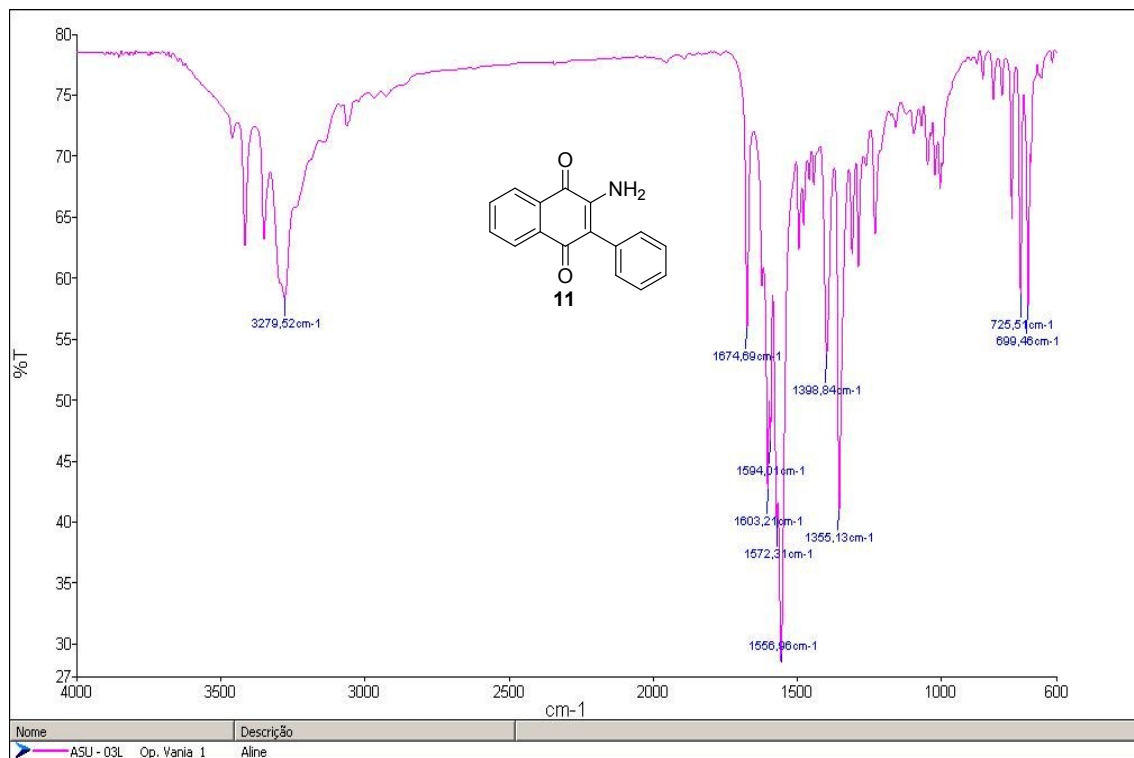
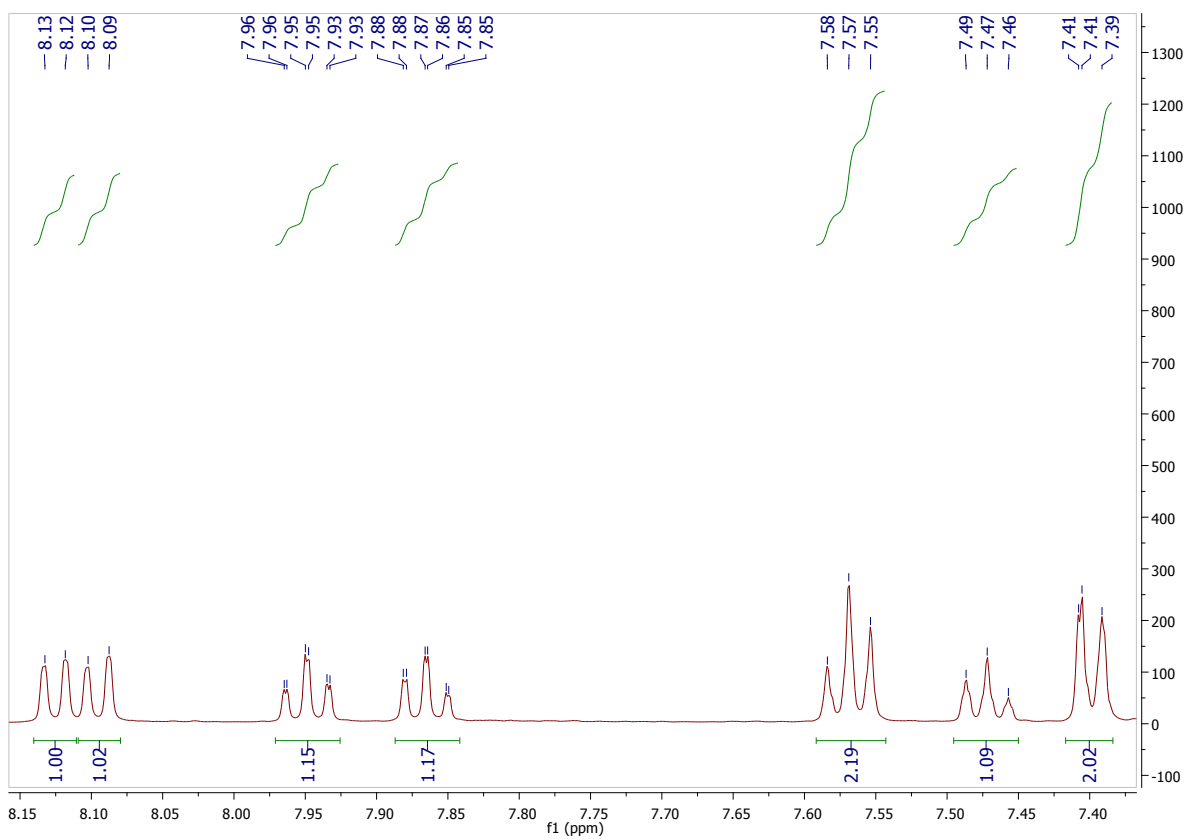
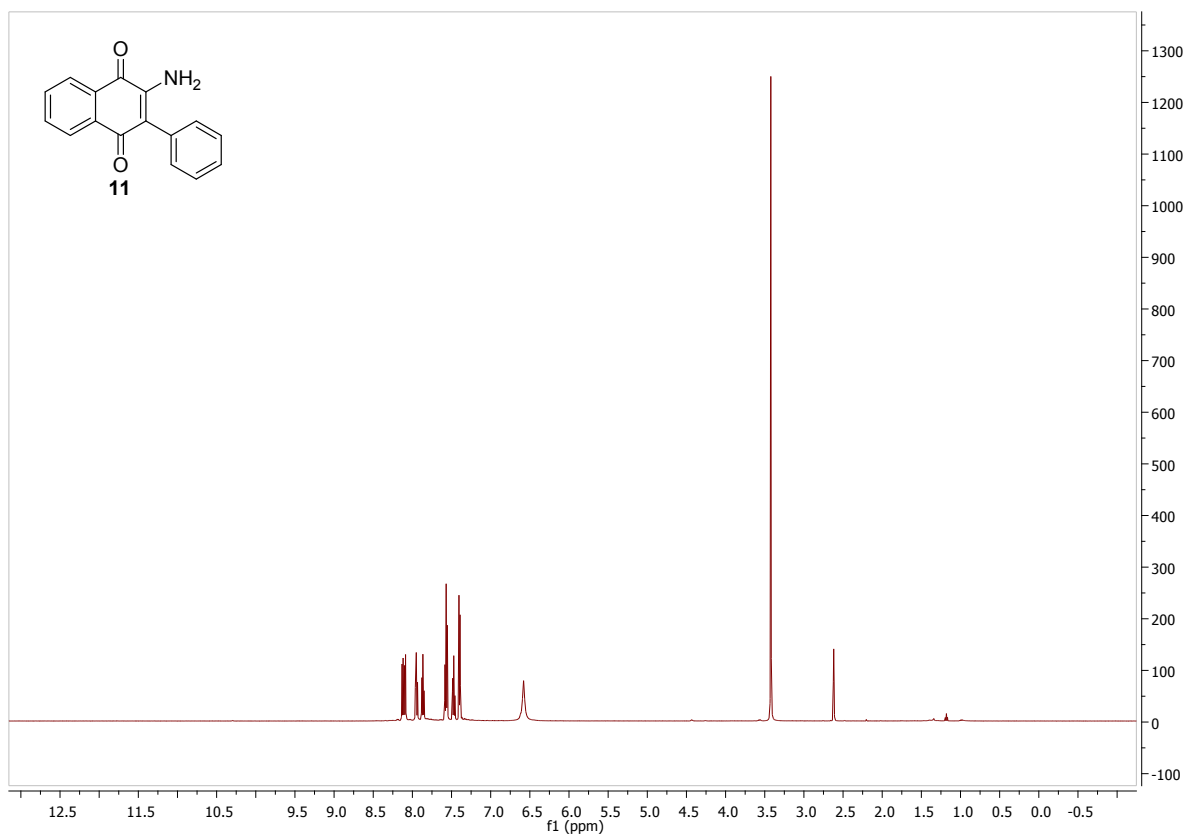


Figure S44 - Infrared spectrum of 2-amino-3-phenylnaphthalene-1,4-dione (**11**)



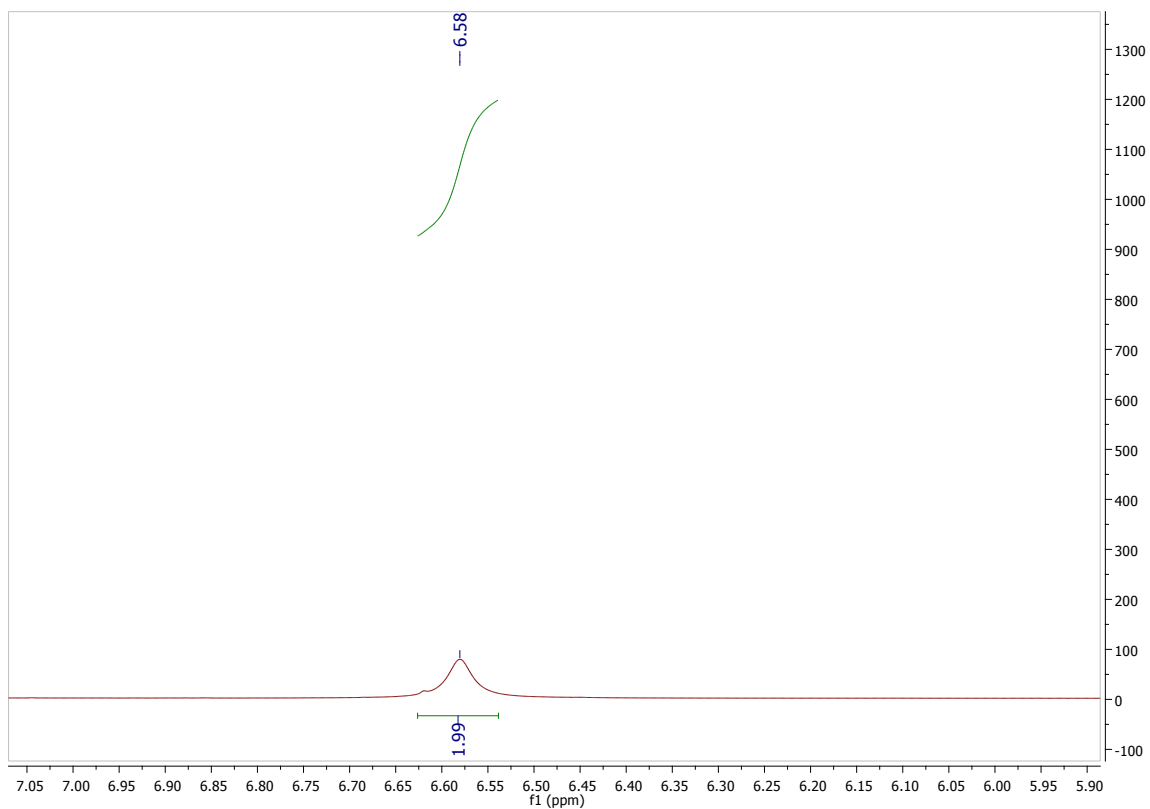


Figure S45 - ^1H NMR Spectra of 2-amino-3-phenylnaphthalene-1,4-dione (**11**)

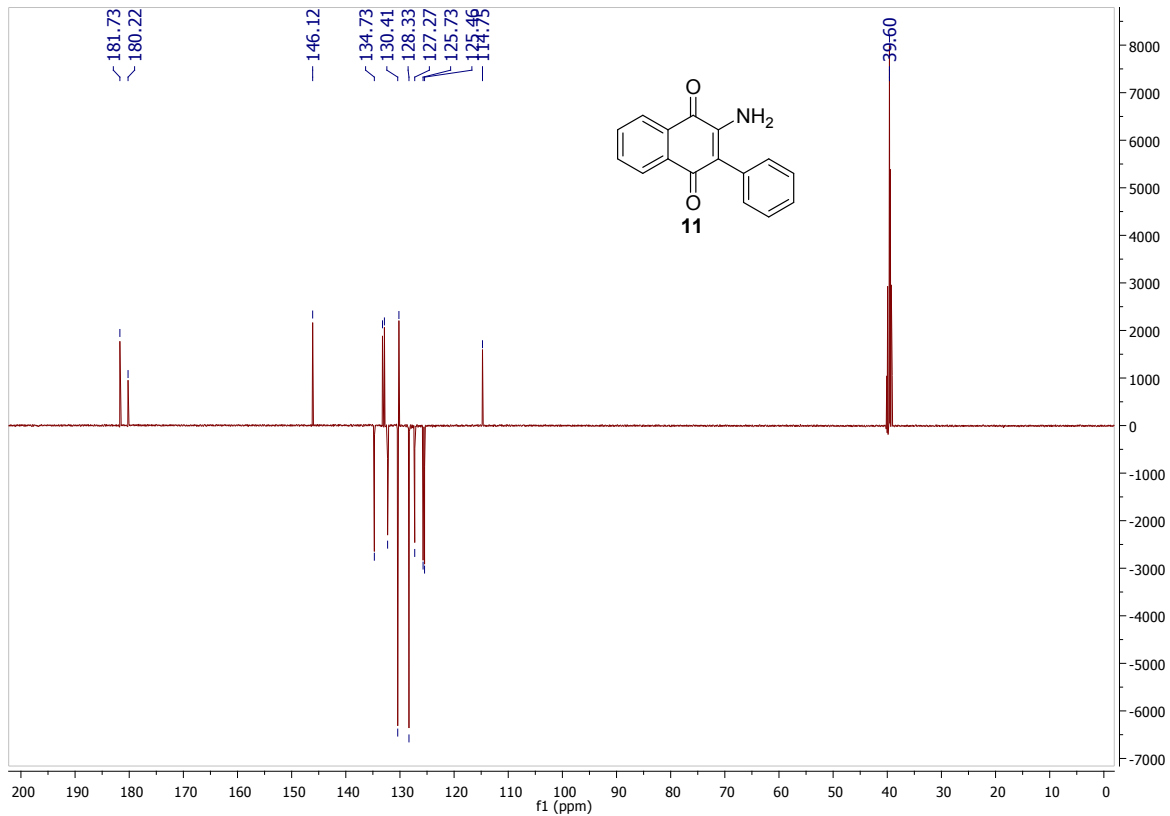


Figure S46 - ^{13}C NMR Spectra of 2-amino-3-phenylnaphthalene-1,4-dione (**11**)