

Catalyst and Solvent-Free alkylation of Quinoline *N*-oxide with olefins: Direct Access to Quinoline Substituted α -Hydroxy Carboxylic Derivatives

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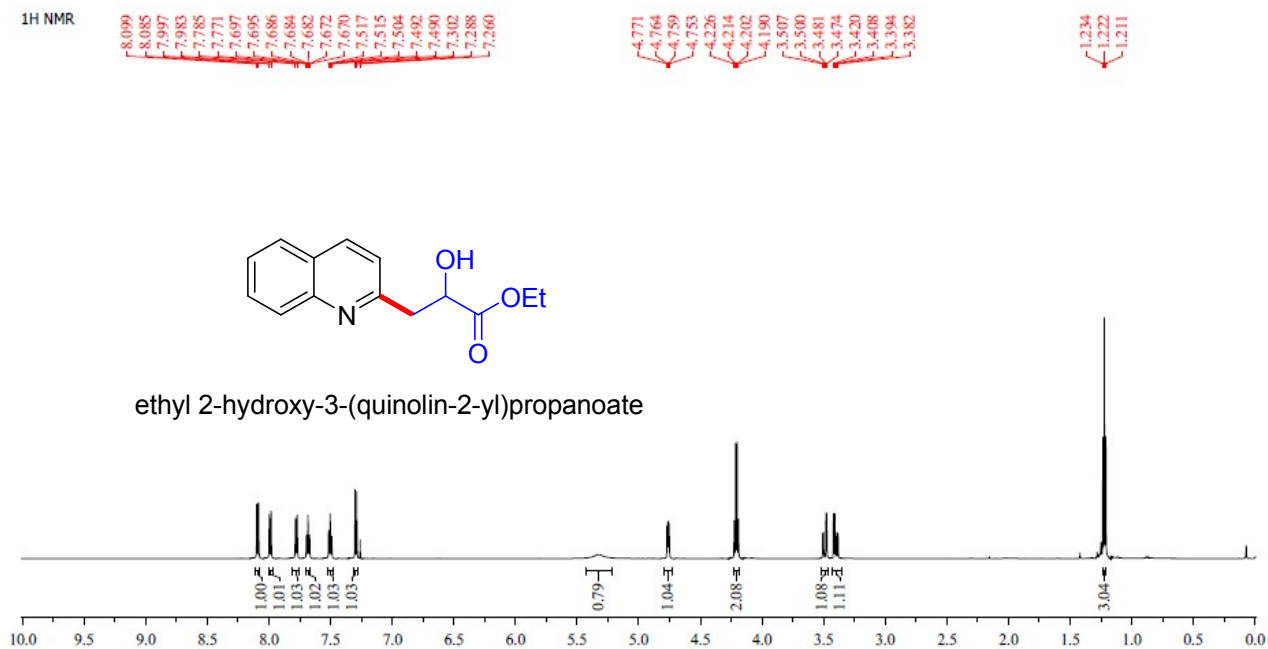
Supporting Information

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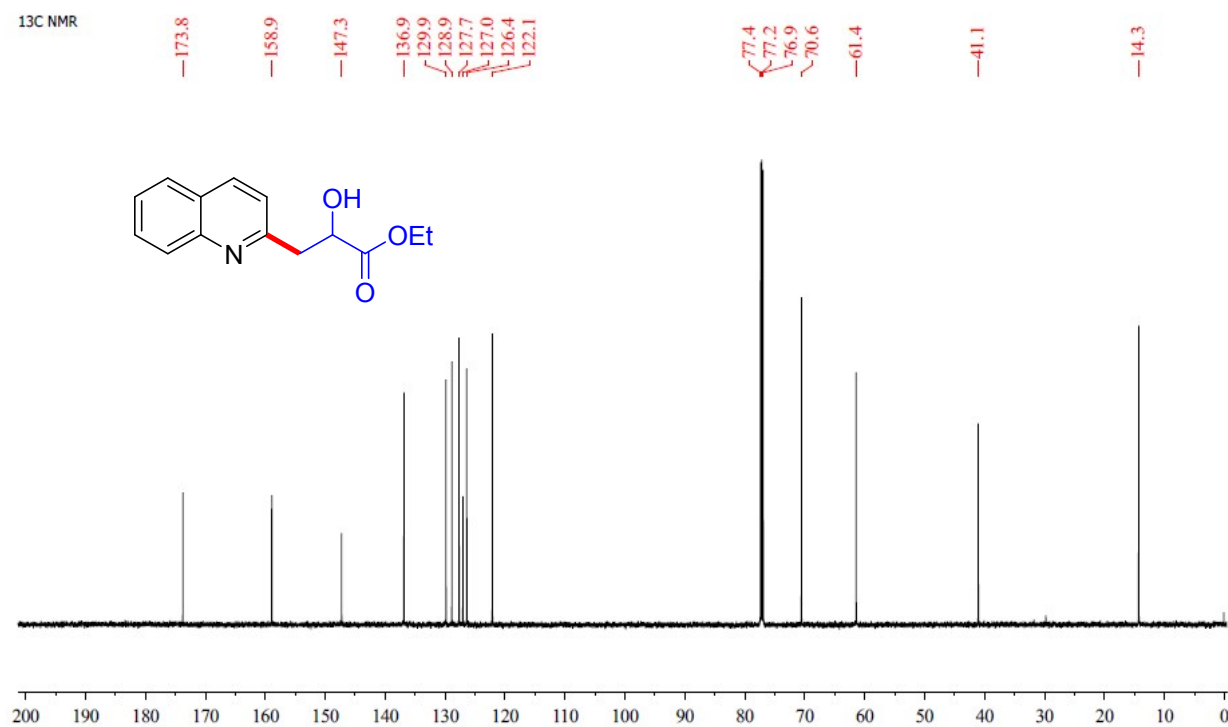
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1 Spectral data for quinoline *N*-oxides reaction with acrylate
ethyl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2, entry 3a)

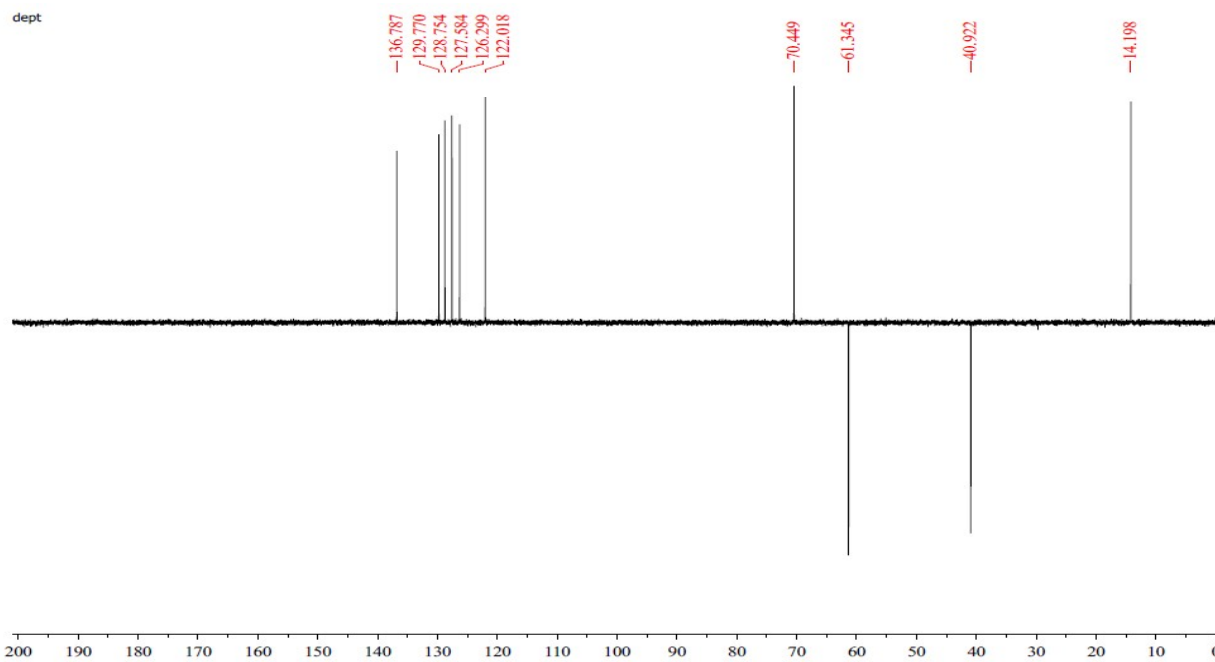
¹H NMR (600 MHz, CDCl₃)



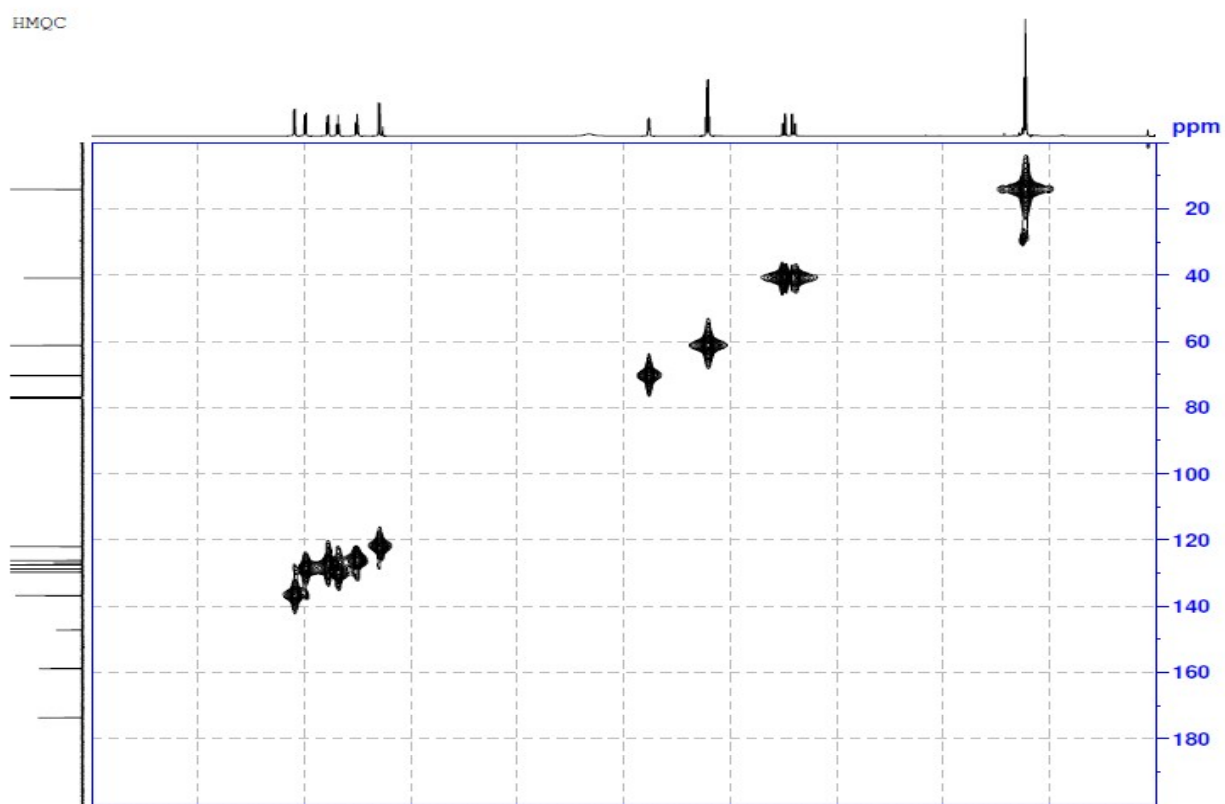
¹³C NMR (150 MHz, CDCl₃)



Dept

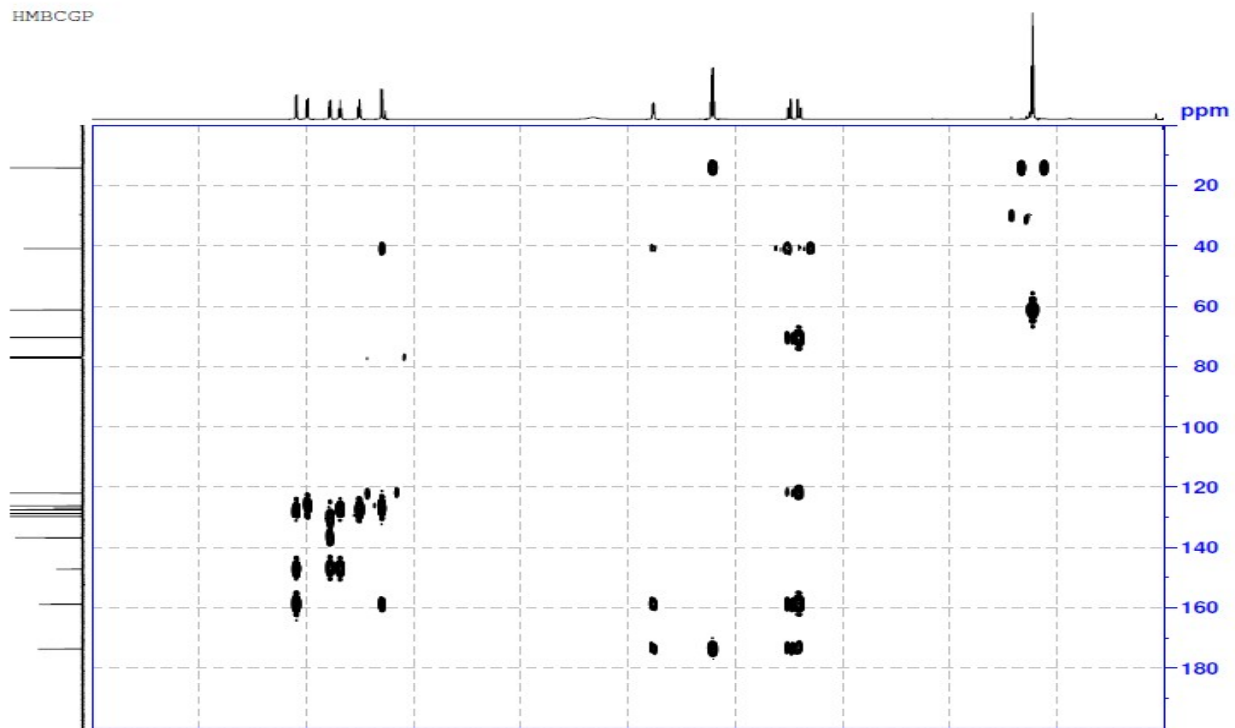


HMQC



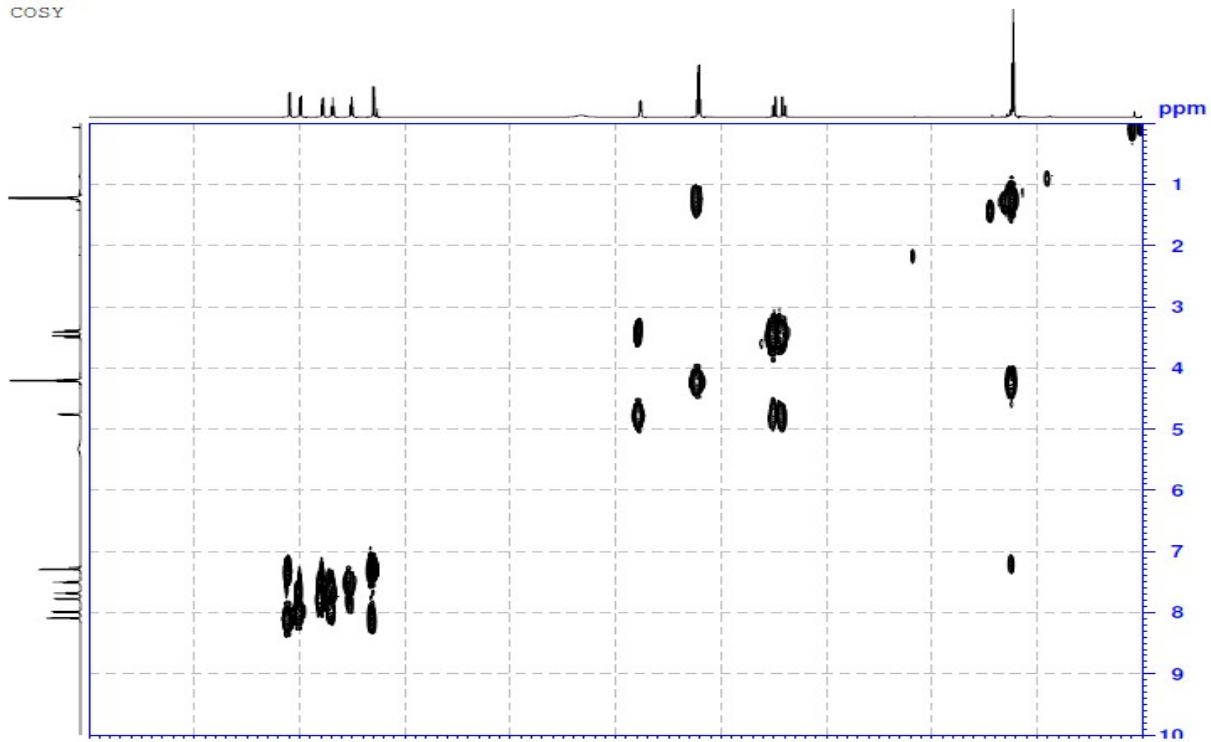
HMBC

HMBCGP



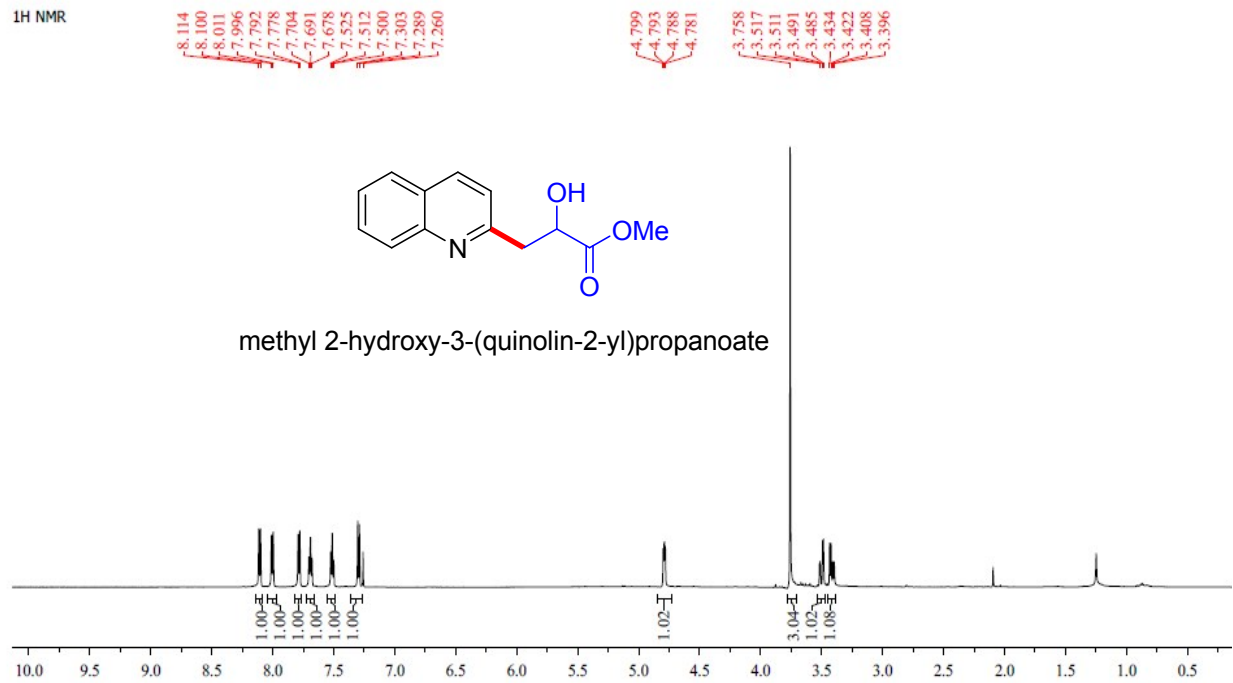
COSY

COSY

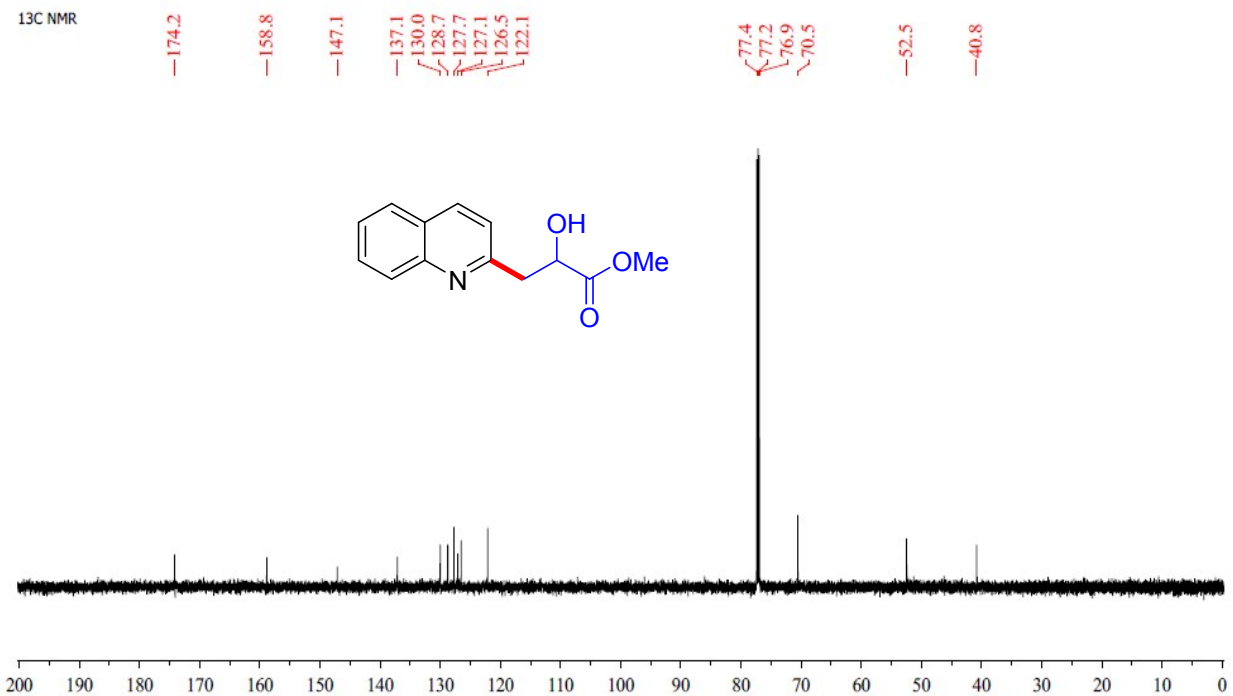


methyl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2, entry 3b)

¹H NMR (600 MHz, CDCl₃)

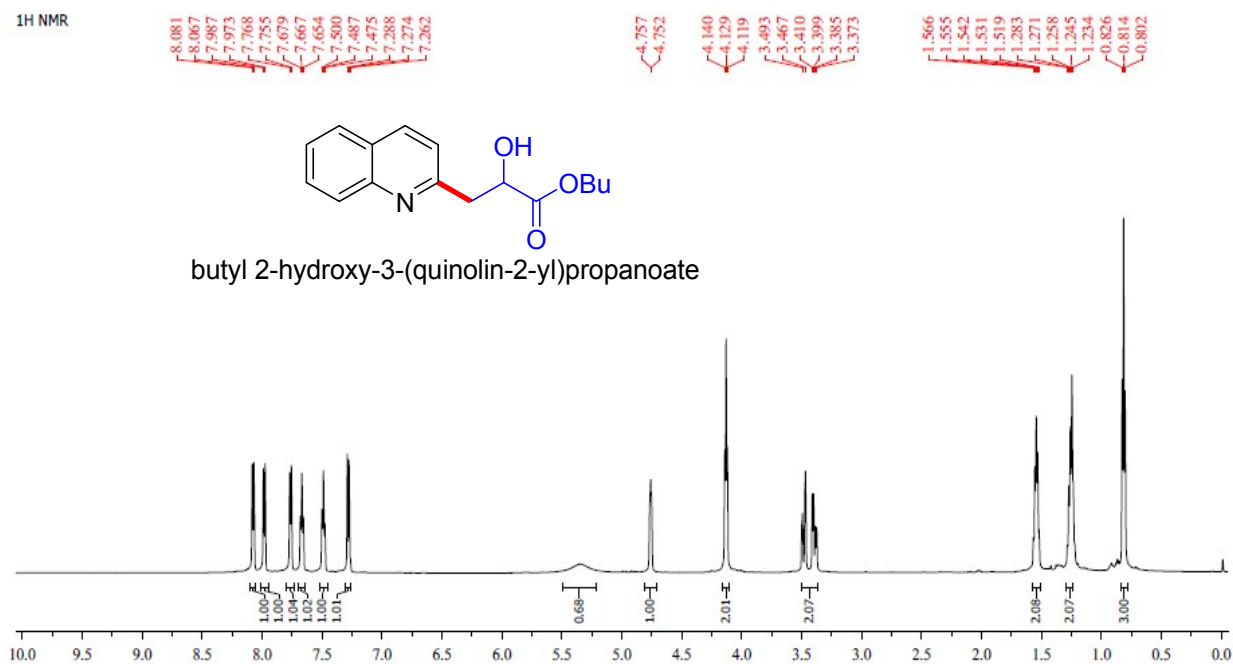


¹³C NMR (150 MHz, CDCl₃)

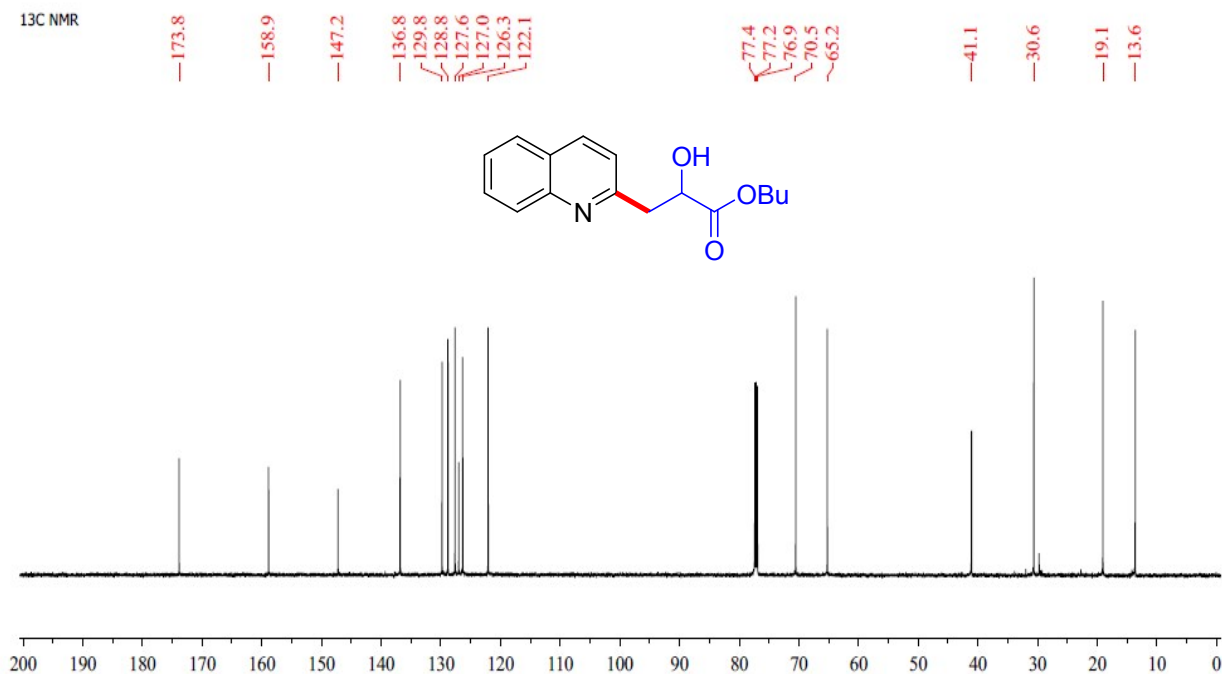


butyl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2, entry 3c)

$^1\text{H NMR}$ (600 MHz, CDCl_3)

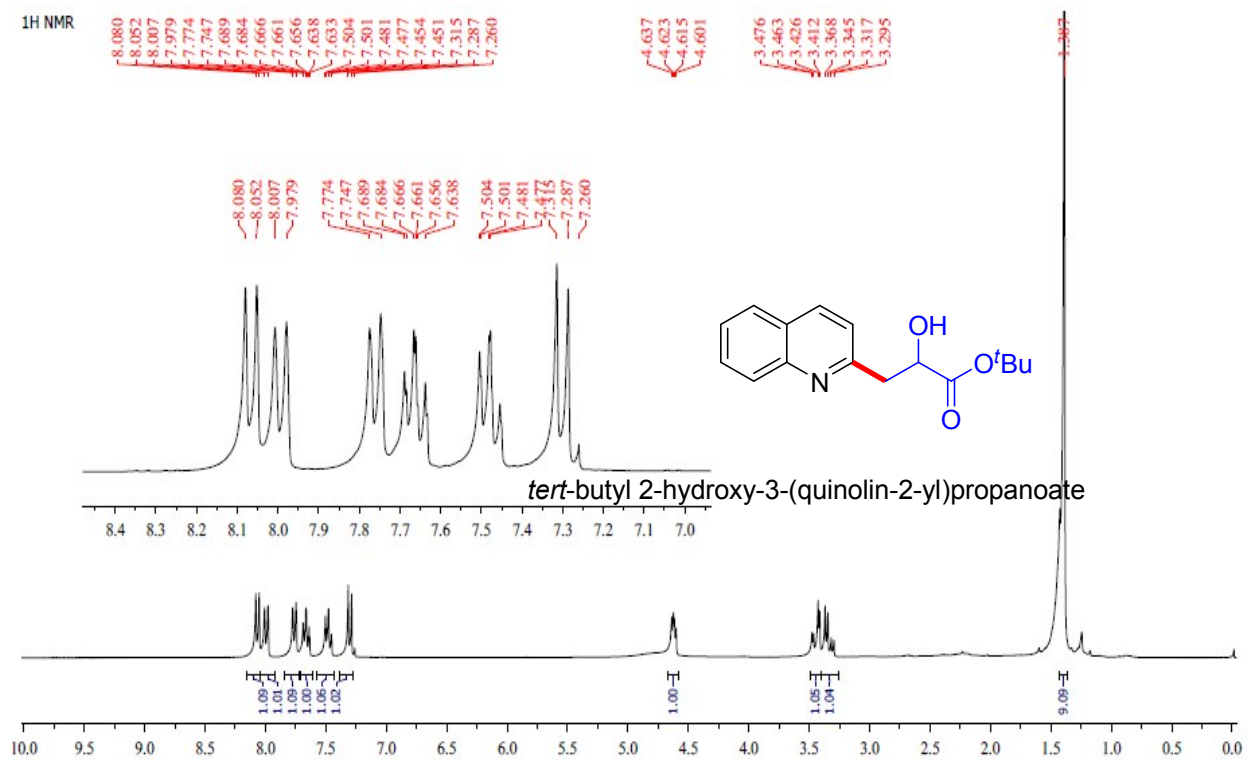


$^{13}\text{C NMR}$ (150 MHz, CDCl_3)

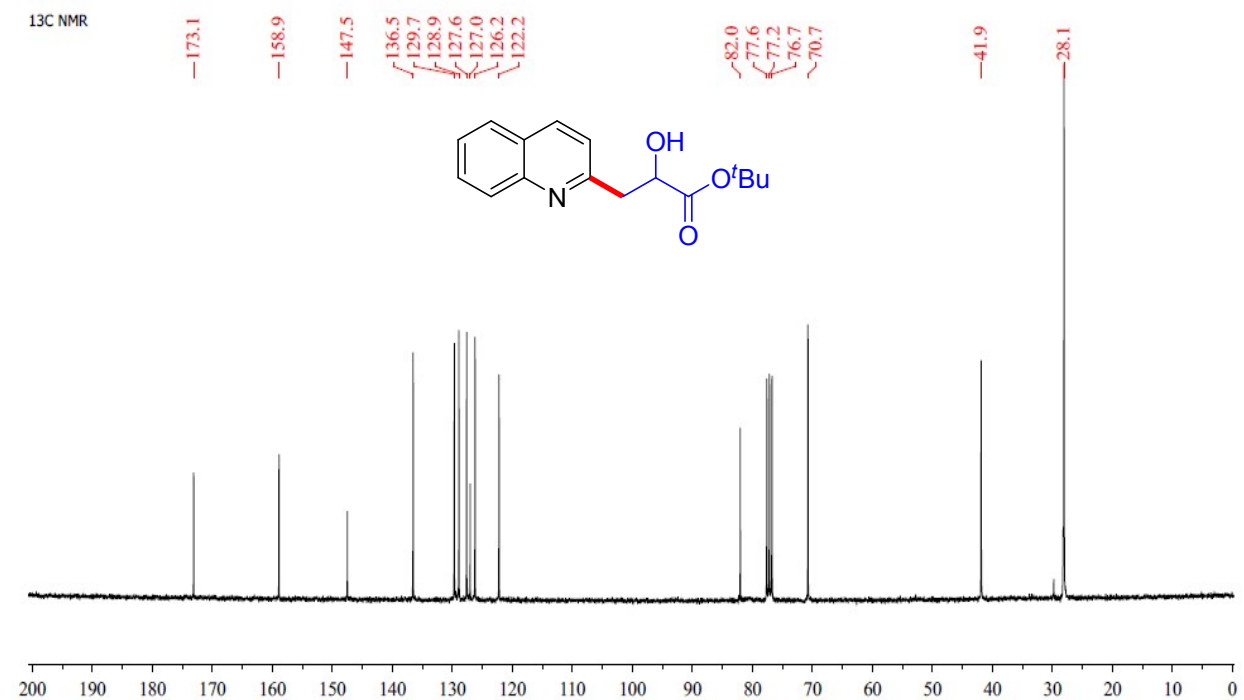


***tert*-butyl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2, entry 3d)**

¹H NMR (300 MHz, CDCl₃)

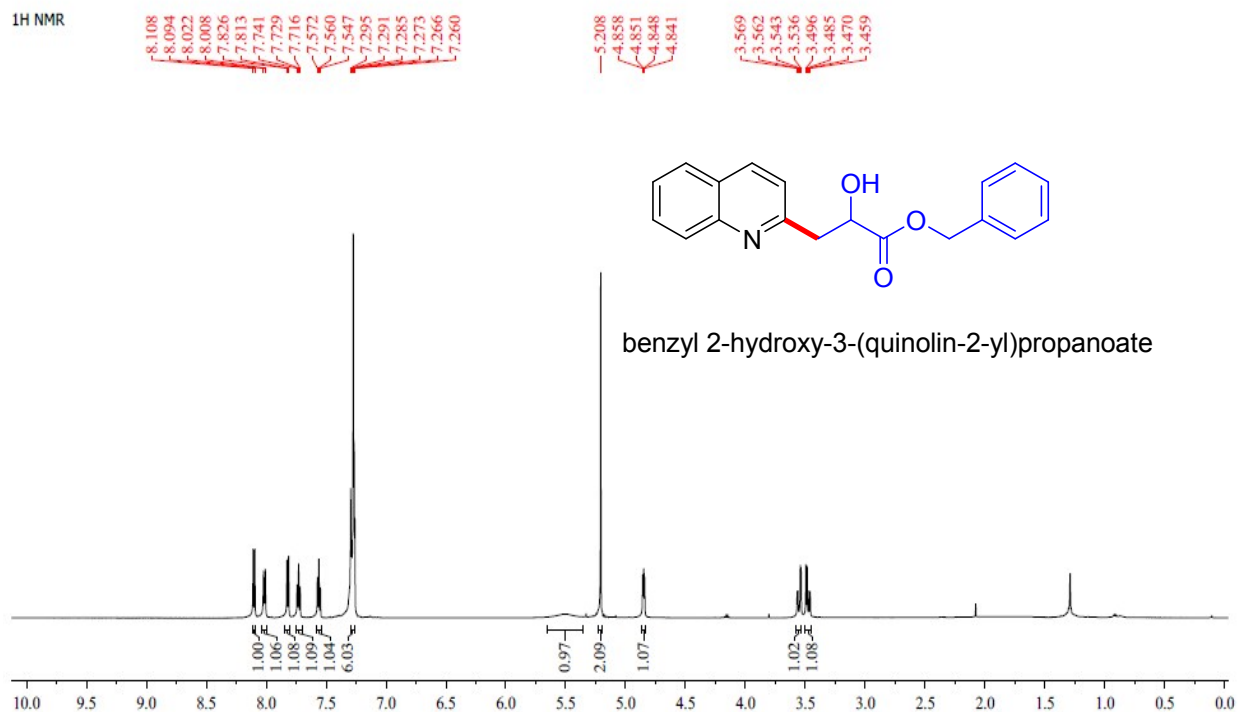


¹³C NMR (75 MHz, CDCl₃)

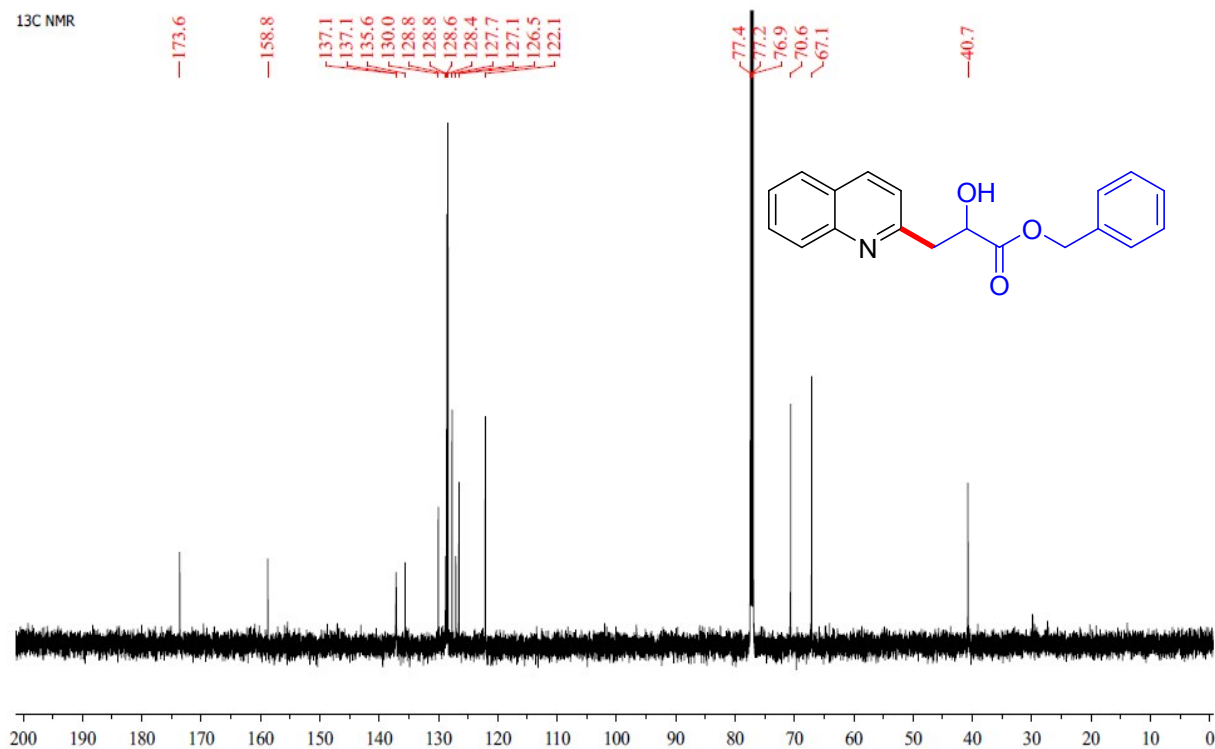


benzyl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2 , entry 3e)

¹H NMR (600 MHz, CDCl₃)

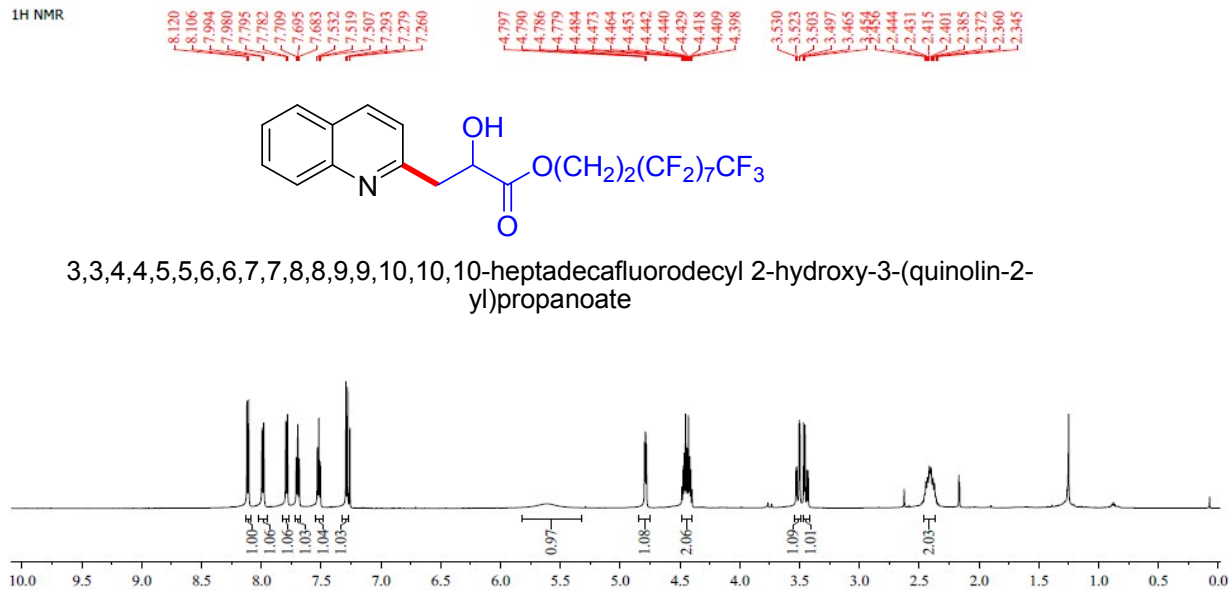


¹³C NMR (75 MHz, CDCl₃)

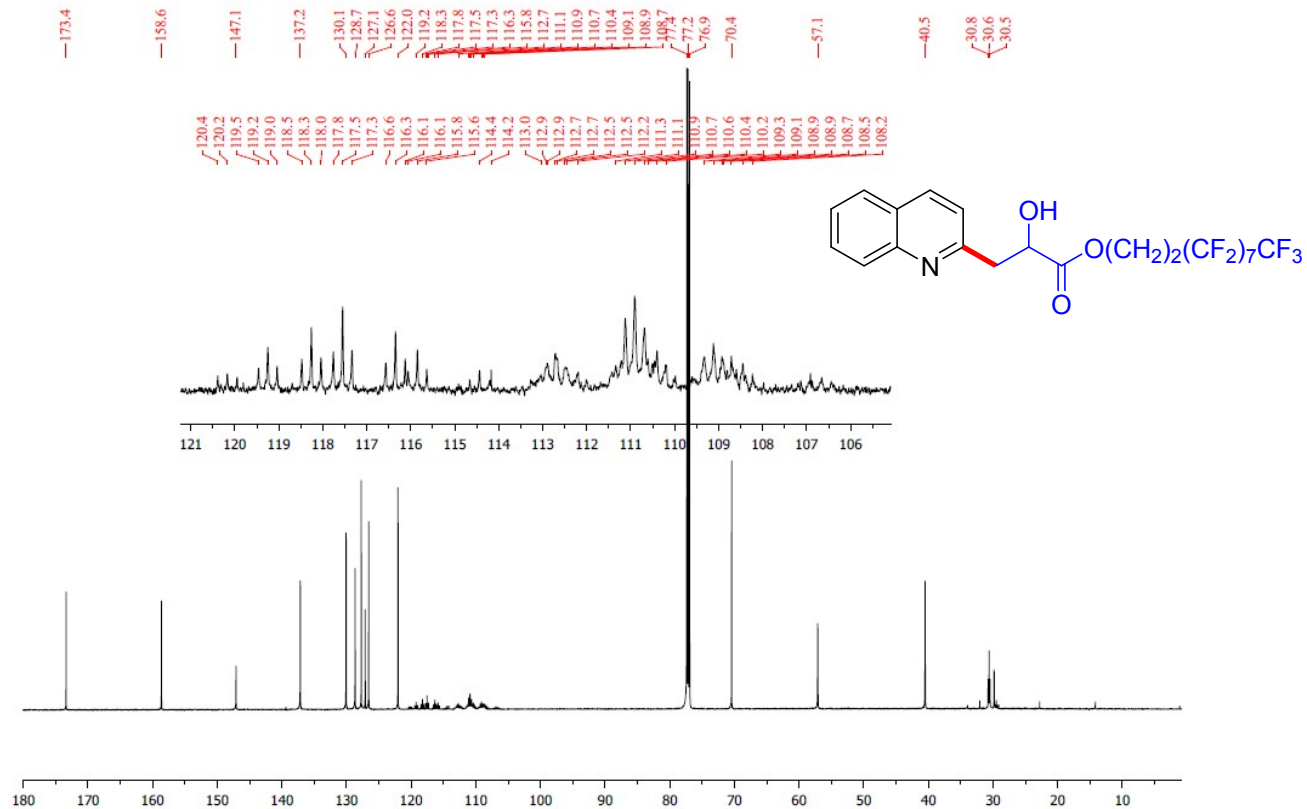


3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2, entry 3f)

¹H NMR (600 MHz, CDCl₃)

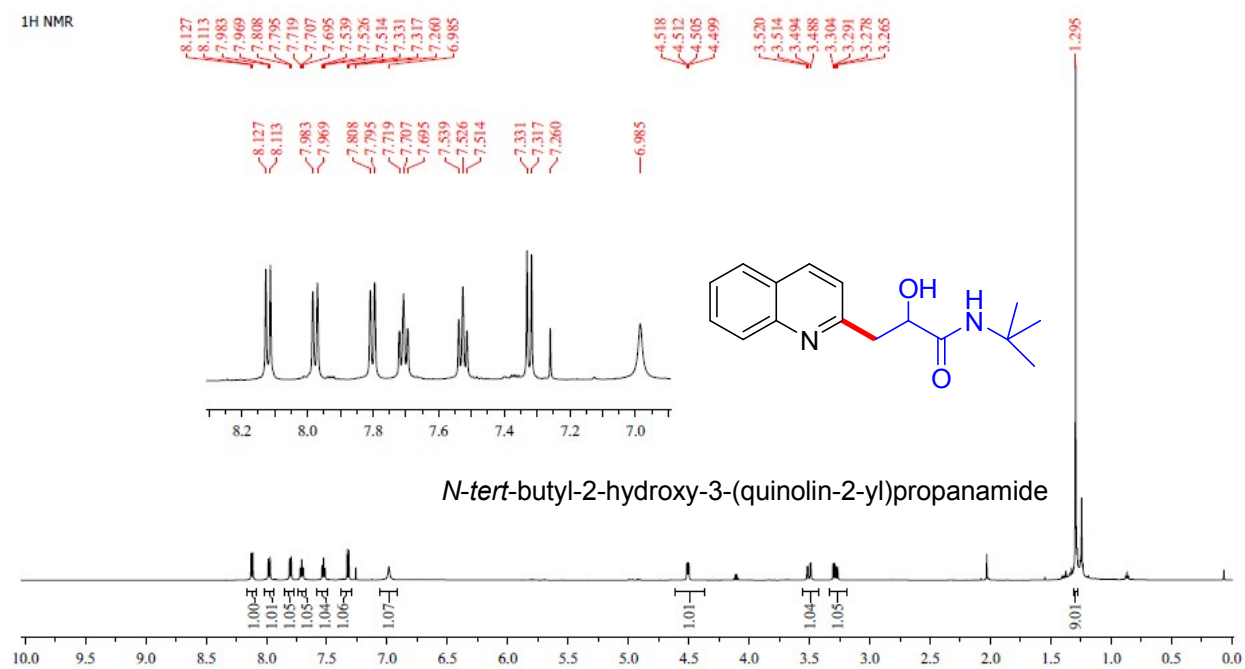


¹³C NMR (150 MHz, CDCl₃)

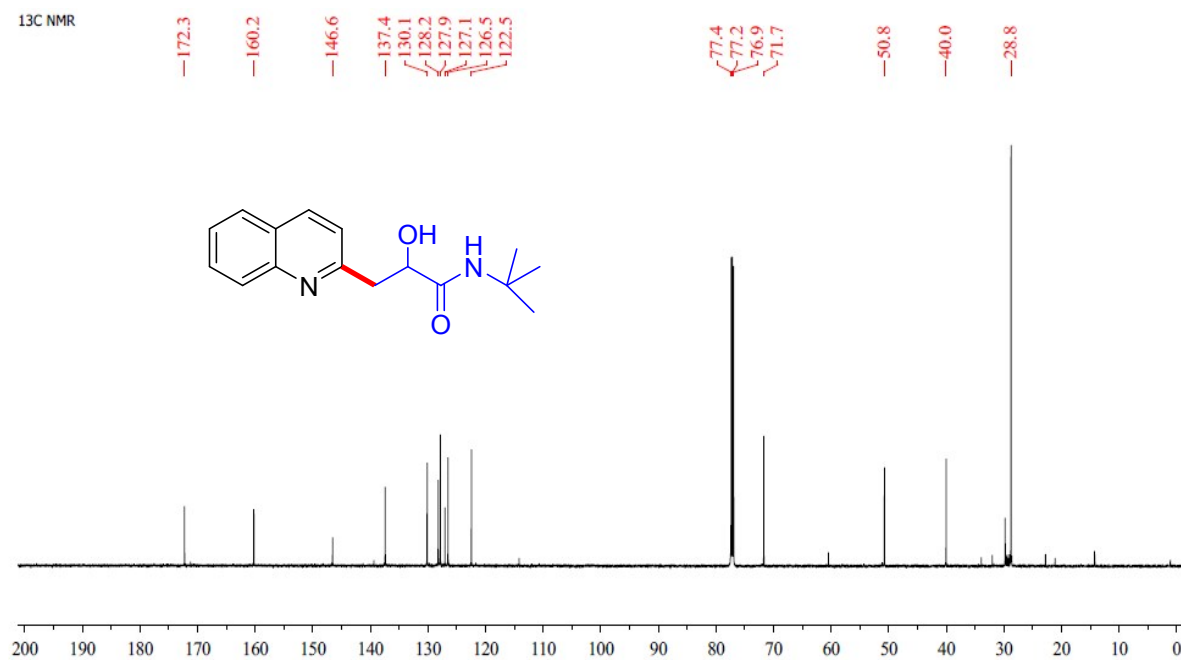


N-tert-butyl-2-hydroxy-3-(quinolin-2-yl)propanamide (Table 2, entry 3g)

¹H NMR (600 MHz, CDCl₃)

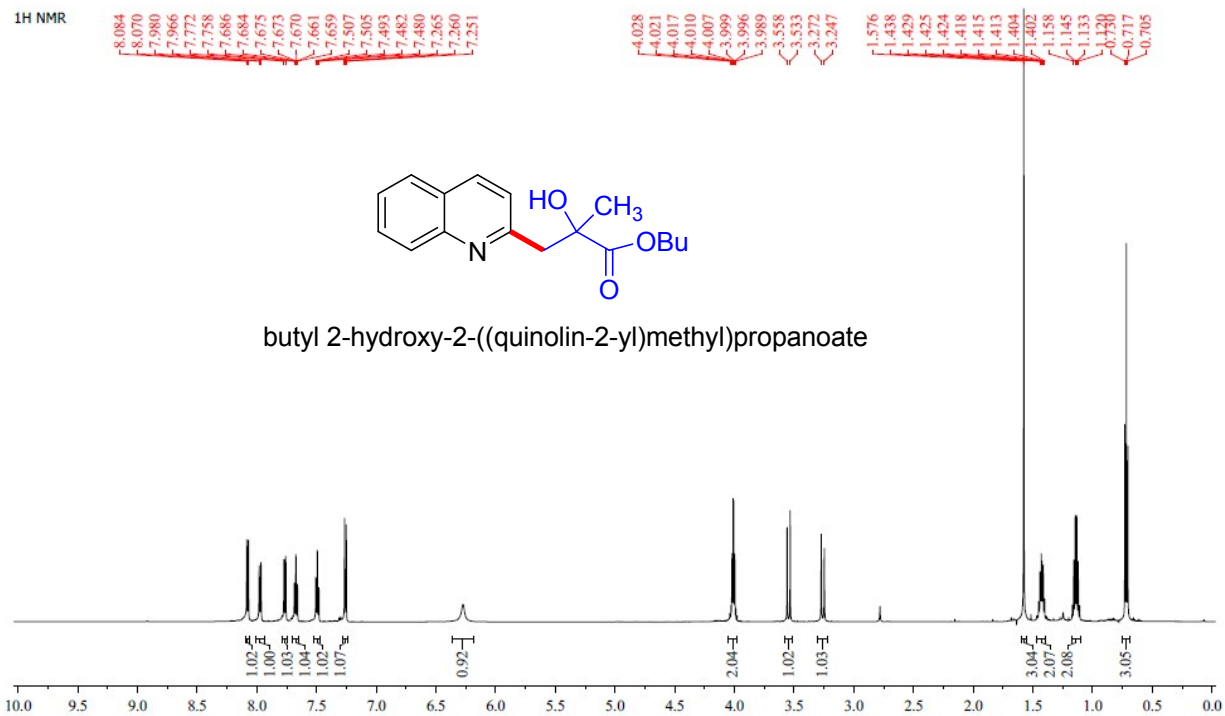


¹³C NMR (150 MHz, CDCl₃)

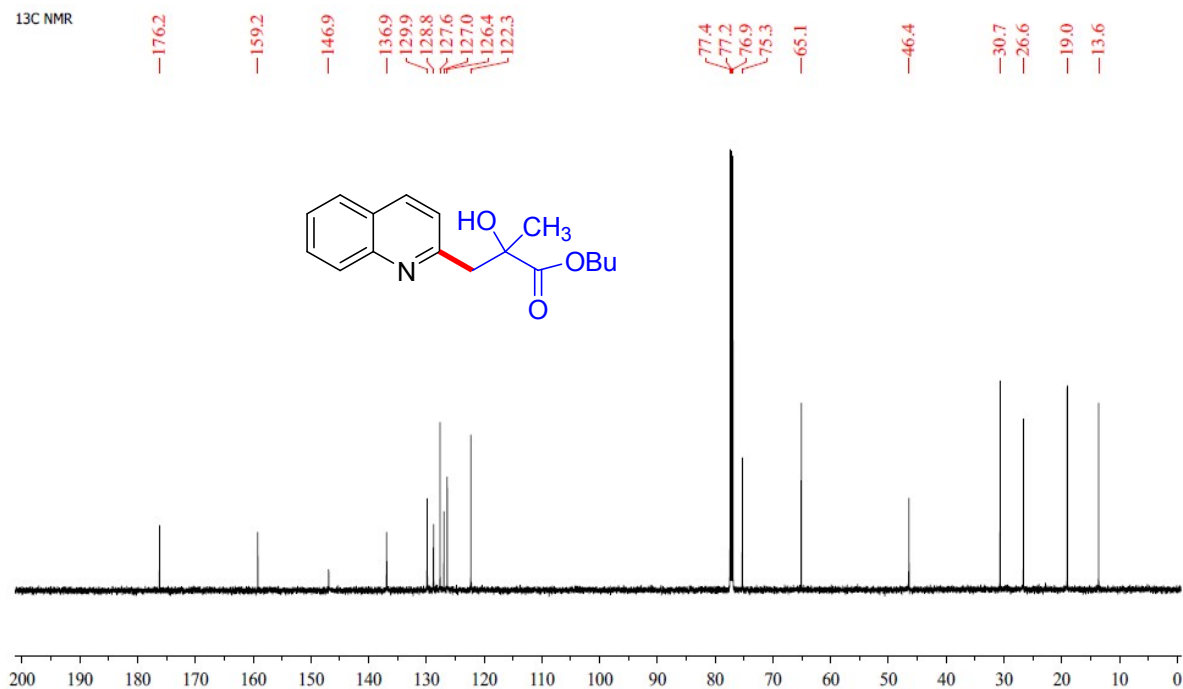


butyl 2-hydroxy-2-(quinolin-2-yl)methylpropanoate (Table 2, entry 3h)

¹H NMR (600 MHz, CDCl₃)

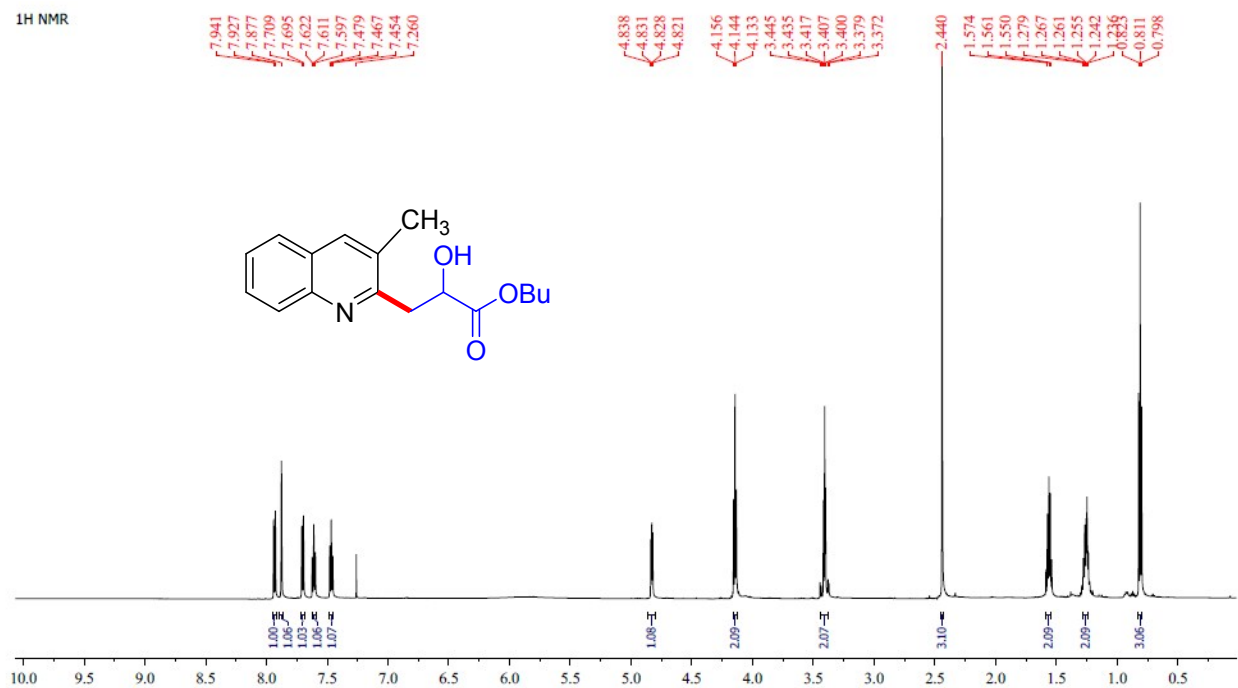


¹³C NMR (150 MHz, CDCl₃)

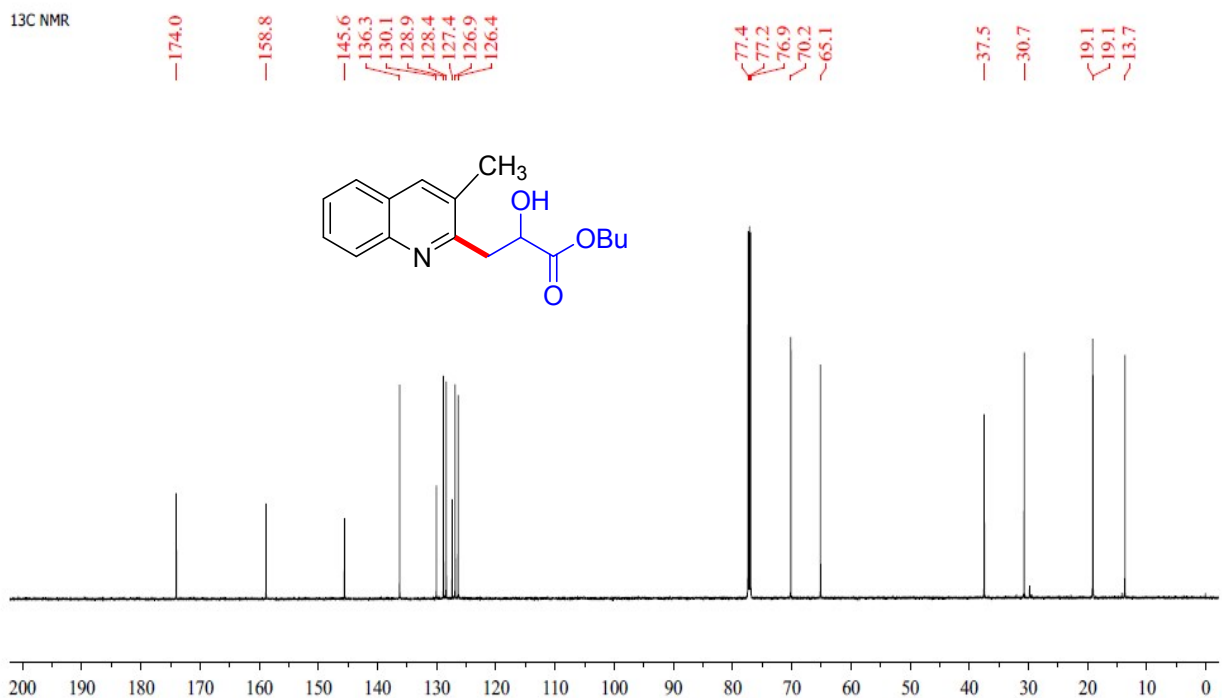


butyl 2-hydroxy-3-(3-methylquinolin-2-yl)propanoate (Table 2, entry 3i)

^1H NMR (600 MHz, CDCl_3)

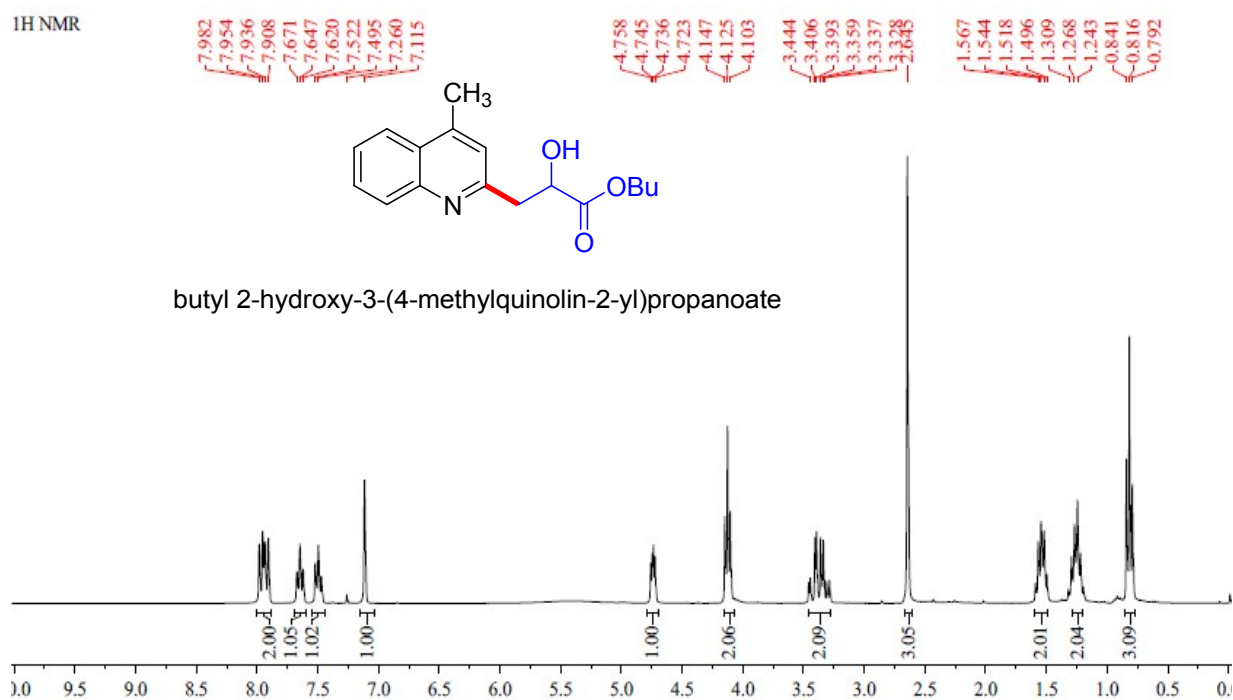


^{13}C NMR (150 MHz, CDCl_3)

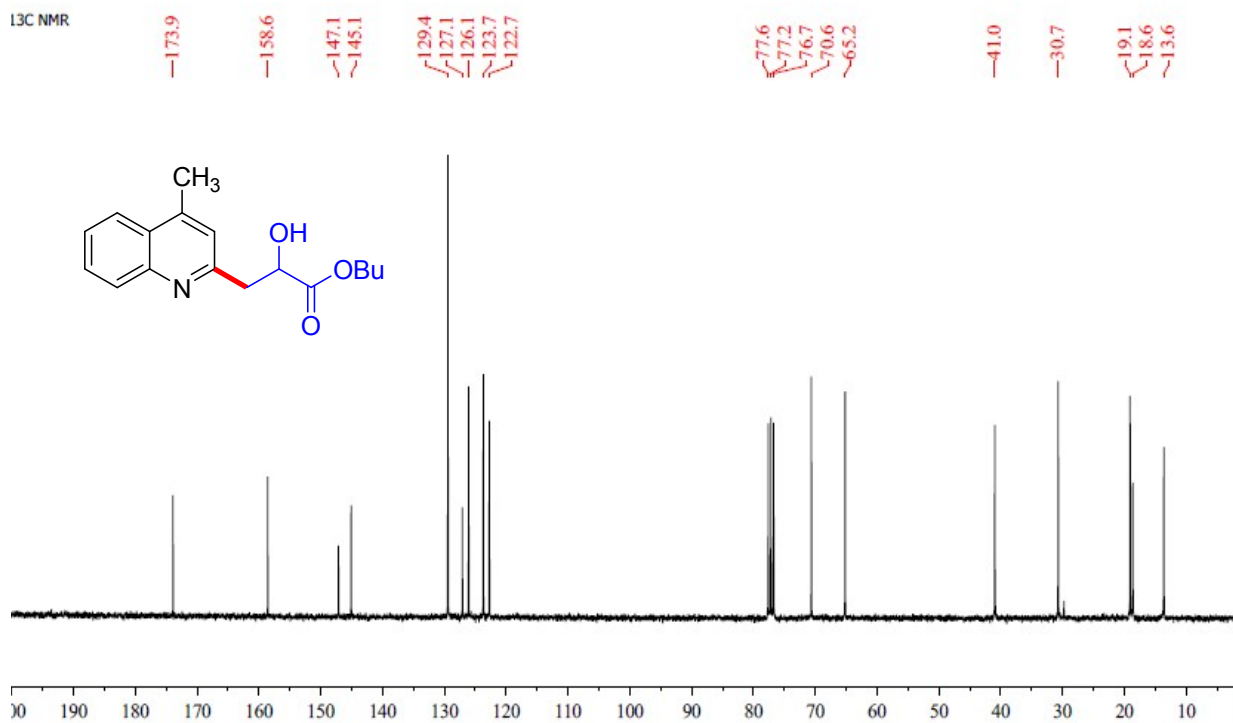


butyl 2-hydroxy-3-(4-methylquinolin-2-yl)propanoate (Table 2, entry 3j)

¹H NMR (300 MHz, CDCl₃)

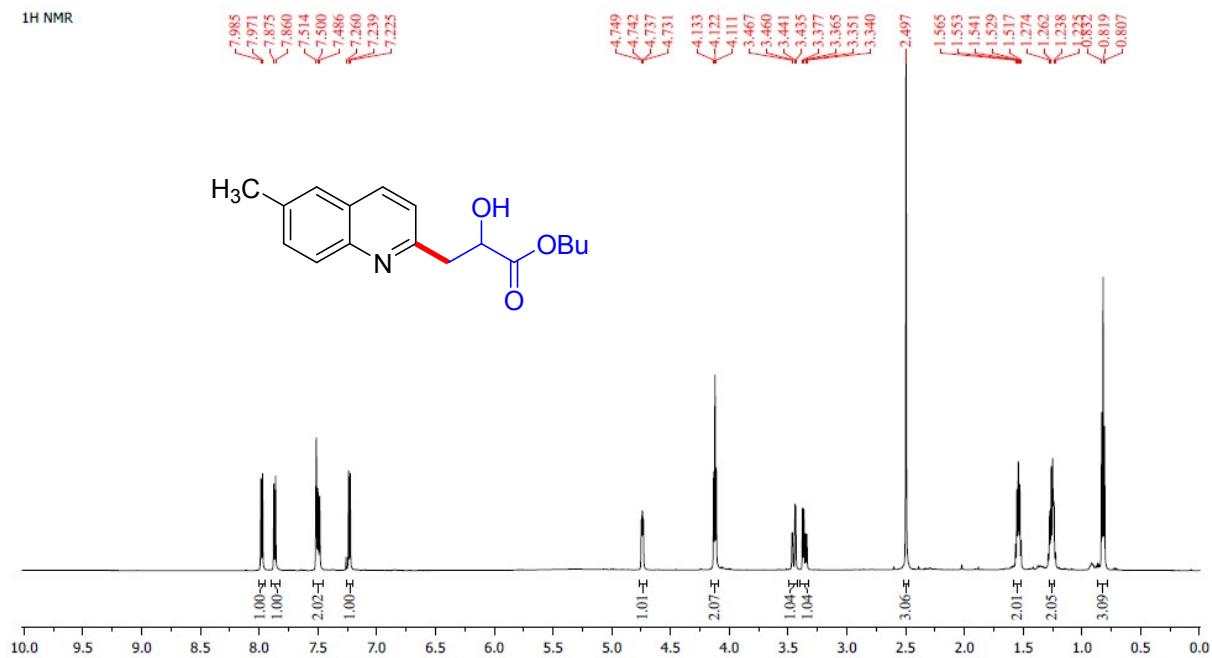


¹³C NMR (75 MHz, CDCl₃)

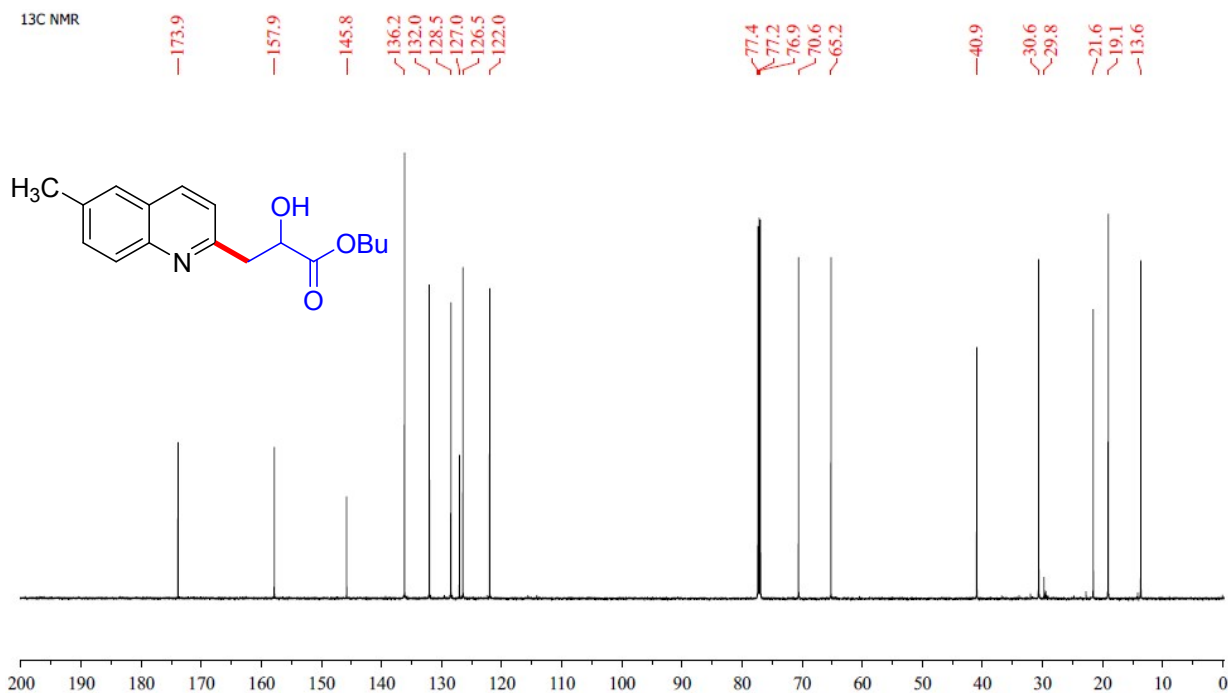


butyl 2-hydroxy-3-(6-methylquinolin-2-yl)propanoate (Table 2, entry 3k)

¹H NMR (600 MHz, CDCl₃)

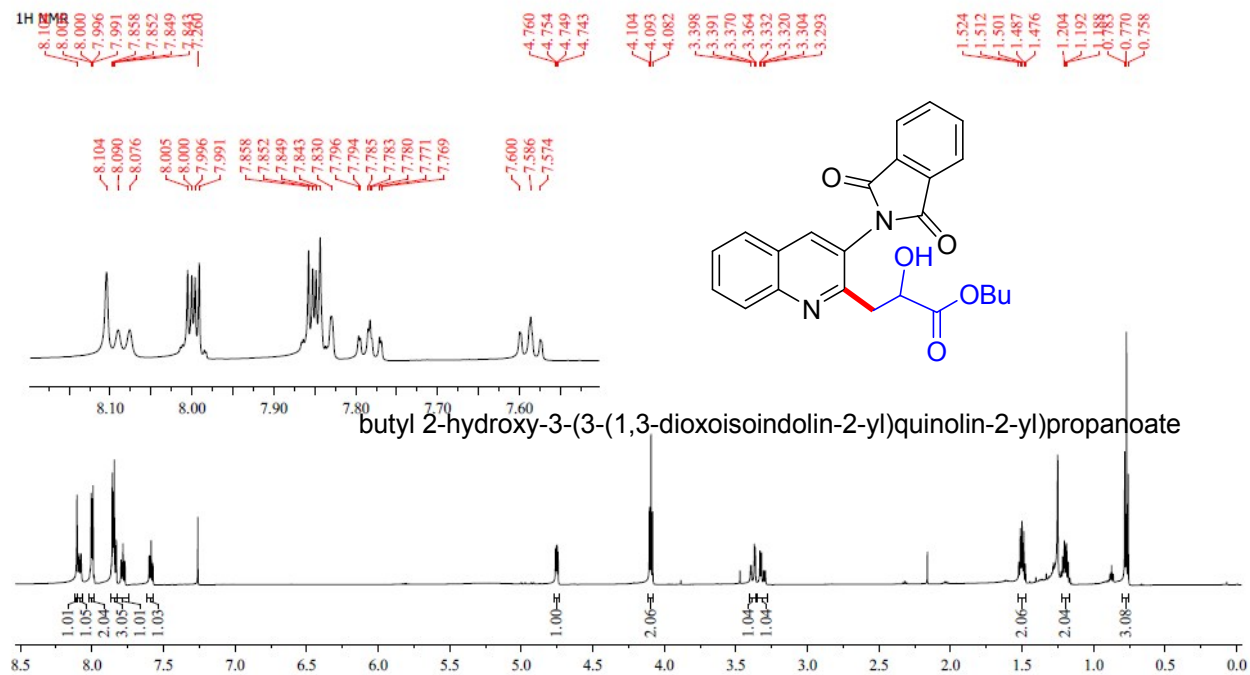


¹³C NMR (150 MHz, CDCl₃)

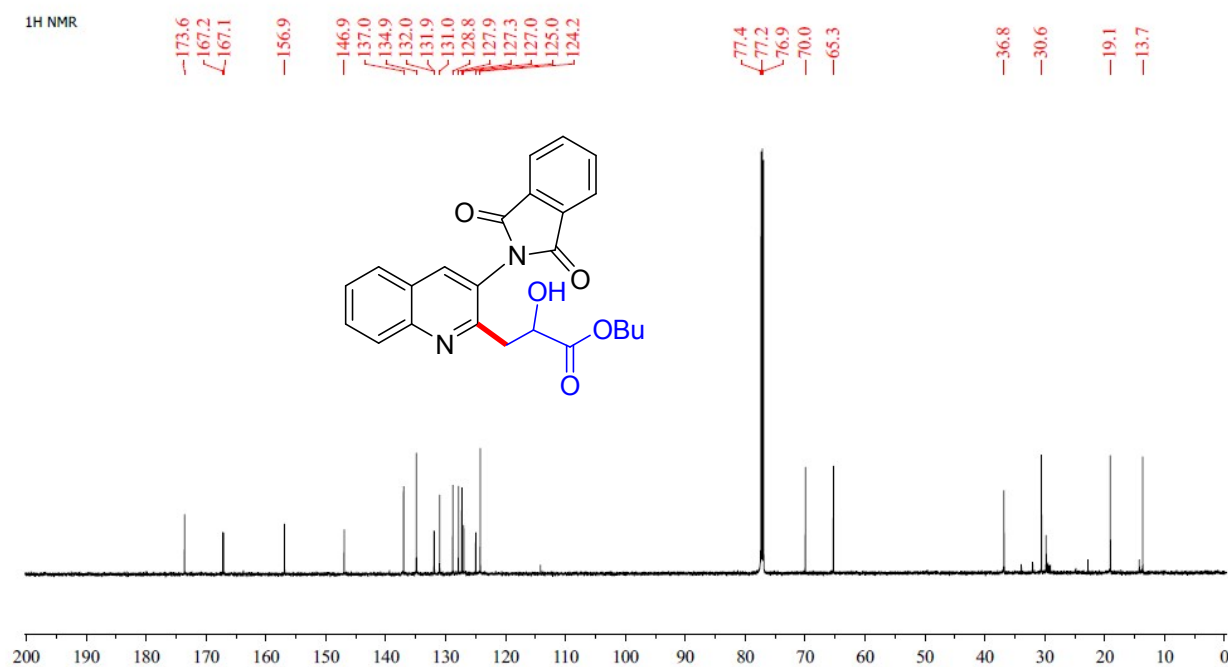


butyl 2-hydroxy-3-(3-(1,3-dioxisoindolin-2-yl)quinolin-2-yl)propanoate (Table 2, entry 3m)

¹H NMR (600 MHz, CDCl₃)

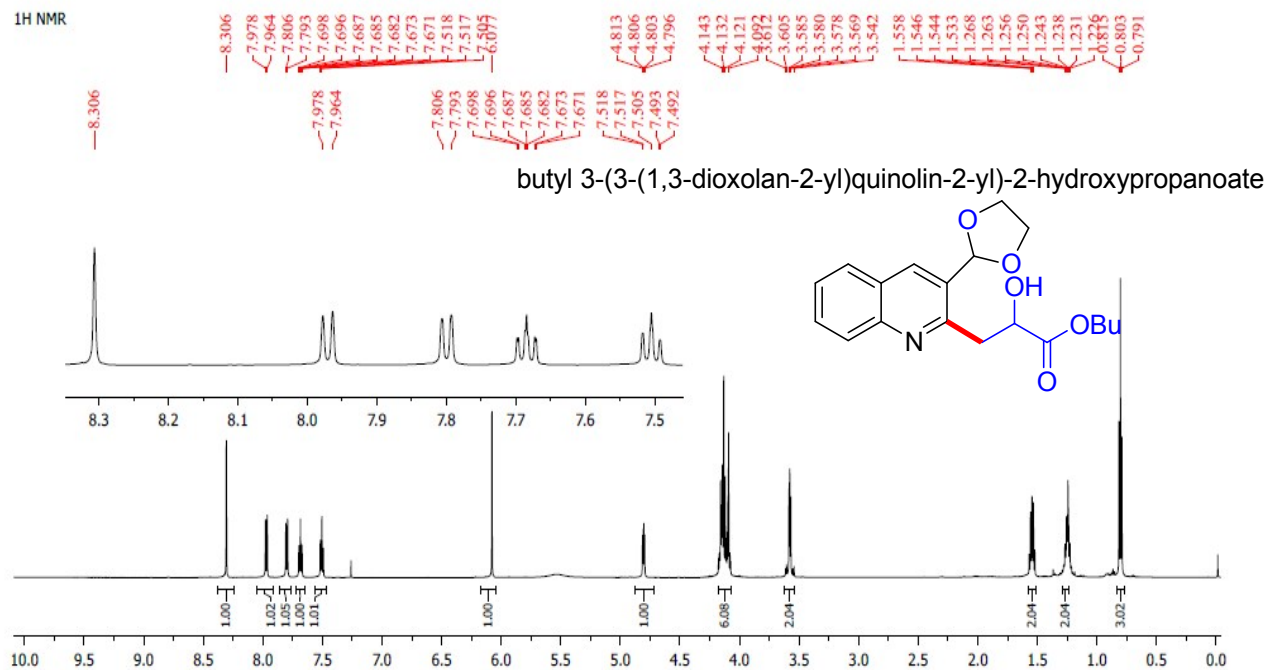


¹³C NMR (150 MHz, CDCl₃)

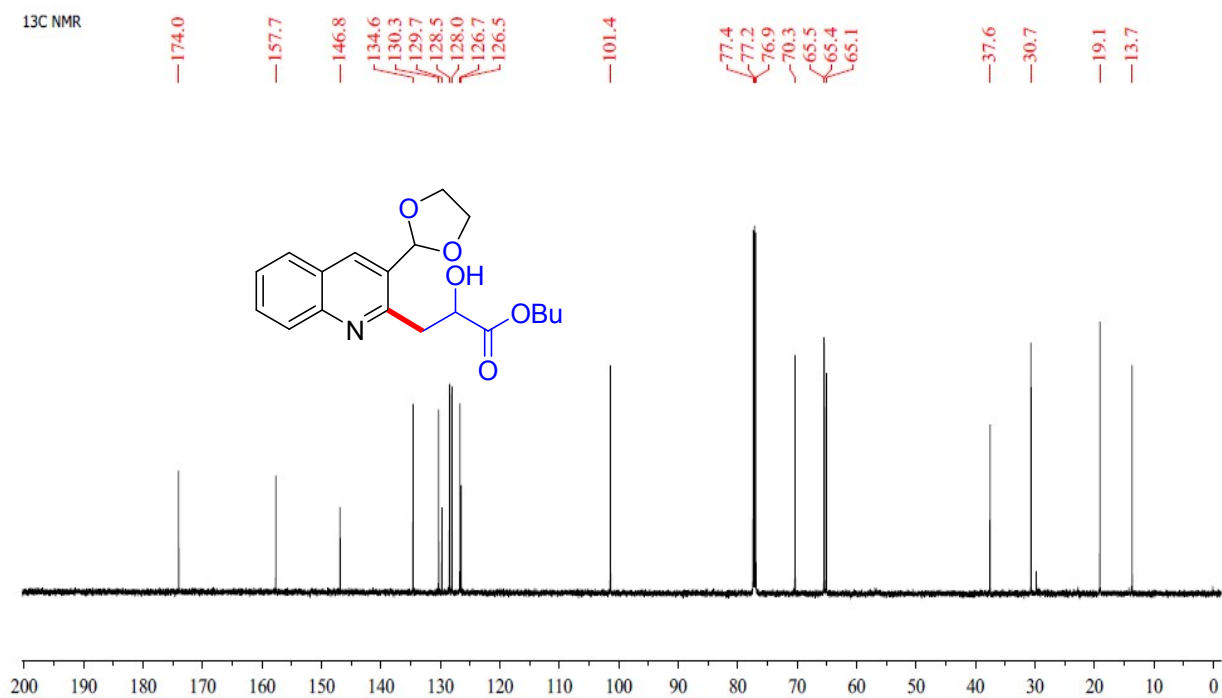


butyl 3-(3-(1,3-dioxolan-2-yl)quinolin-2-yl)-2-hydroxypropanoate (Table 2, entry 3n)

¹H NMR (600 MHz, CDCl₃)

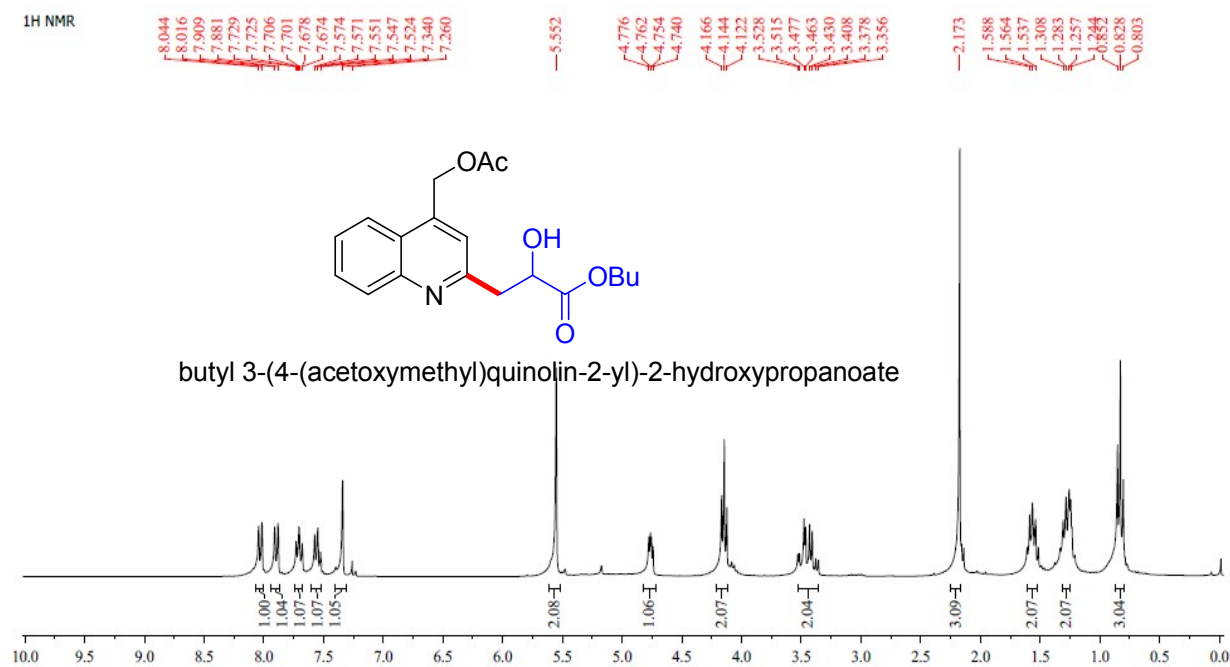


¹³C NMR (150 MHz, CDCl₃)

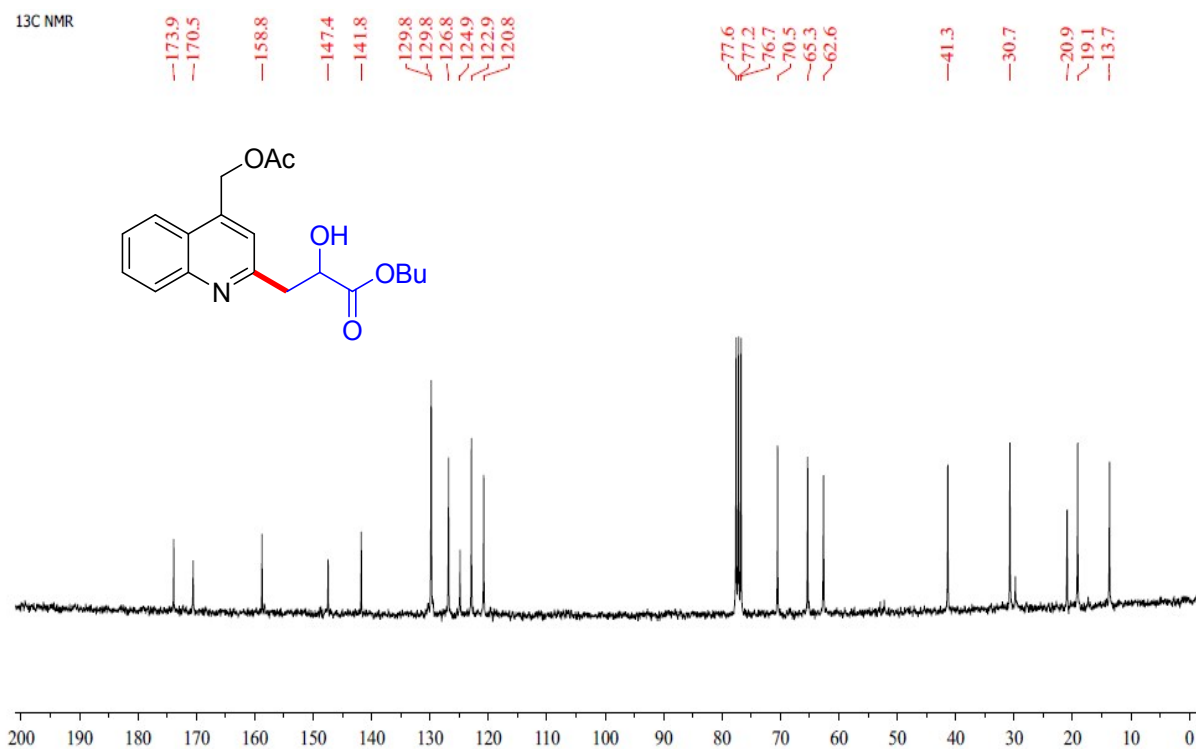


butyl 3-(4-(acetoxymethyl)quinolin-2-yl)-2-hydroxypropanoate (Table 2, entry 3p)

$^1\text{H NMR}$ (300 MHz, CDCl_3)



$^{13}\text{C NMR}$ (75 MHz, CDCl_3)

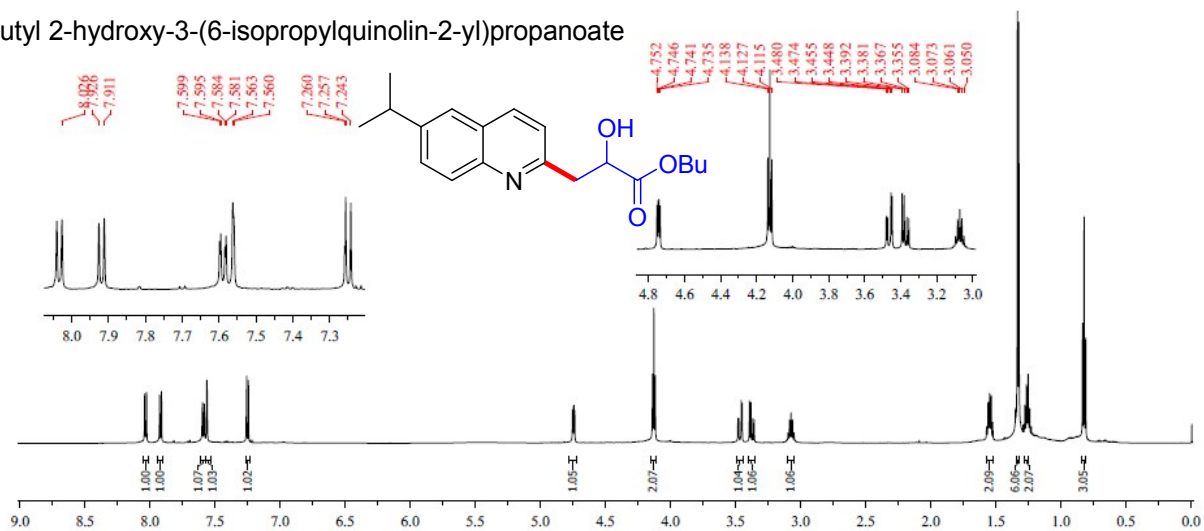


butyl 2-hydroxy-3-(6-isopropylquinolin-2-yl)propanoate (Table 2, entry 3q)

¹H NMR (600 MHz, CDCl₃)

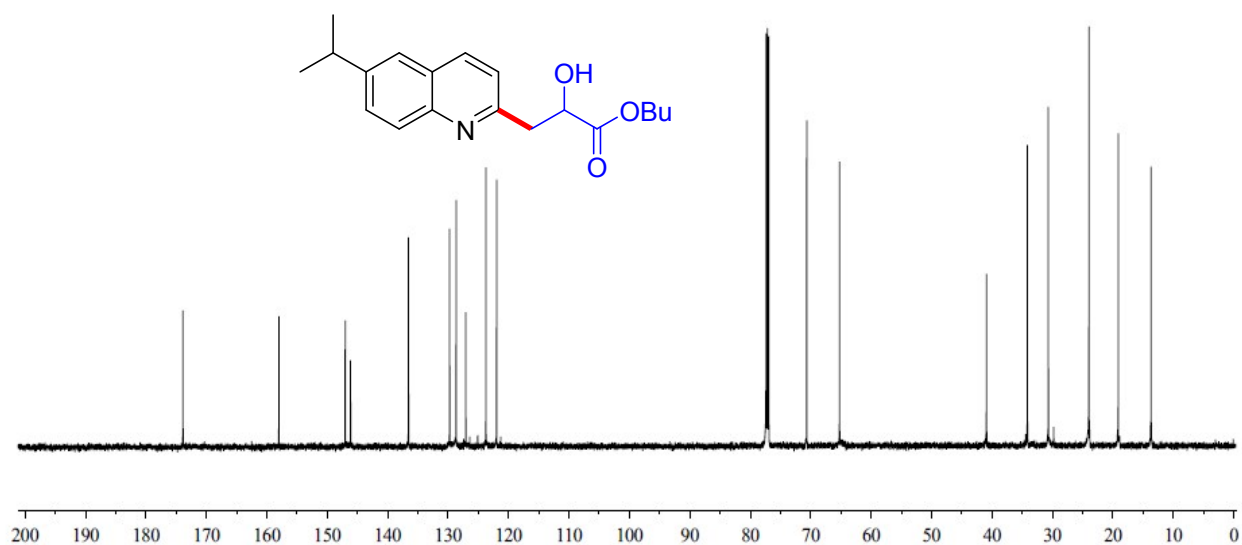
¹H NMR peaks (ppm): 8.040, 8.026, 7.926, 7.911, 7.563, 7.568, 7.557, 7.243, 4.752, 4.746, 4.741, 4.735, 4.138, 4.127, 4.115, 3.480, 3.474, 3.455, 3.448, 3.392, 3.381, 3.367, 3.355, 3.348, 3.084, 3.073, 3.061, 3.050, 1.557, 1.546, 1.535, 1.533, 1.321, 1.276, 1.263, 1.250, 0.838, 0.820, 0.807

butyl 2-hydroxy-3-(6-isopropylquinolin-2-yl)propanoate



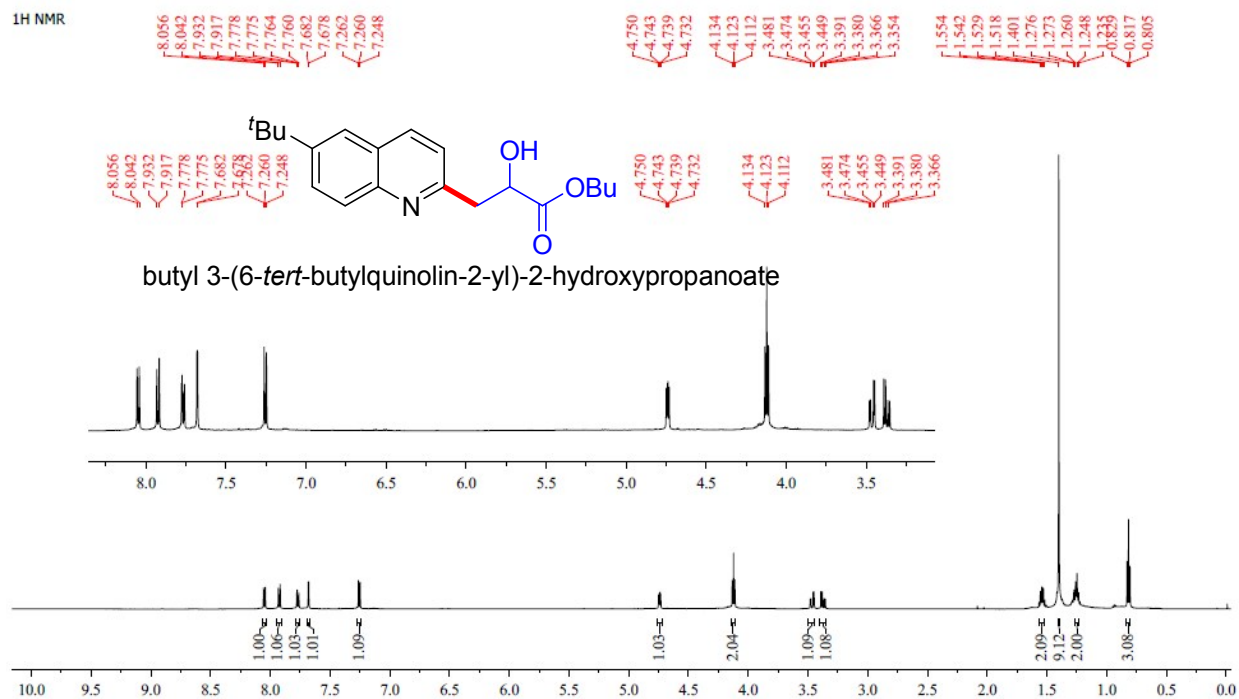
¹³C NMR (150 MHz, CDCl₃)

¹³C NMR peaks (ppm): 173.9, 158.0, 147.0, 146.1, 136.6, 129.7, 128.7, 127.1, 123.7, 122.0, 77.4, 77.2, 76.9, 70.7, 65.2, 40.9, 34.1, 30.7, 24.0, 24.0, 19.1, 13.7

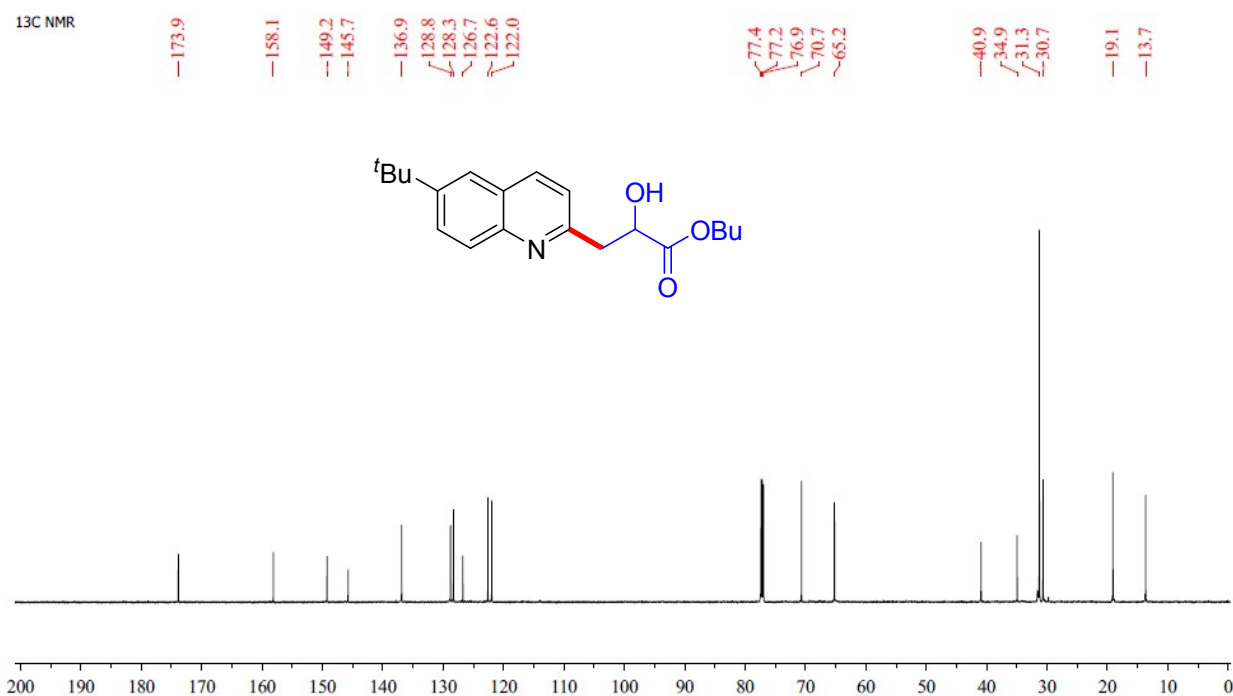


butyl 3-(6-*tert*-butylquinolin-2-yl)-2-hydroxypropanoate (Table 2, entry 3r)

¹H NMR (600 MHz, CDCl₃)

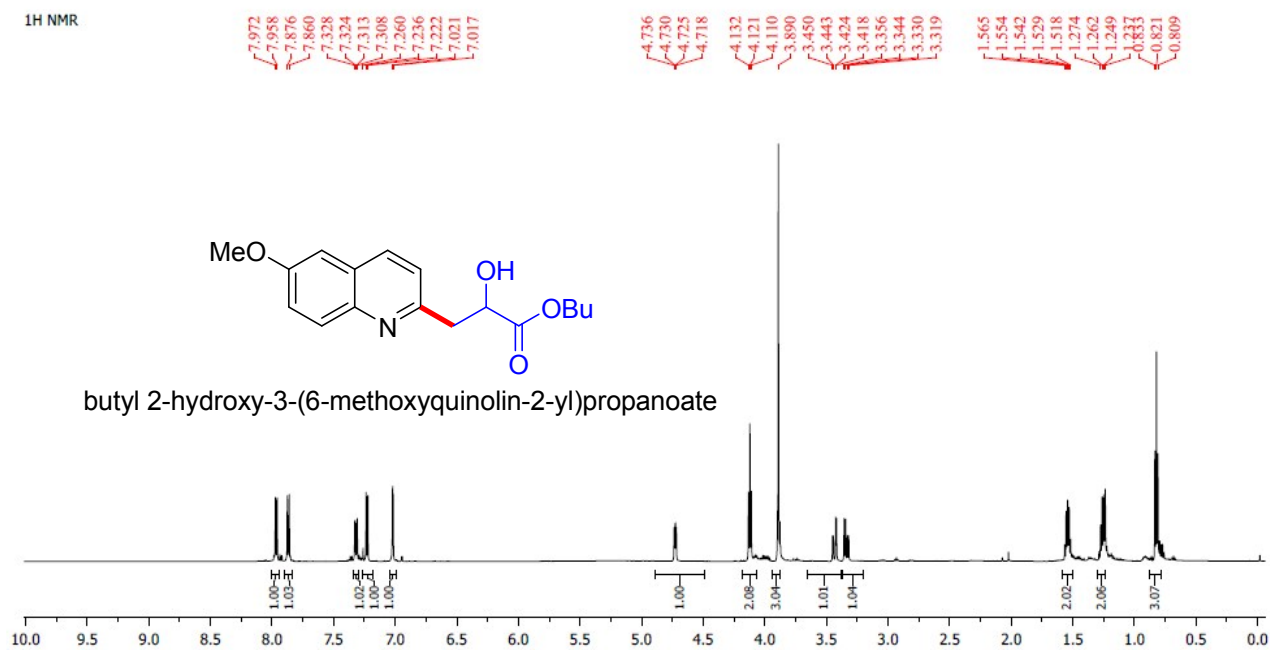


¹³C NMR (150 MHz, CDCl₃)

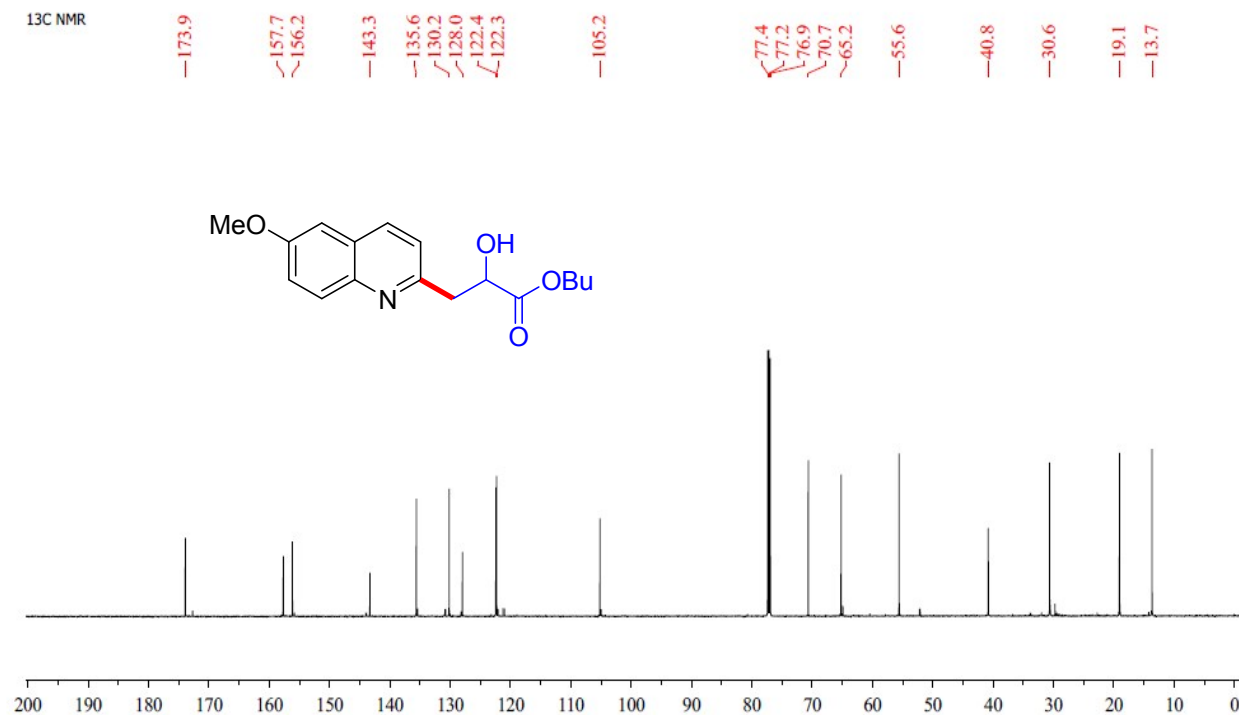


butyl 2-hydroxy-3-(6-methoxyquinolin-2-yl)propanoate (Table 2, entry 3s)

^1H NMR (600 MHz, CDCl_3)

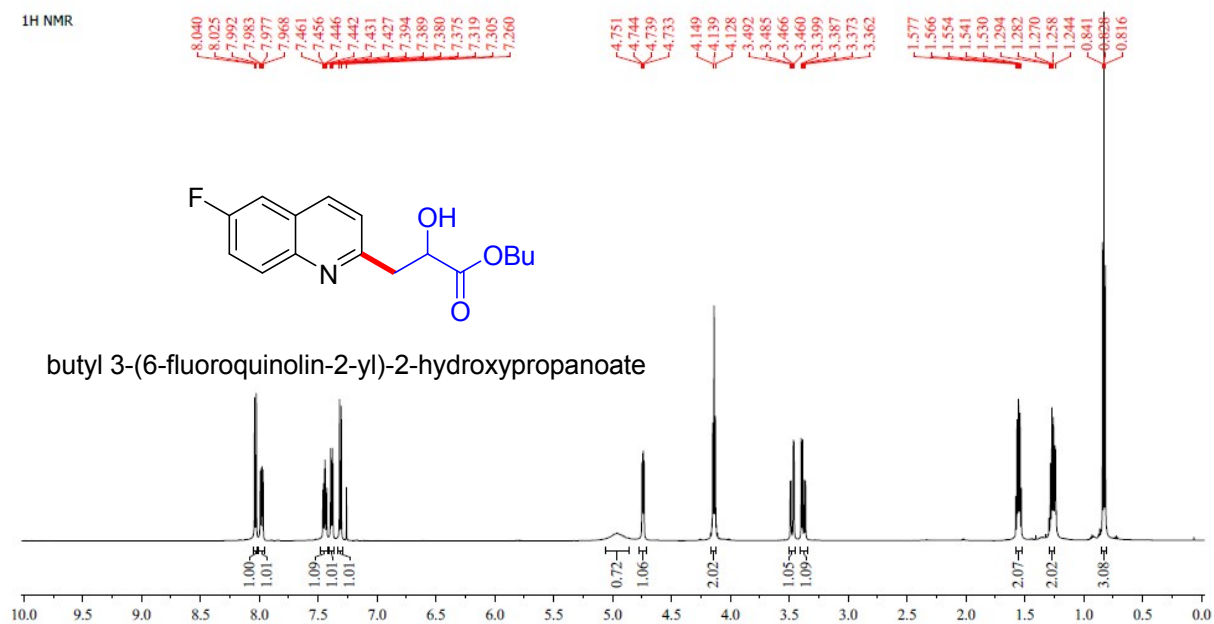


^{13}C NMR (150 MHz, CDCl_3)

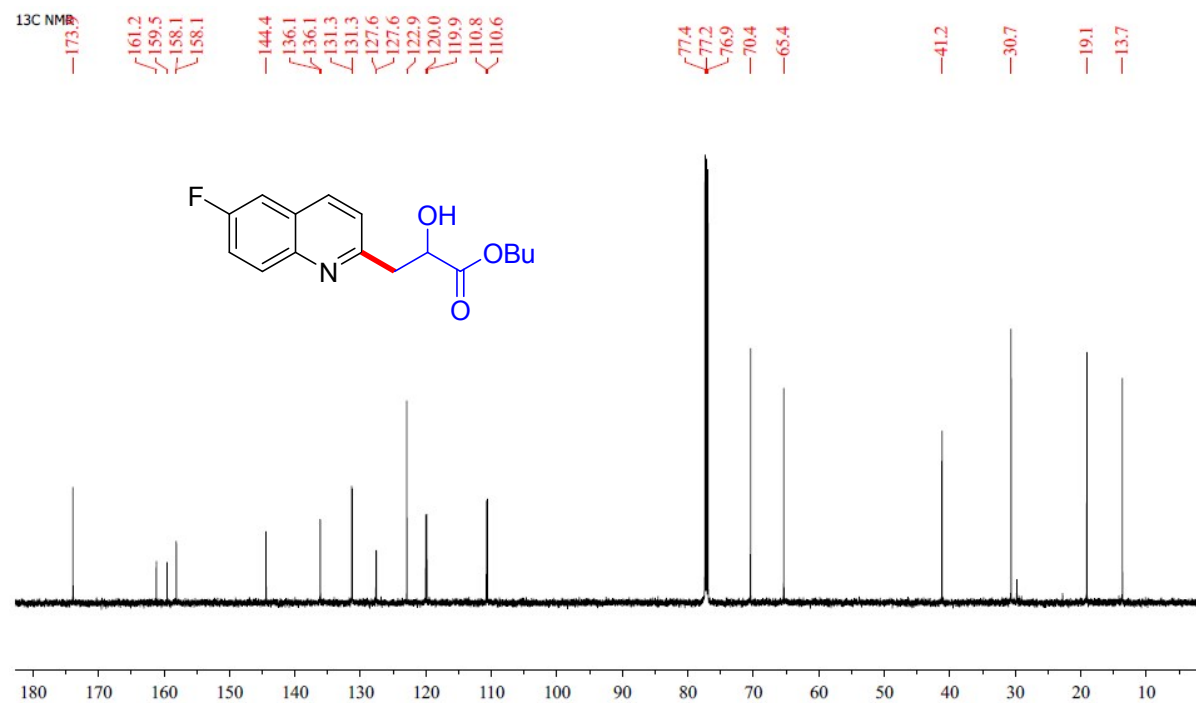


butyl 3-(6-fluoroquinolin-2-yl)-2-hydroxypropanoate (Table 2, entry 3t)

¹H NMR (600 MHz, CDCl₃)

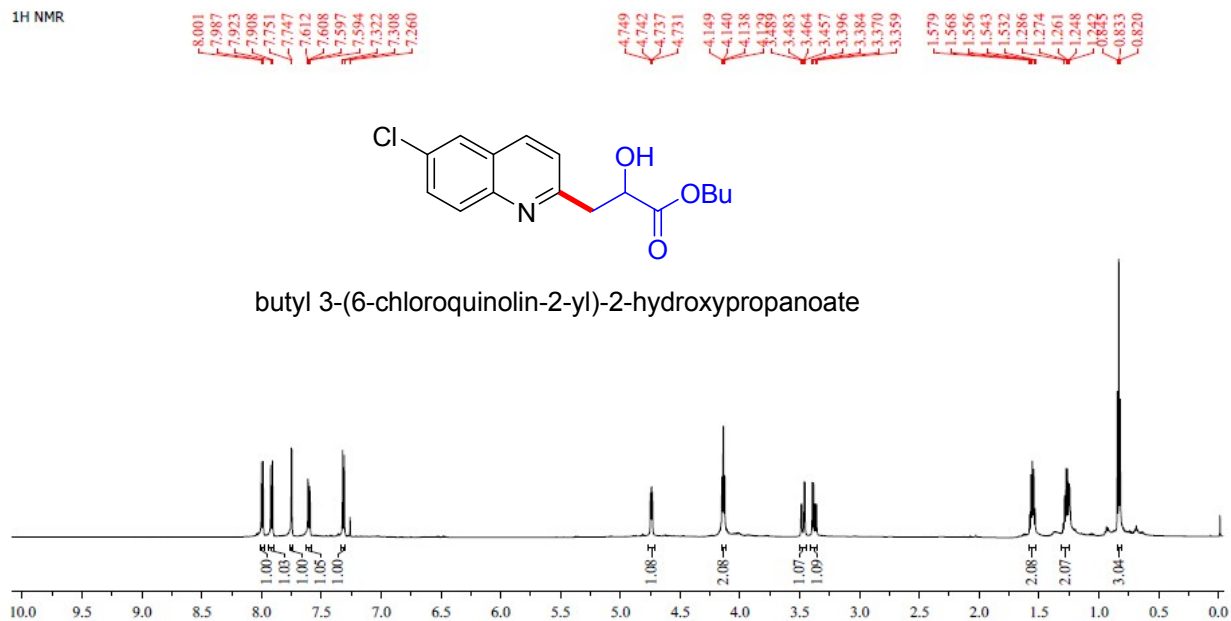


¹³C NMR (150 MHz, CDCl₃)

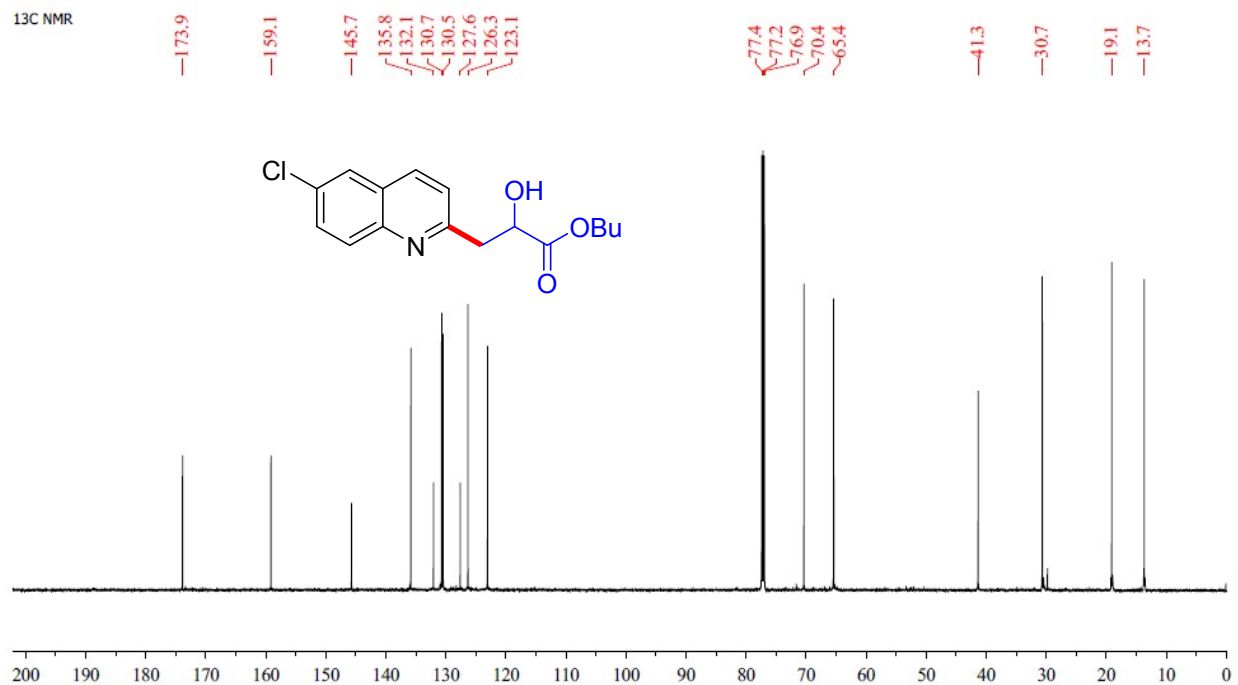


butyl 3-(6-chloroquinolin-2-yl)-2-hydroxypropanoate (Table 2, entry 3u)

$^1\text{H NMR}$ (600 MHz, CDCl_3)

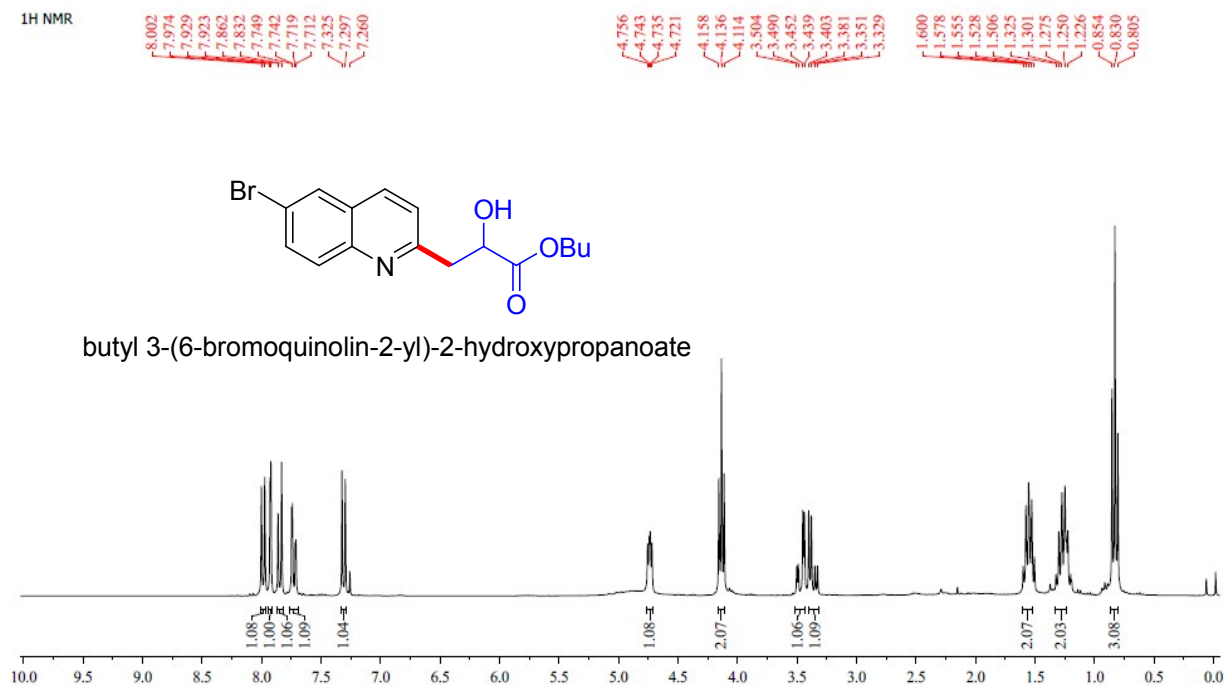


$^{13}\text{C NMR}$ (150 MHz, CDCl_3)

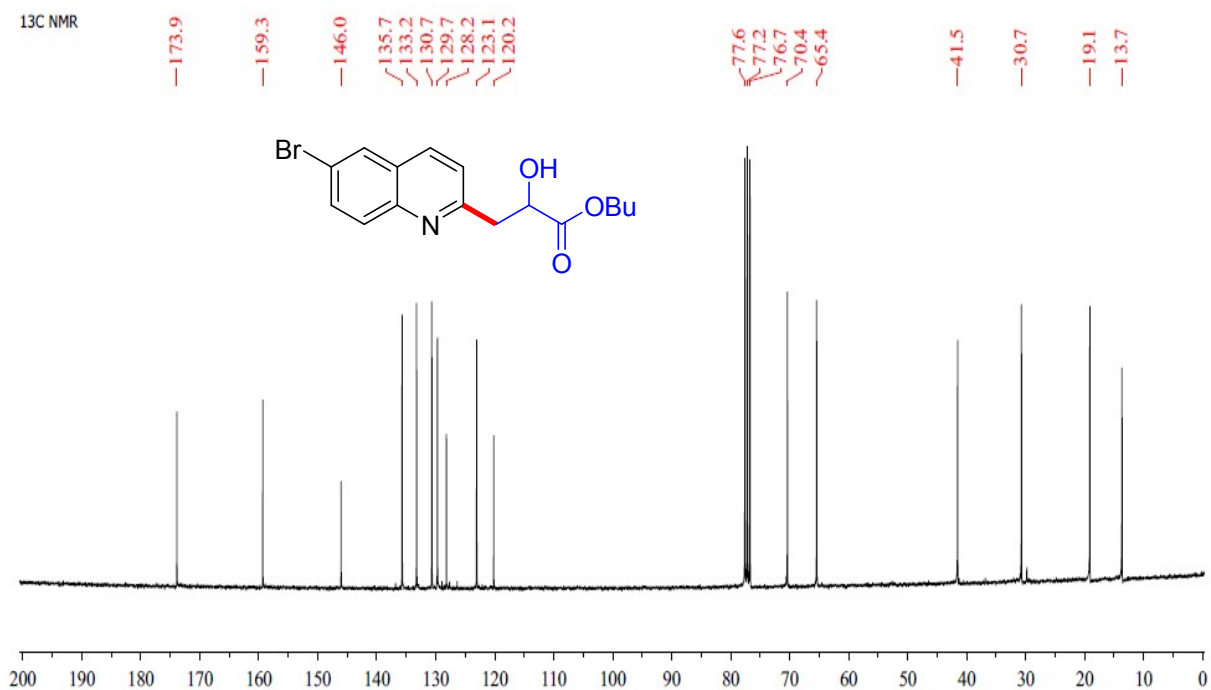


butyl 3-(6-bromoquinolin-2-yl)-2-hydroxypropanoate (Table 2, entry 3v)

¹H NMR (300 MHz, CDCl₃)



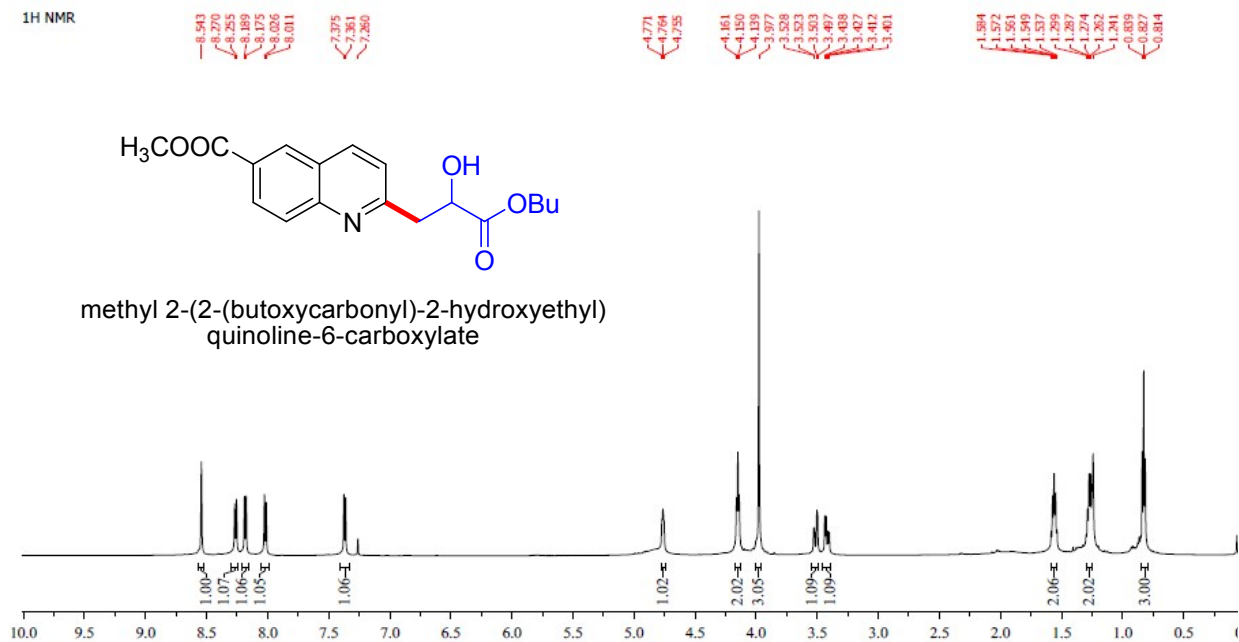
¹³C NMR (75 MHz, CDCl₃)



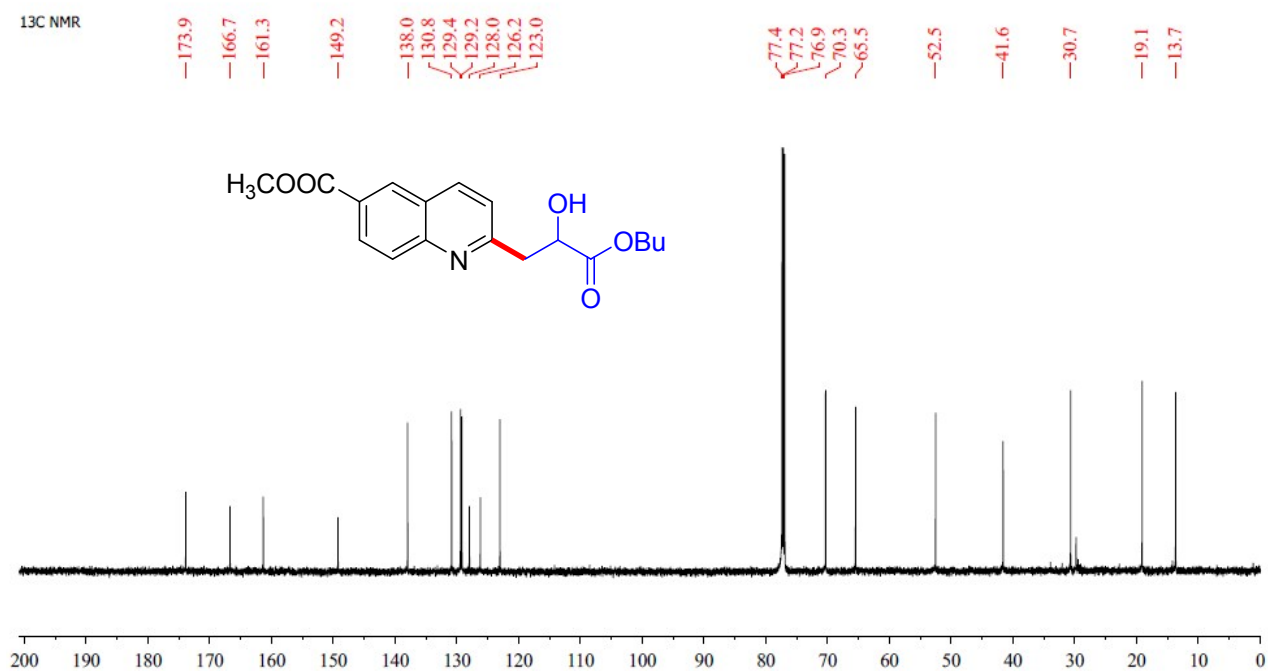
methyl 2-(2-(butoxycarbonyl)-2-hydroxyethyl)quinoline-6-carboxylate

(Table 2, entry 3w)

¹H NMR (600 MHz, CDCl₃)

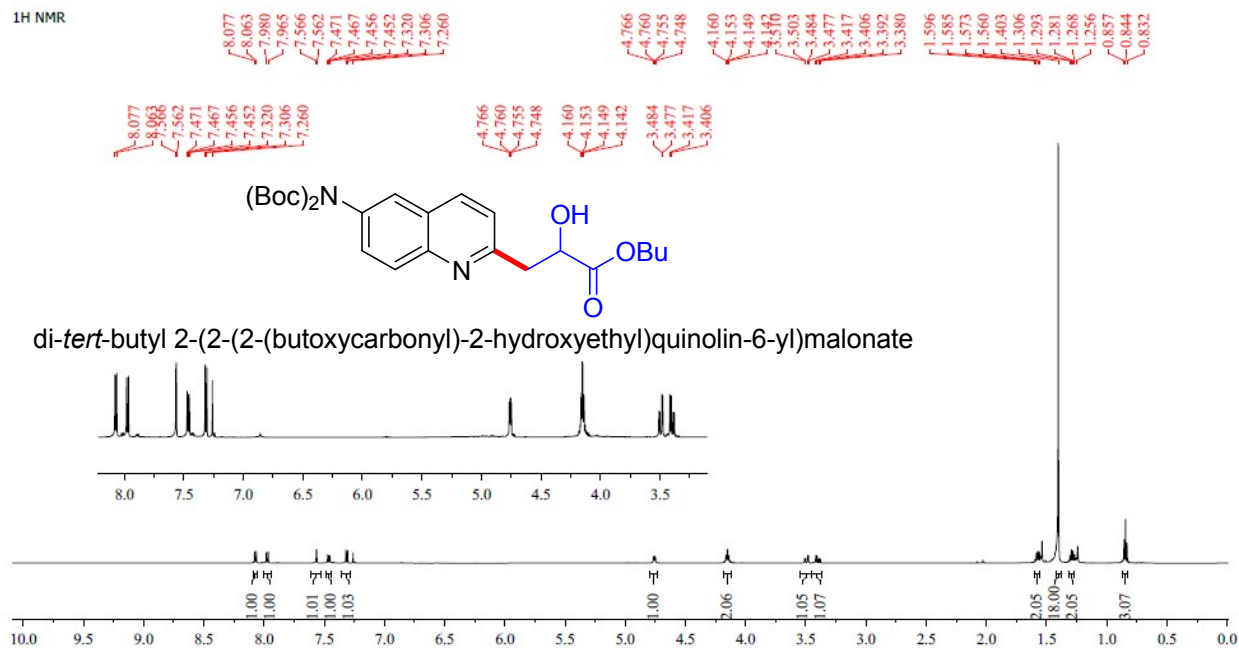


¹³C NMR (150 MHz, CDCl₃)

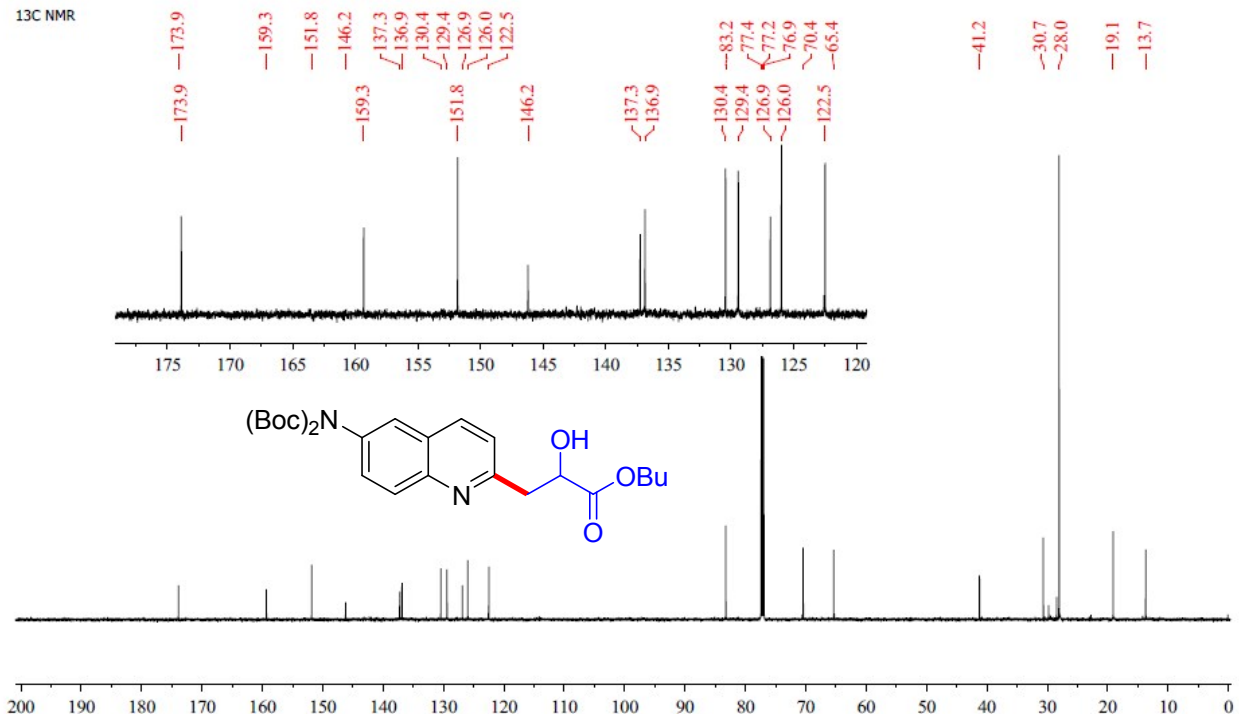


di-tert-butyl 2-(2-(2-(butoxycarbonyl)-2-hydroxyethyl)quinolin-6-yl)malonate
(Table 2, entry 3x)

¹H NMR (600 MHz, CDCl₃)

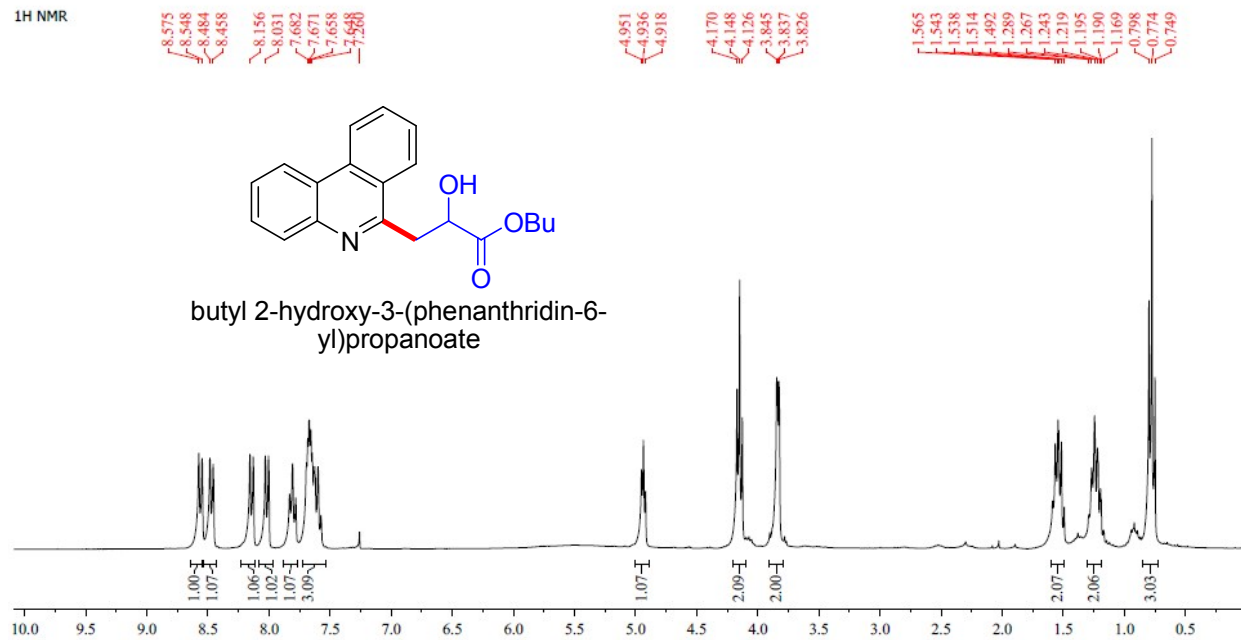


¹³C NMR (150 MHz, CDCl₃)

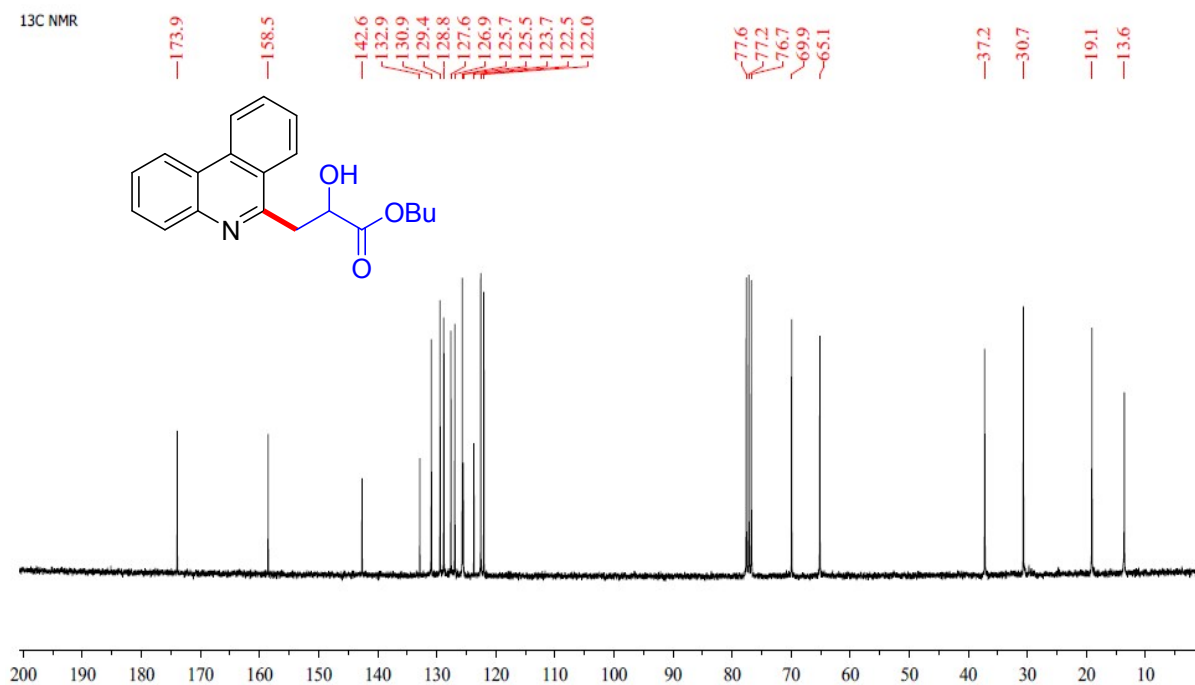


butyl 2-hydroxy-3-(phenanthridin-6-yl)propanoate (Table 2 , entry 3z)

¹H NMR (300 MHz, CDCl₃)

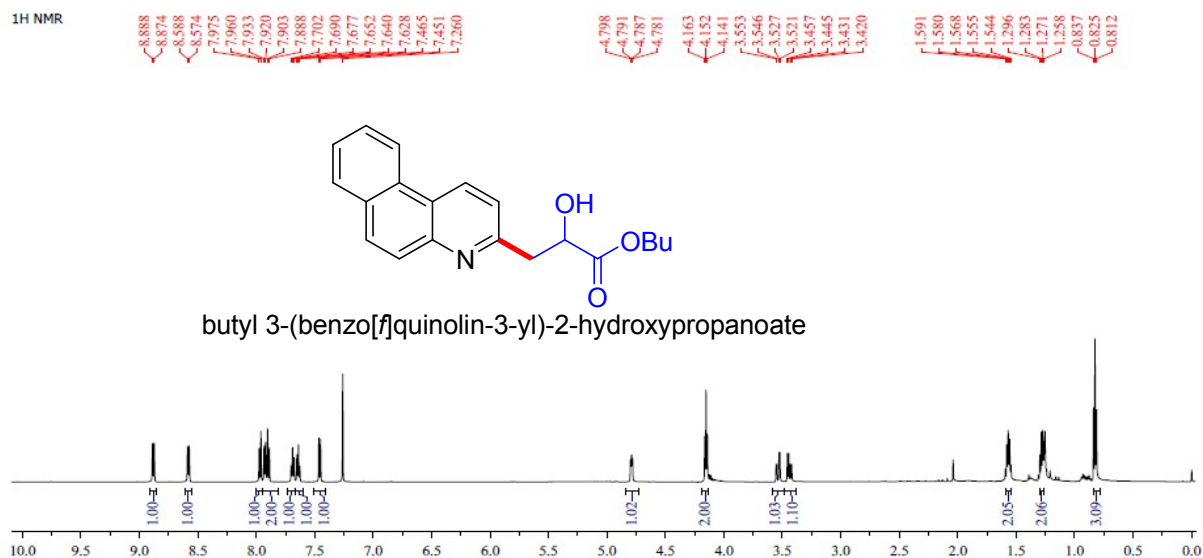


¹³C NMR (75 MHz, CDCl₃)

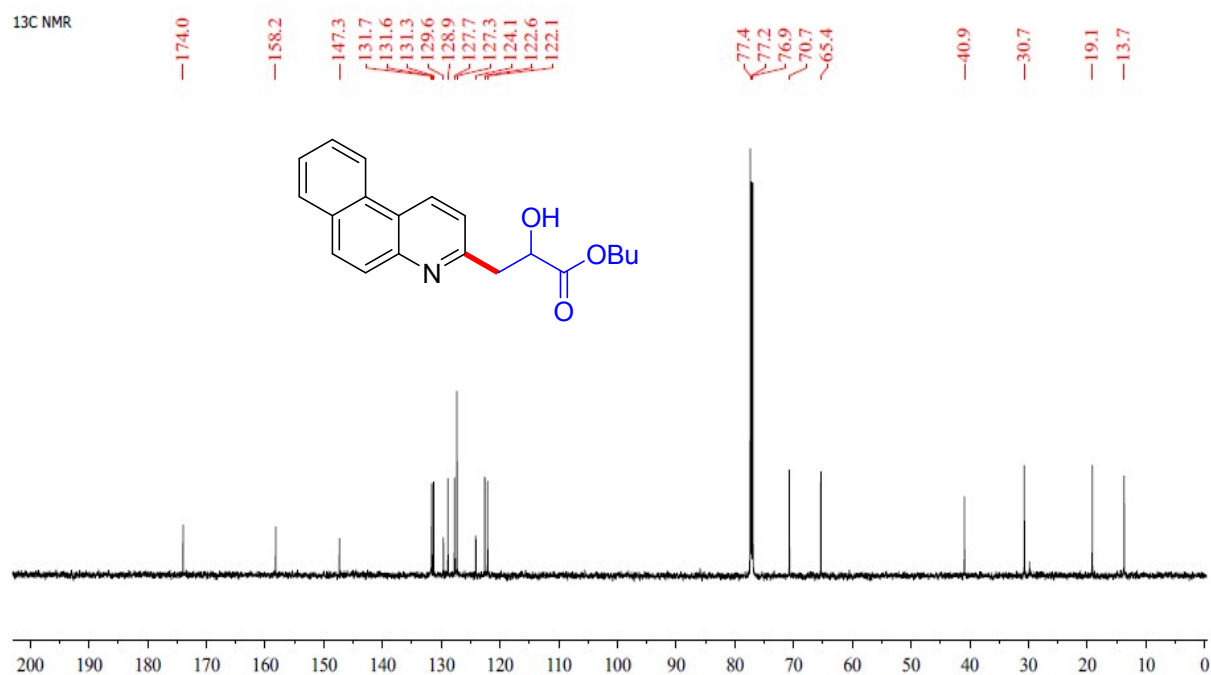


butyl 3-(benzo[f]quinolin-3-yl)-2-hydroxypropanoate (Table 2, entry 3za)

$^1\text{H NMR}$ (600 MHz, CDCl_3)

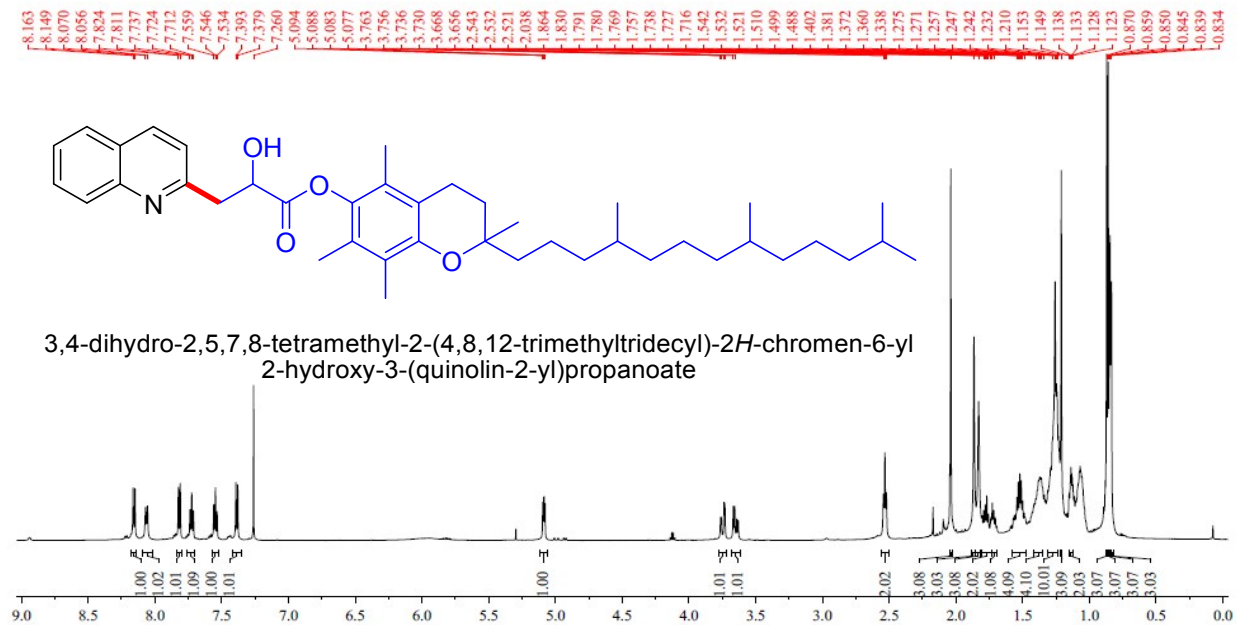


$^{13}\text{C NMR}$ (150 MHz, CDCl_3)



3,4-dihydro-2,5,7,8-tetramethyl-2-(4,8,12-trimethyltridecyl)-2H-chromen-6-yl 2-hydroxy-3-(quinolin-2-yl)propanoate (Table 2, entry 3zb)

¹H NMR (600 MHz, CDCl₃)



¹³C NMR (150 MHz, CDCl₃)

