

BiCl₃-catalyzed green synthesis of 4-hydroxy-2-quinolone analogues under microwave irradiation

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^bLaboratory of Applied Organic Chemistry, Synthesis of Biomolecules and Molecular Modelling Group, Department of Chemistry, Sciences Faculty, Badji-Mokhtar - Annaba University, Box 12, 23000 Annaba, Algeria.

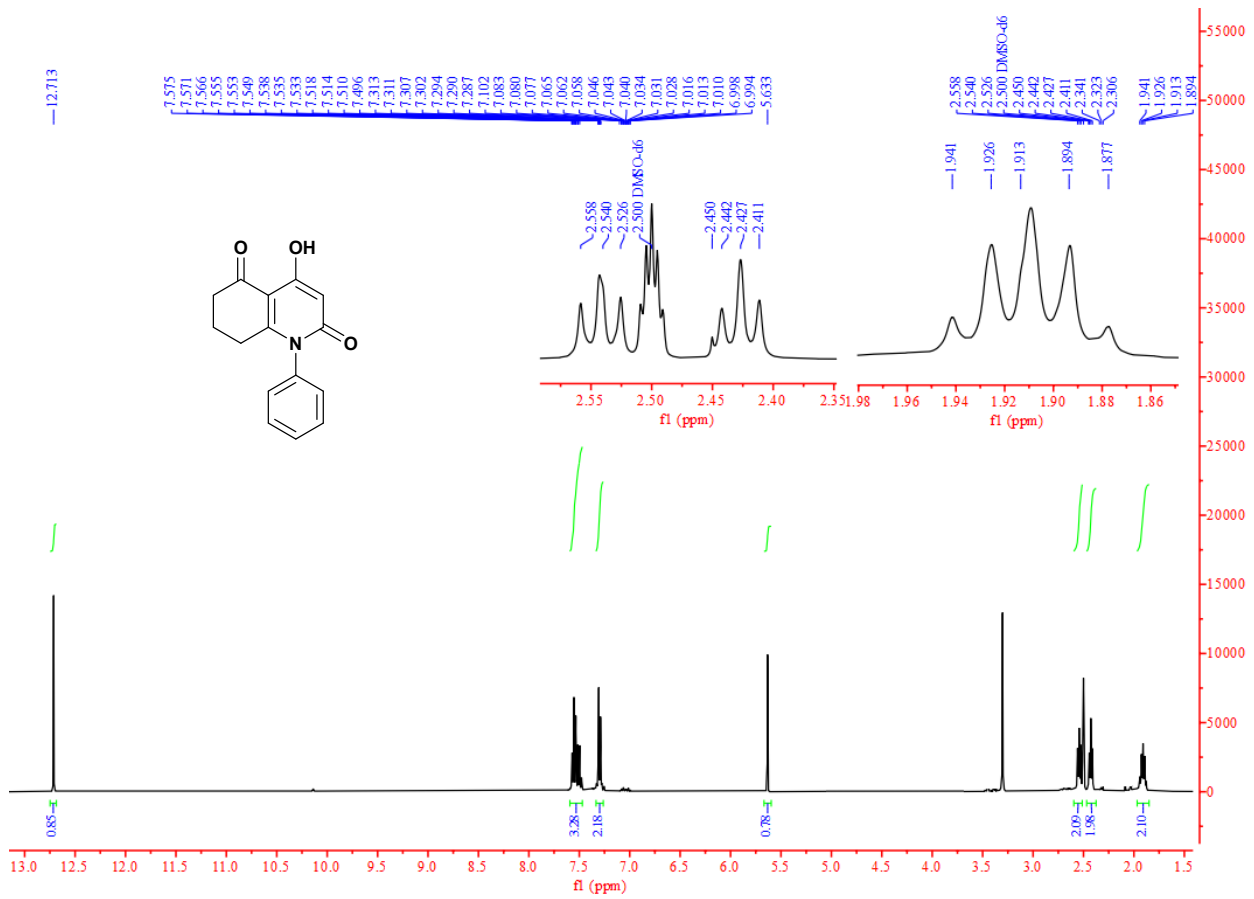
^cResearch Unit in Medicinal Plants, URPM, 3000 Laghouat, attached to Research Center of Biotechnology, CRBt, 25000 Constantine, Algeria.

^dTechnical platform of physico-chemical analysis (PTAPC-Laghout-CRAPC), University of Laghouat, Laghouat 03000, Algeria.

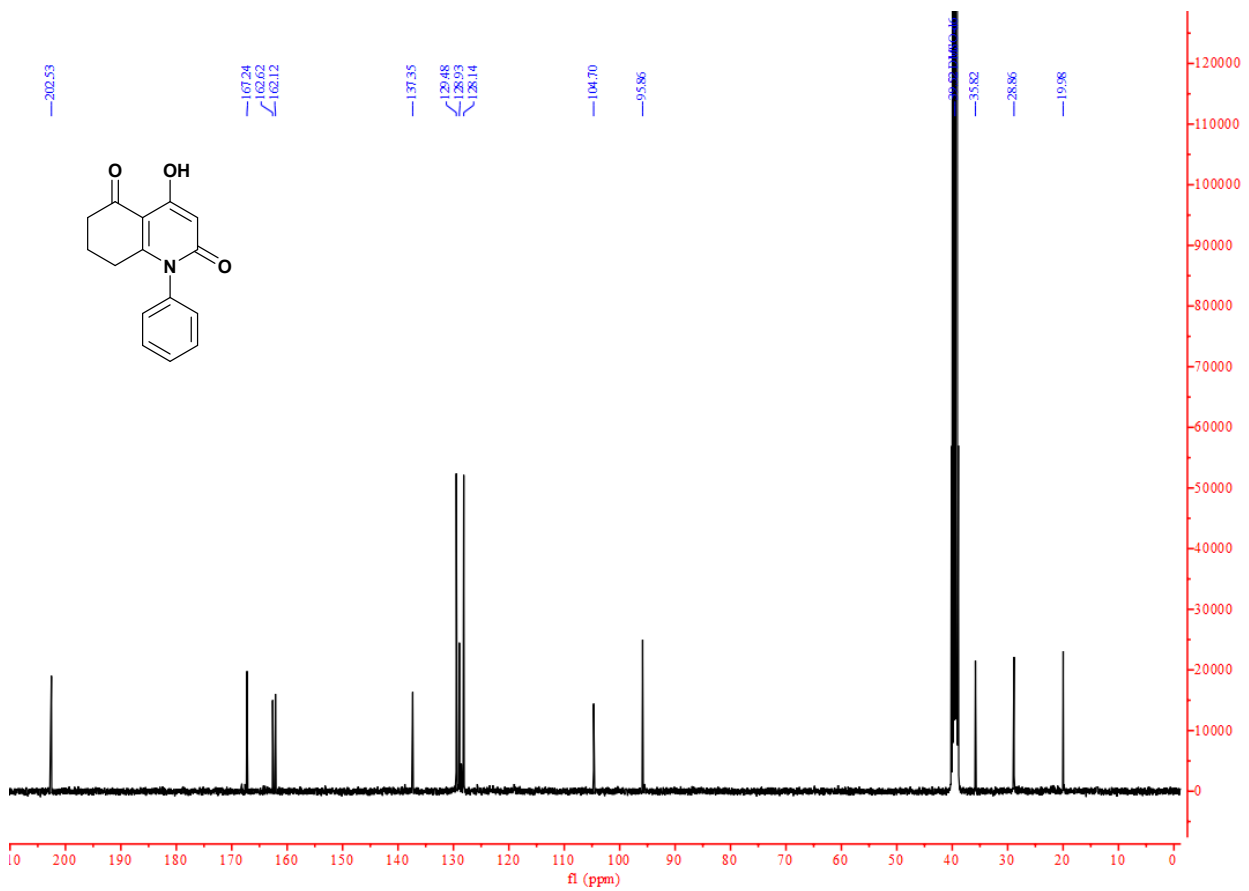
^eAix Marseille Univ, CNRS, Centrale Marseille, iSm2, F-13397 Marseille, France.

^fFaculty of Sciences and Technology, Department of Chemistry, Chadli Bendjedid - EL Tarf University, P.O.Box: 73, El Tarf 36000 Algeria.

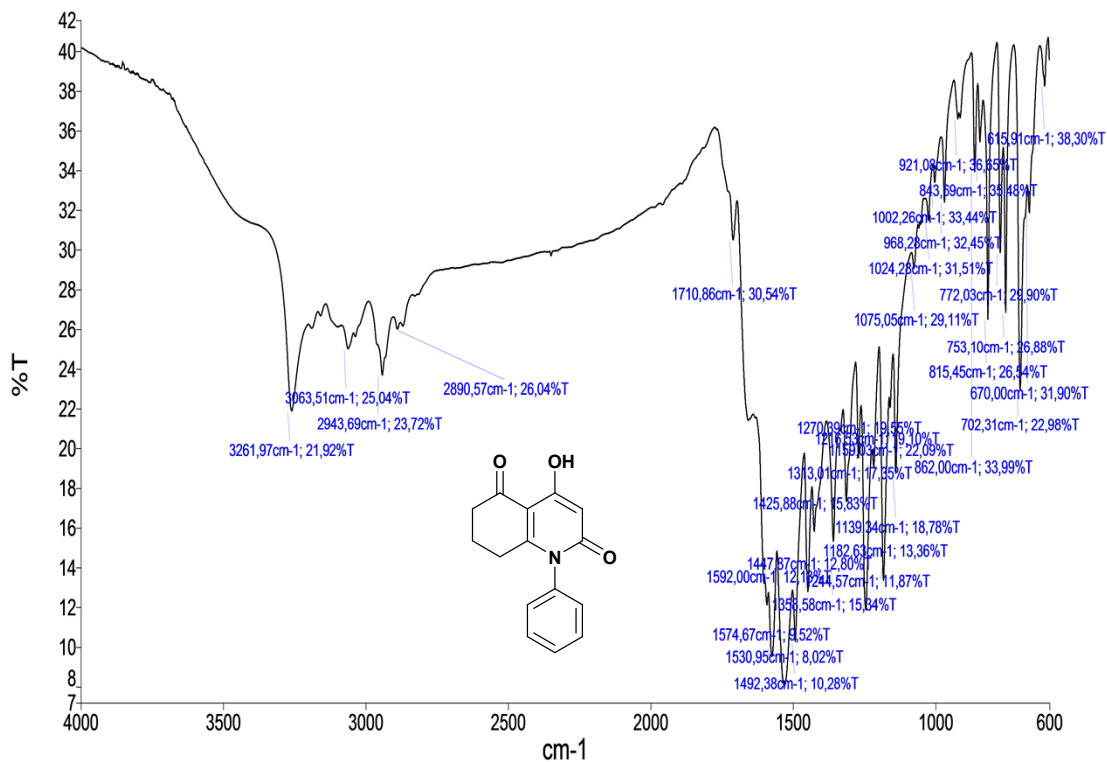
*Corresponding Author. Email: abdeslem.bouzina@univ-annaba.dz; bouzinaabdeslem@yahoo.fr



NMR ¹H spectrum (400 MHz, DMSO-d₆): 4-hydroxy-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹³C spectrum (101 MHz, DMSO-d₆): 4-hydroxy-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



IR spectrum: 4-hydroxy-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

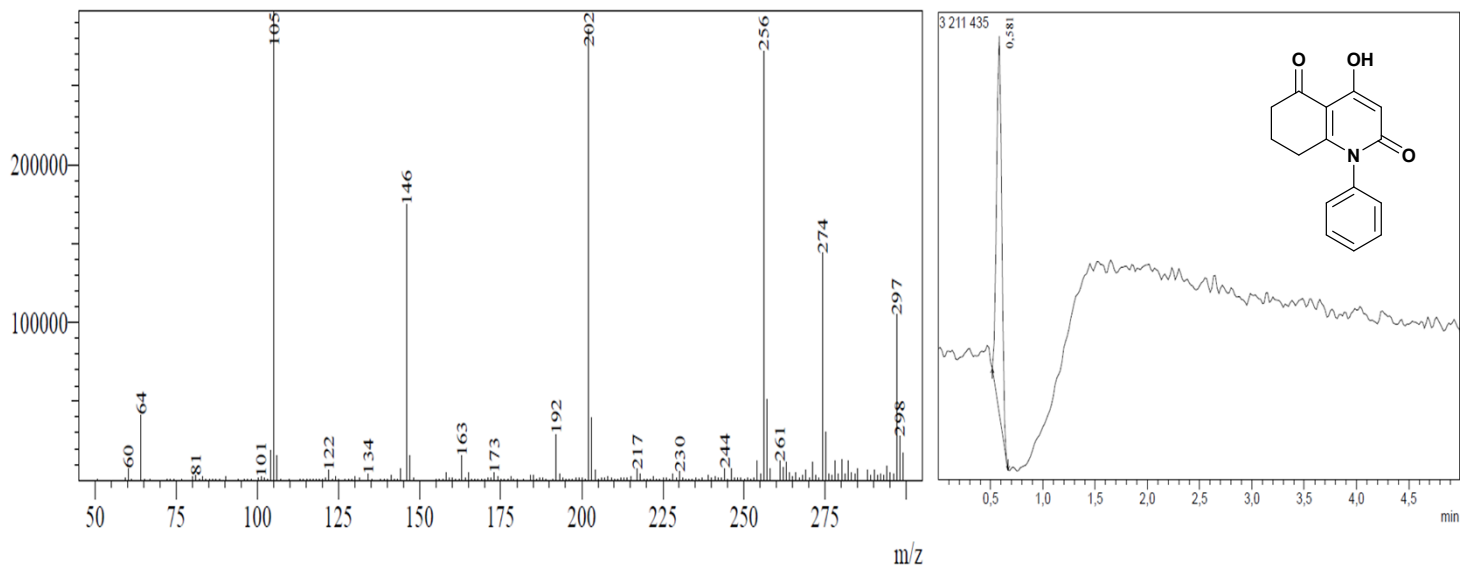
MS Spectrum

Line#:1 R.Time:----(Scan#:----)

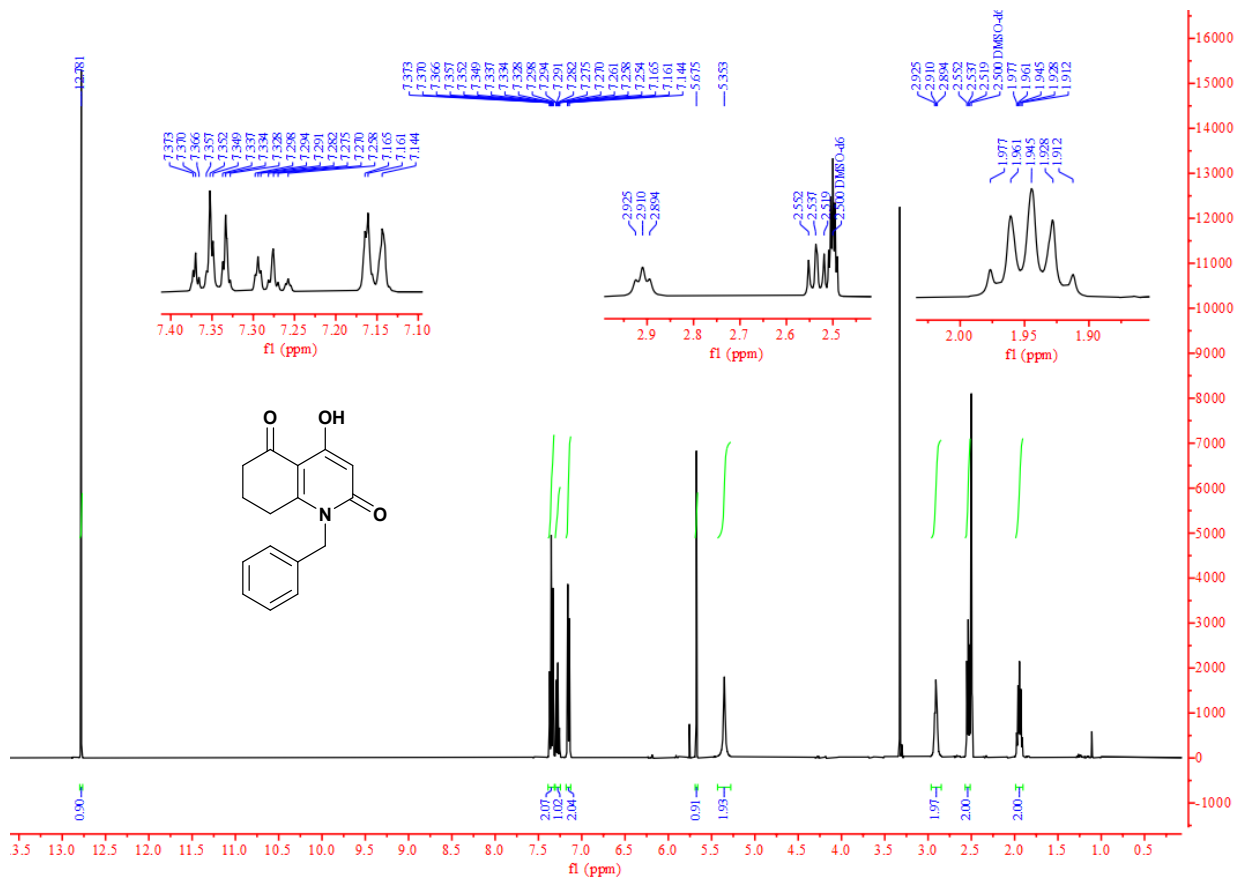
MassPeaks:219

Spectrum Mode:Averaged 0,567-0,600(35-37) Base Peak:105(297264)

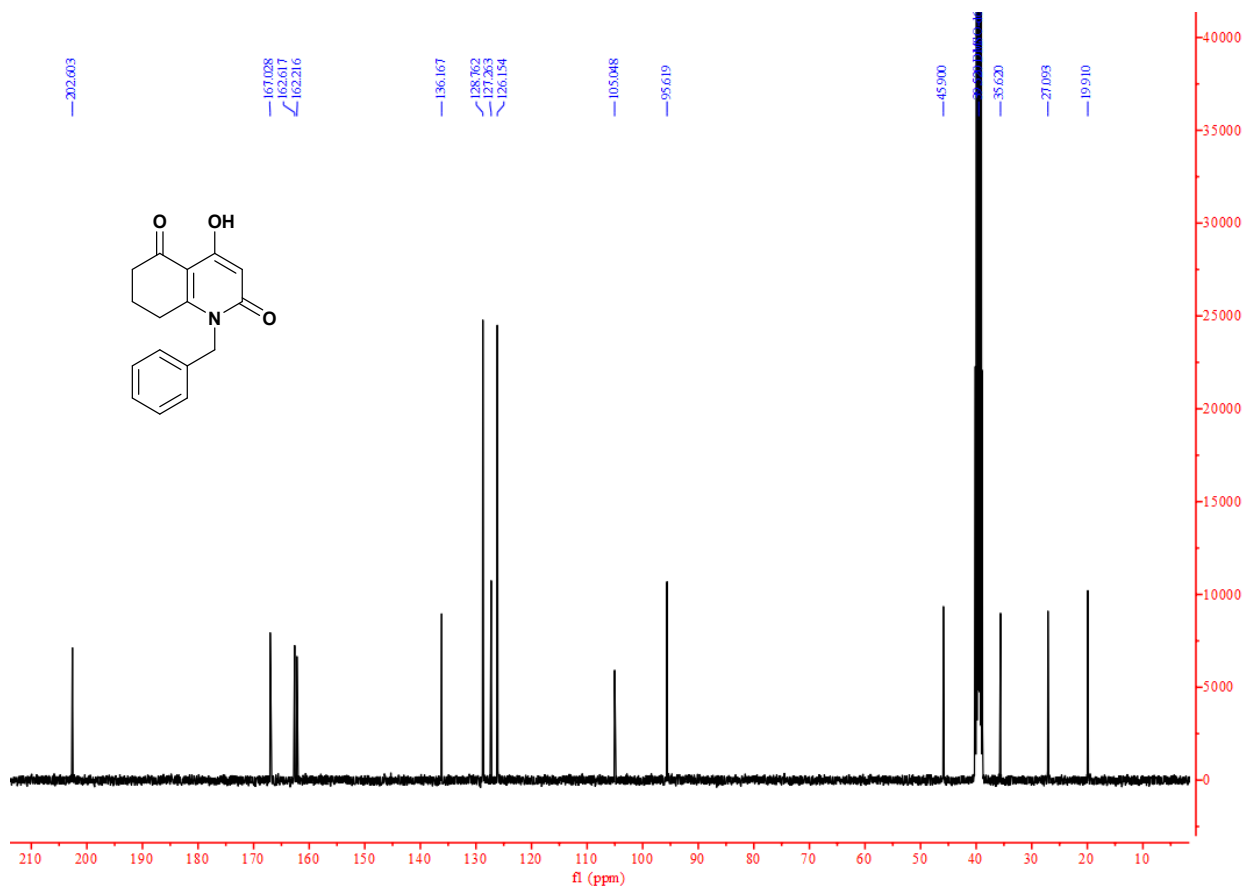
BG Mode:Calc Segment 1 - Event 1



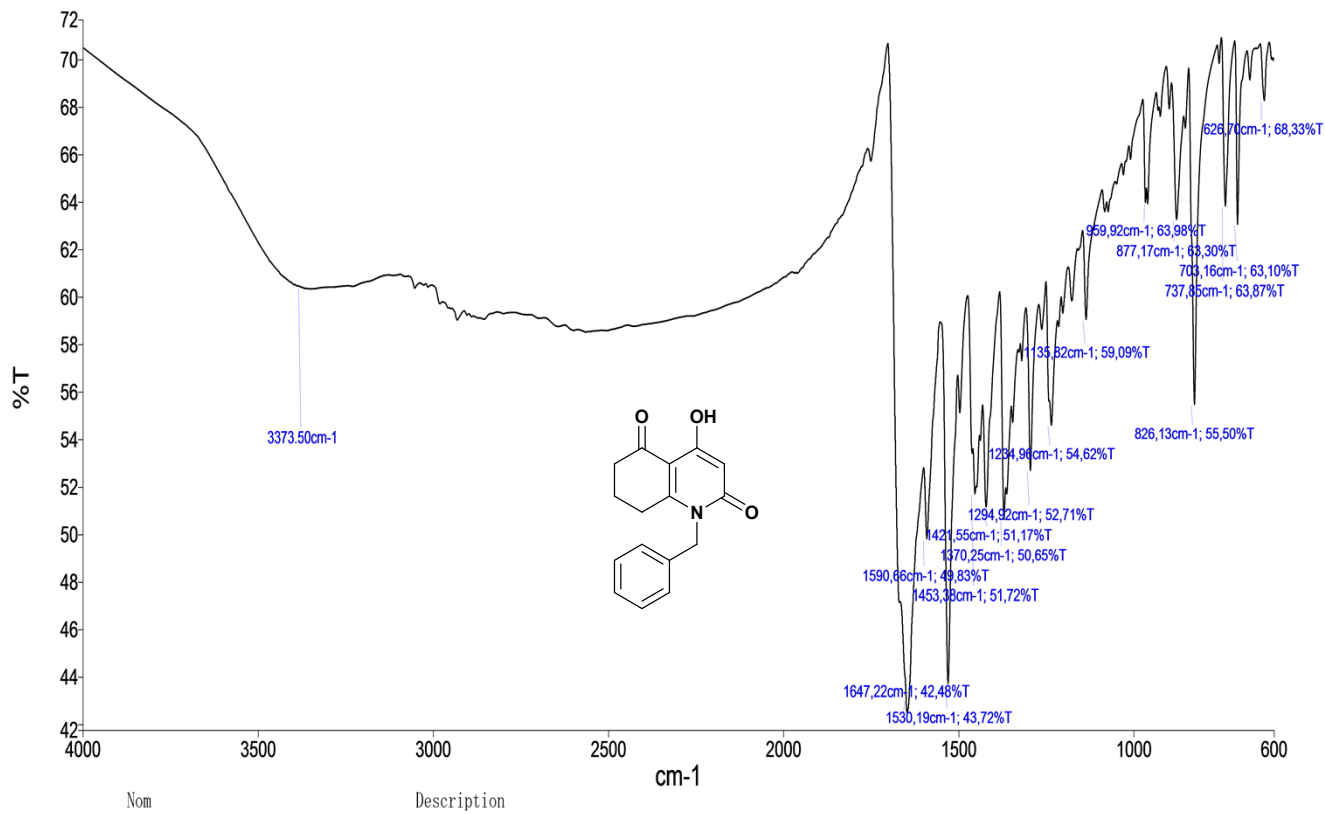
LC-MS spectrum: 4-hydroxy-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, DMSO-d₆): 1-benzyl-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione

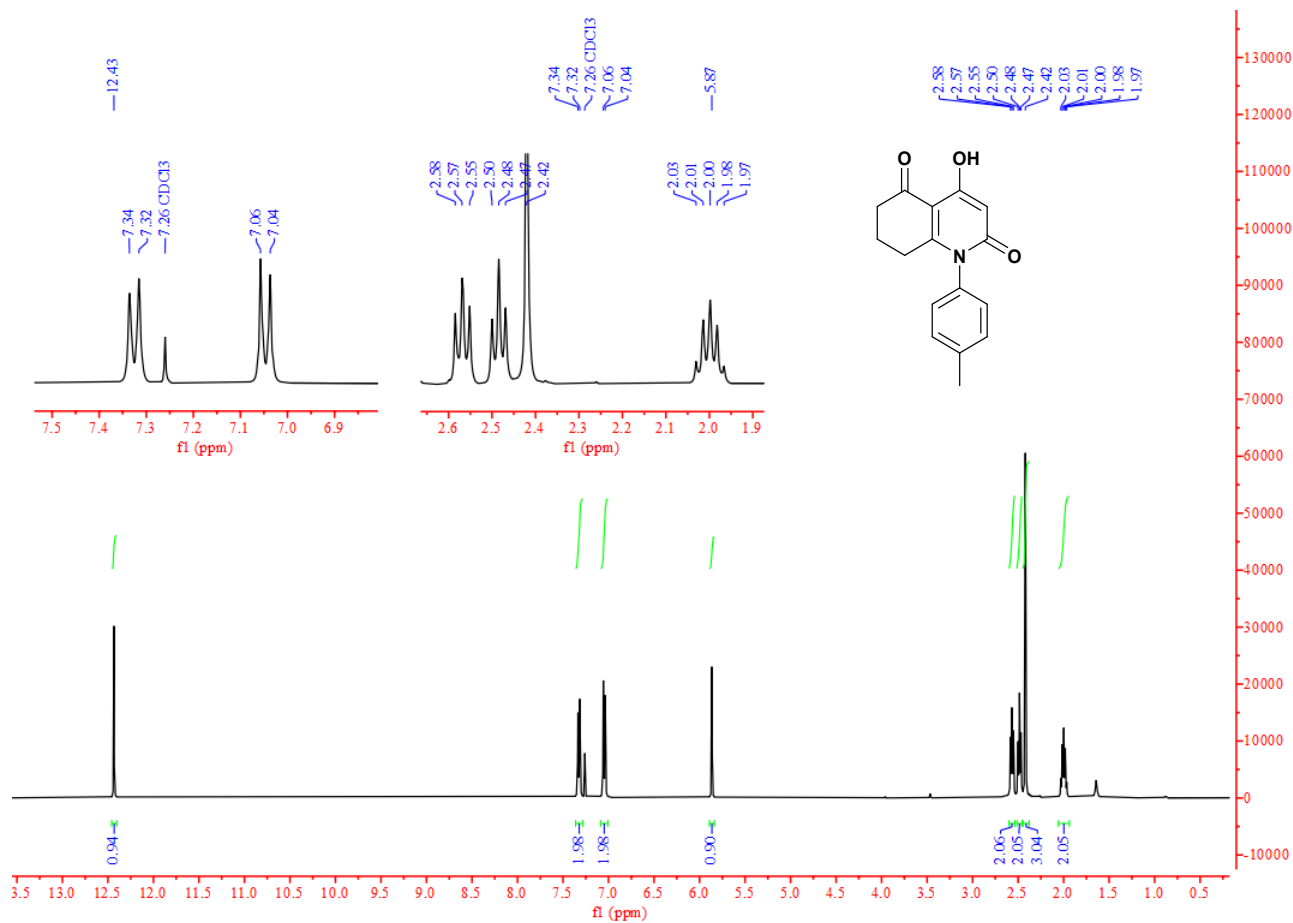


NMR ¹³C spectrum (101 MHz, DMSO-d₆): 1-benzyl-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione

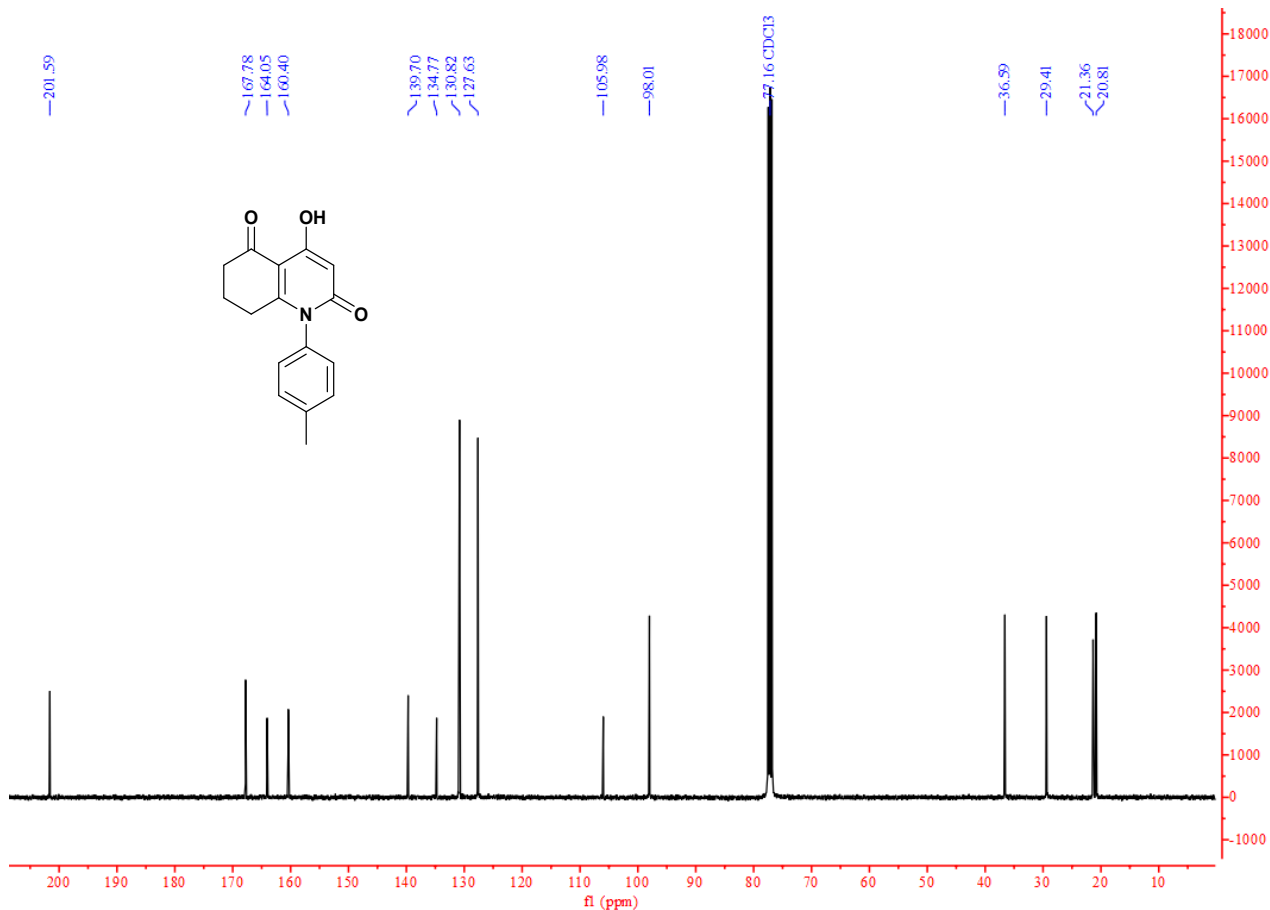


Nom Description
 PService 1228_1 Échantillon 1228 Par PService Date lundi, décembre 12 2022

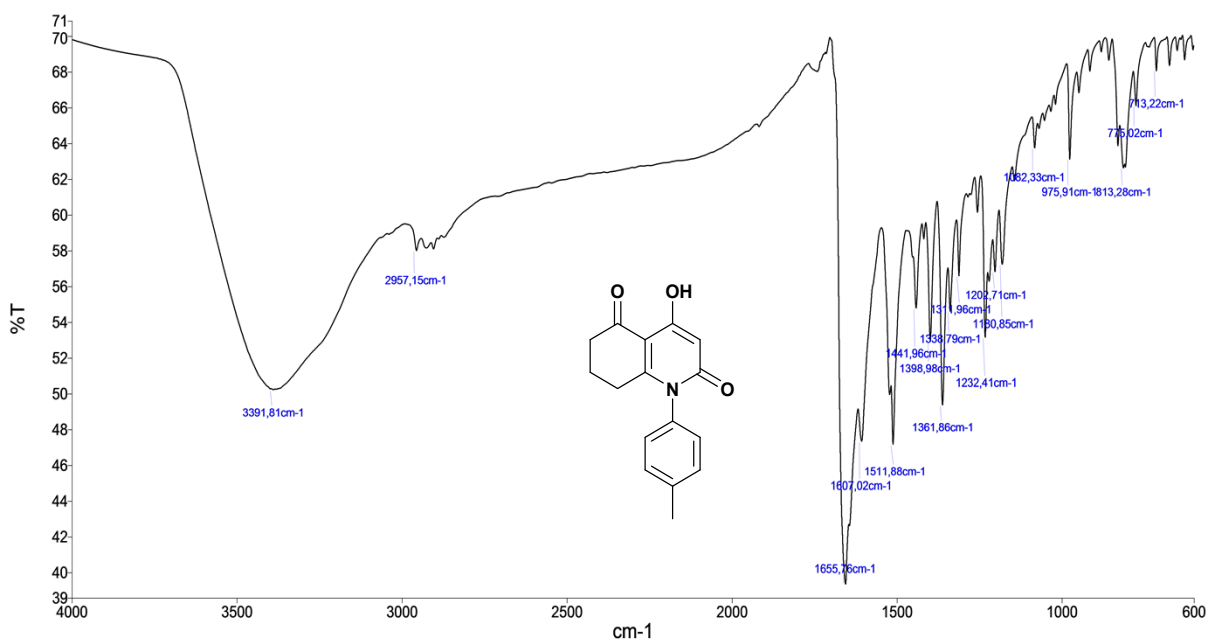
IR spectrum: 1-benzyl-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ^1H spectrum (400 MHz, CDCl_3): 4-hydroxy-1-(p-tolyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹³C spectrum (101 MHz, CDCl₃): 4-hydroxy-1-(p-tolyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione



IR spectrum: 4-hydroxy-1-(p-tolyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione

Nom Description
 Administrator 464_1 Échantillon 464 Par Administrator Date lundi, mars 20 2023

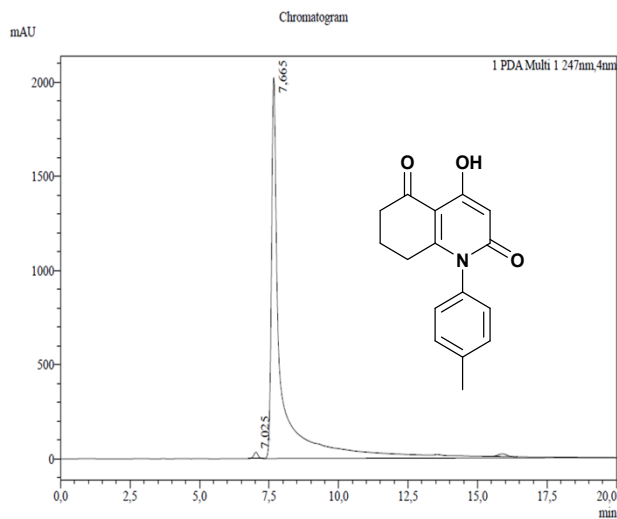
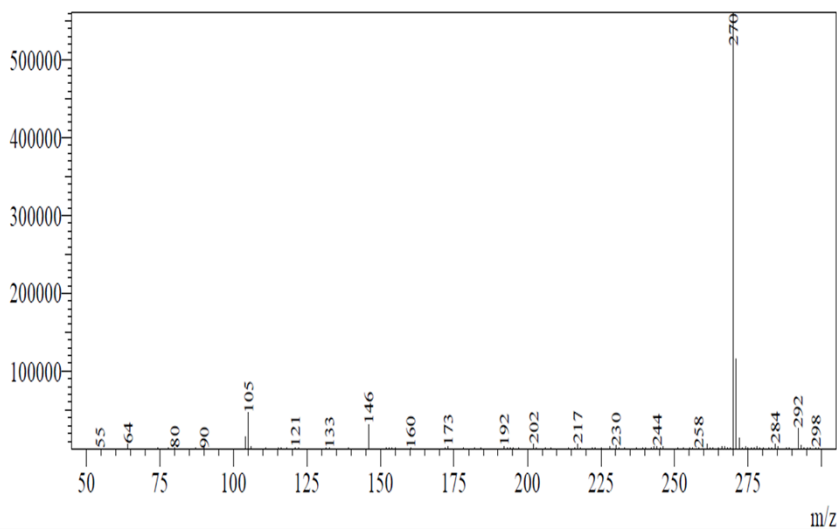
MS Spectrum

Line#:1 R.Time:----(Scan#:----)

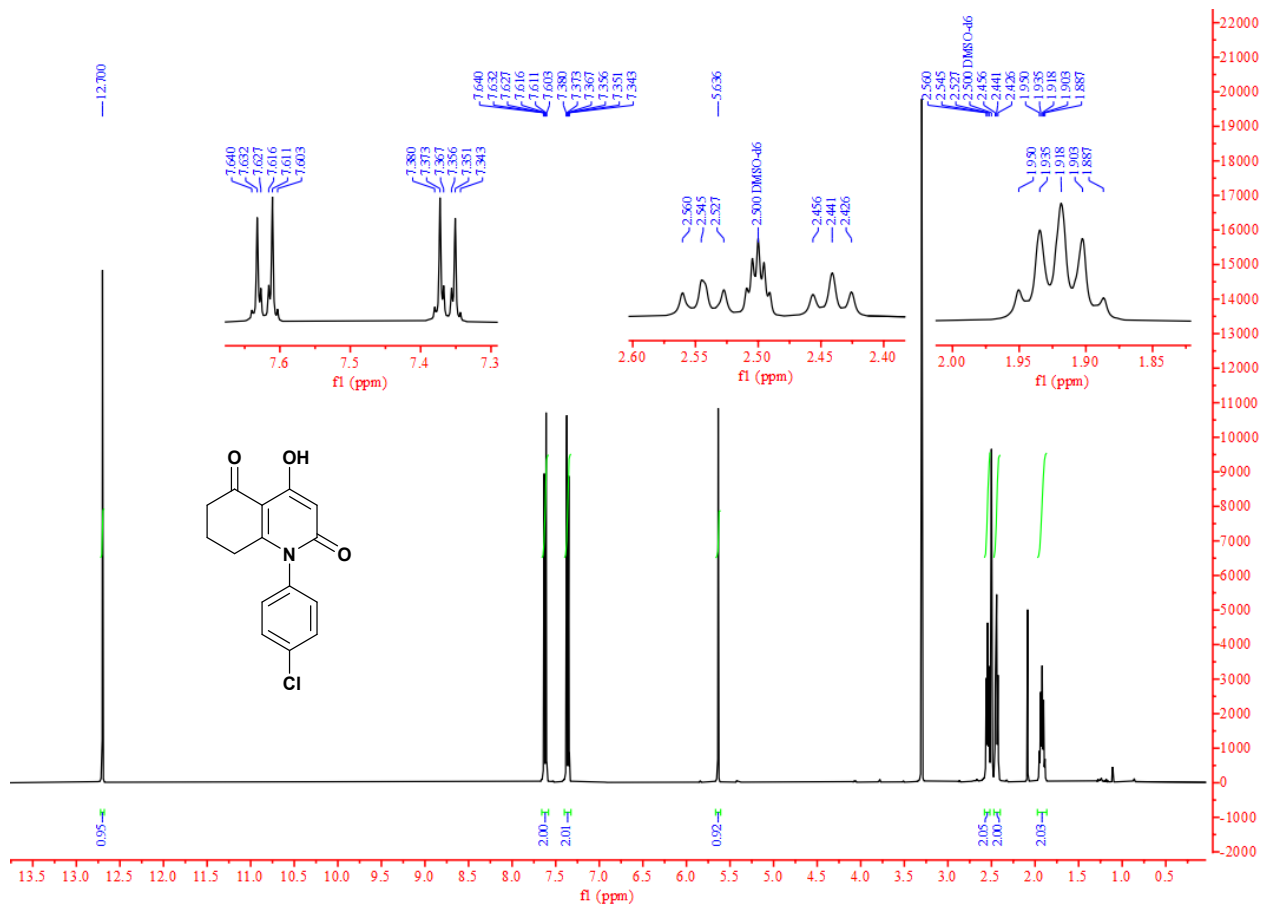
MassPeaks:175

Spectrum Mode:Averaged 0,567-0,600(35-37) Base Peak:270(560933)

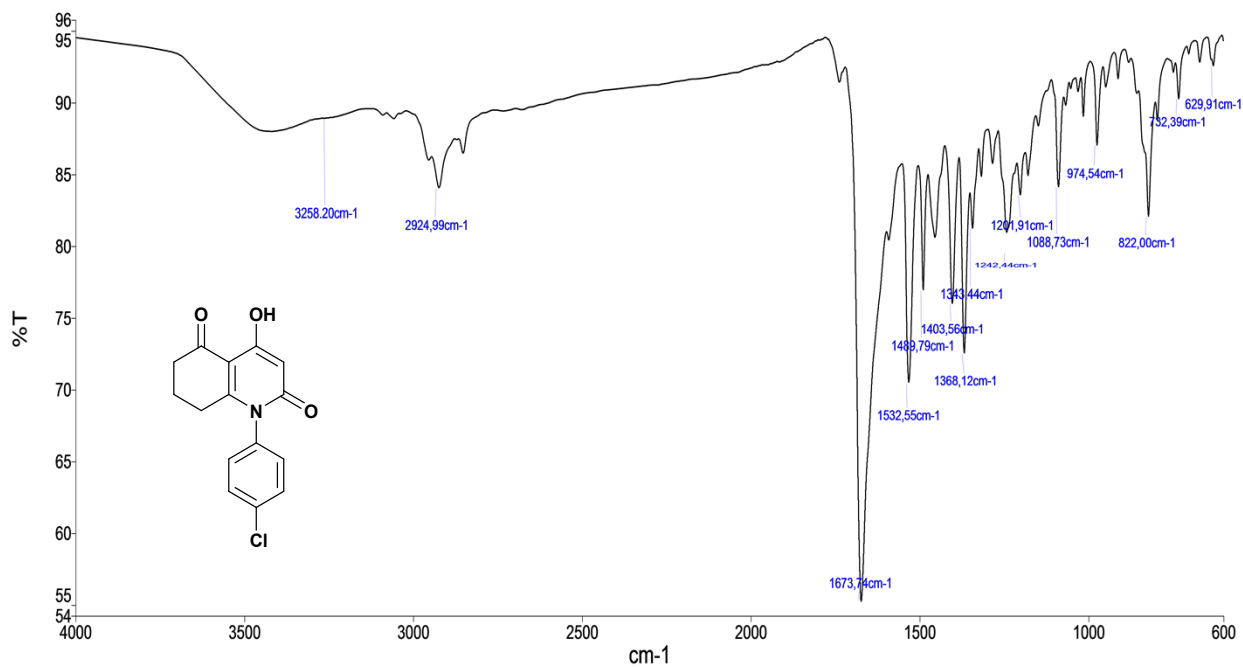
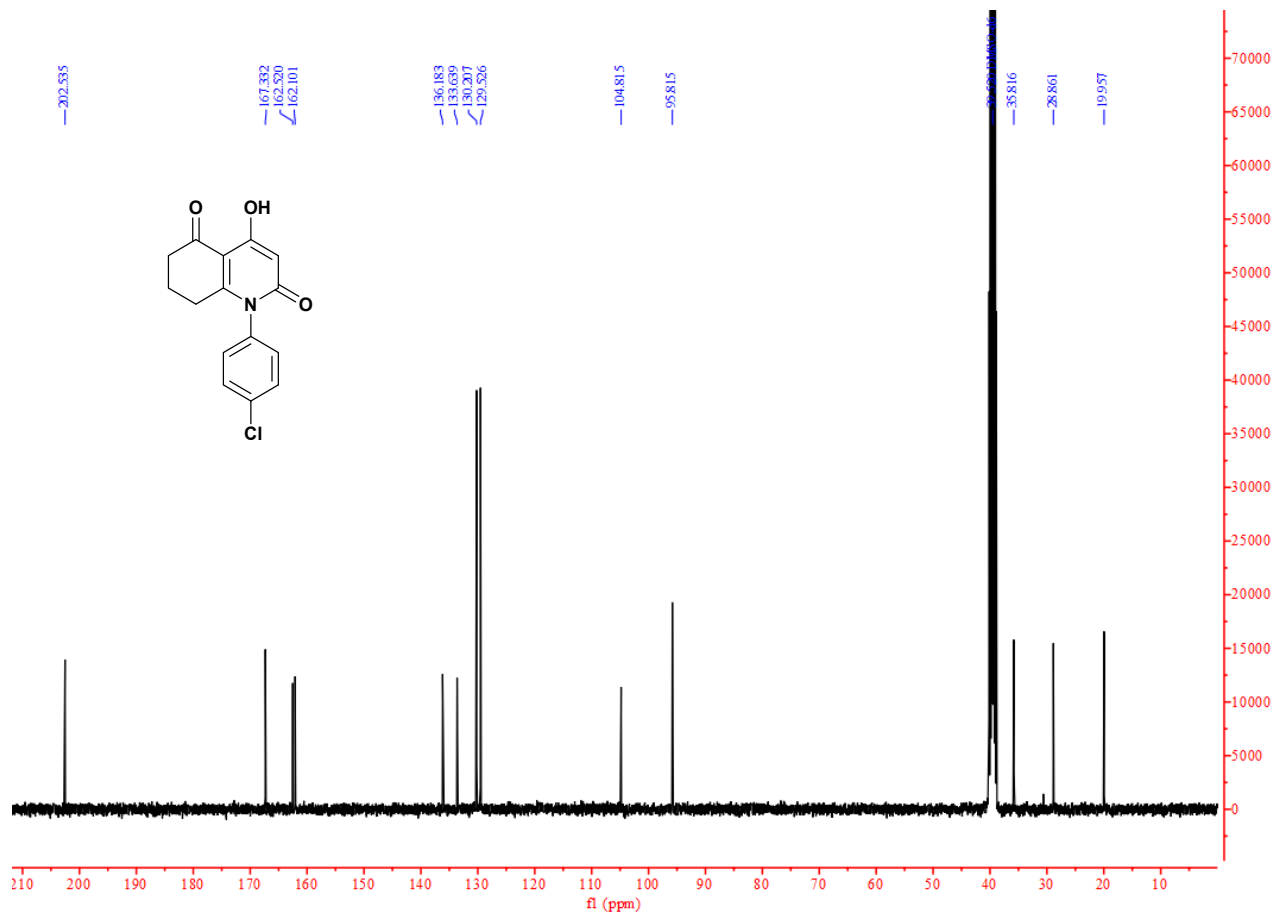
BG Mode:Calc Segment 1 - Event 1



LC-MS spectrum: 4-hydroxy-1-(p-tolyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione

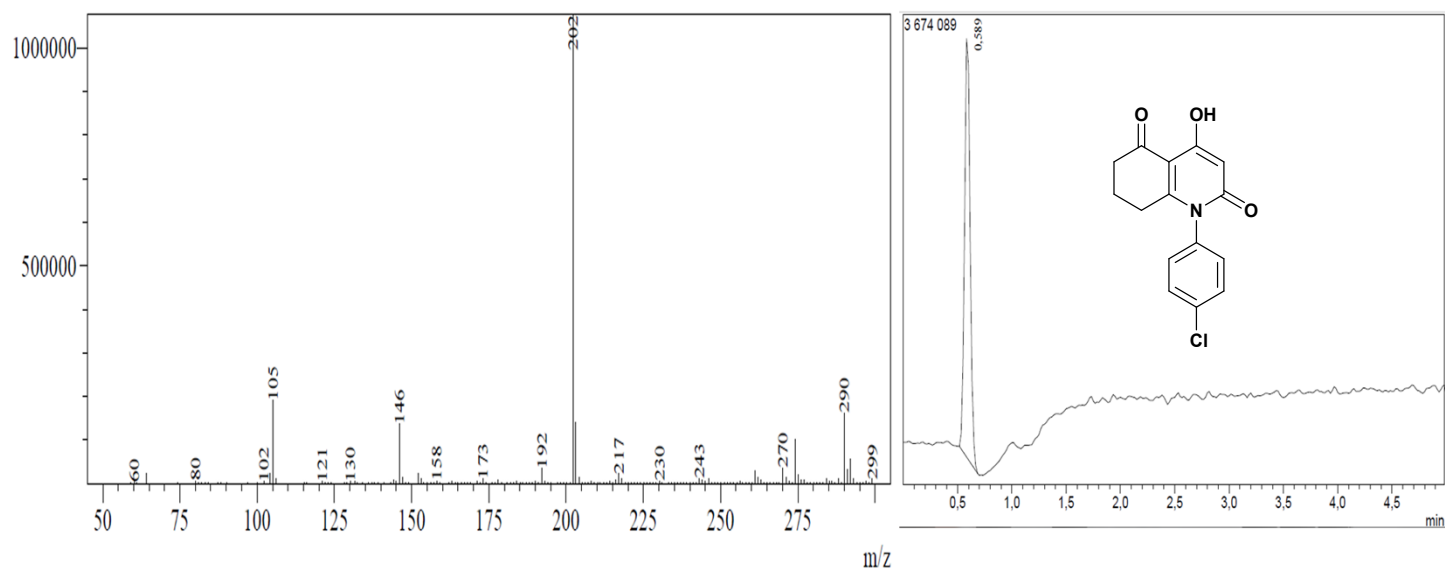


NMR ¹H spectrum (400 MHz, DMSO-d₆): 1-(4-chlorophenyl)-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione

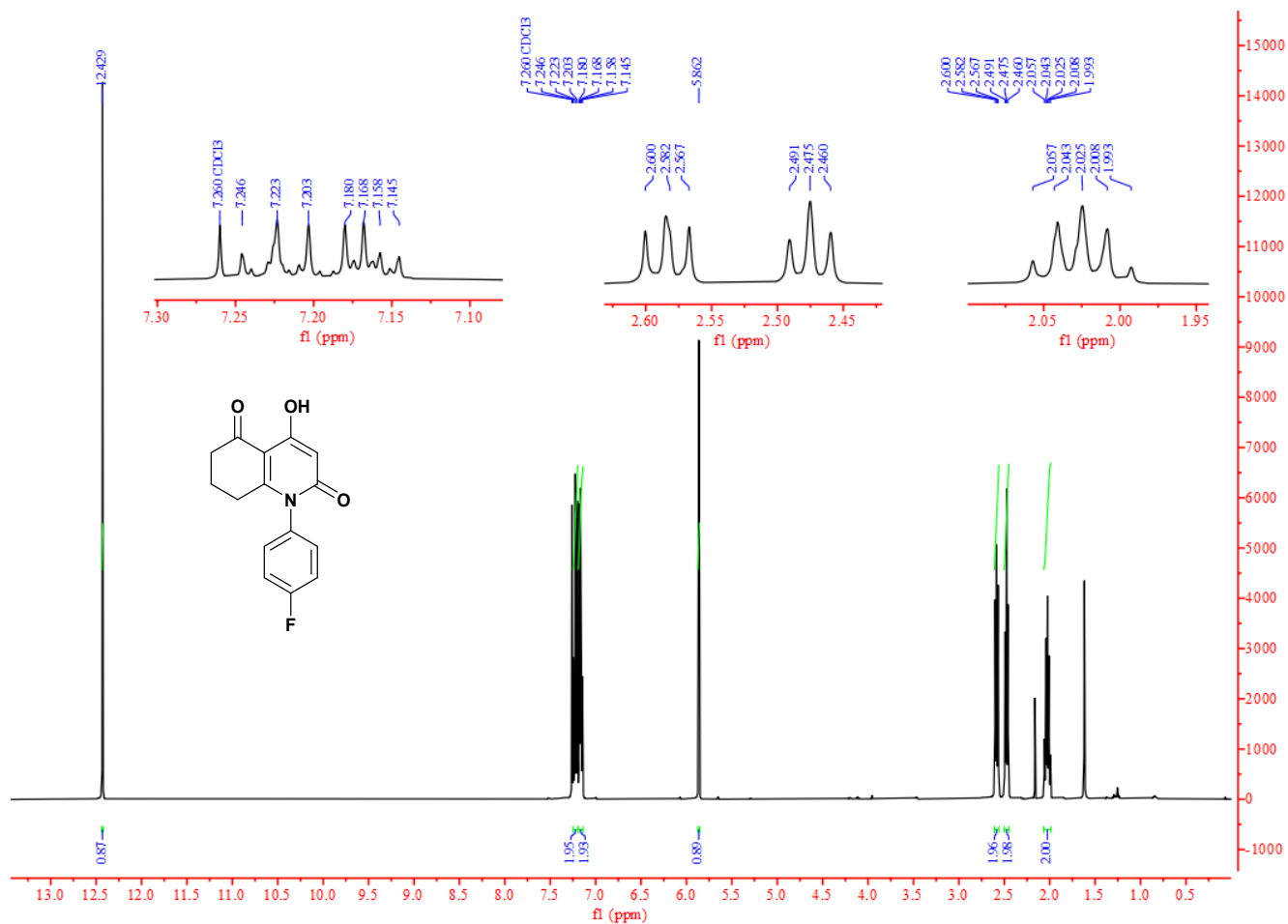


MS Spectrum

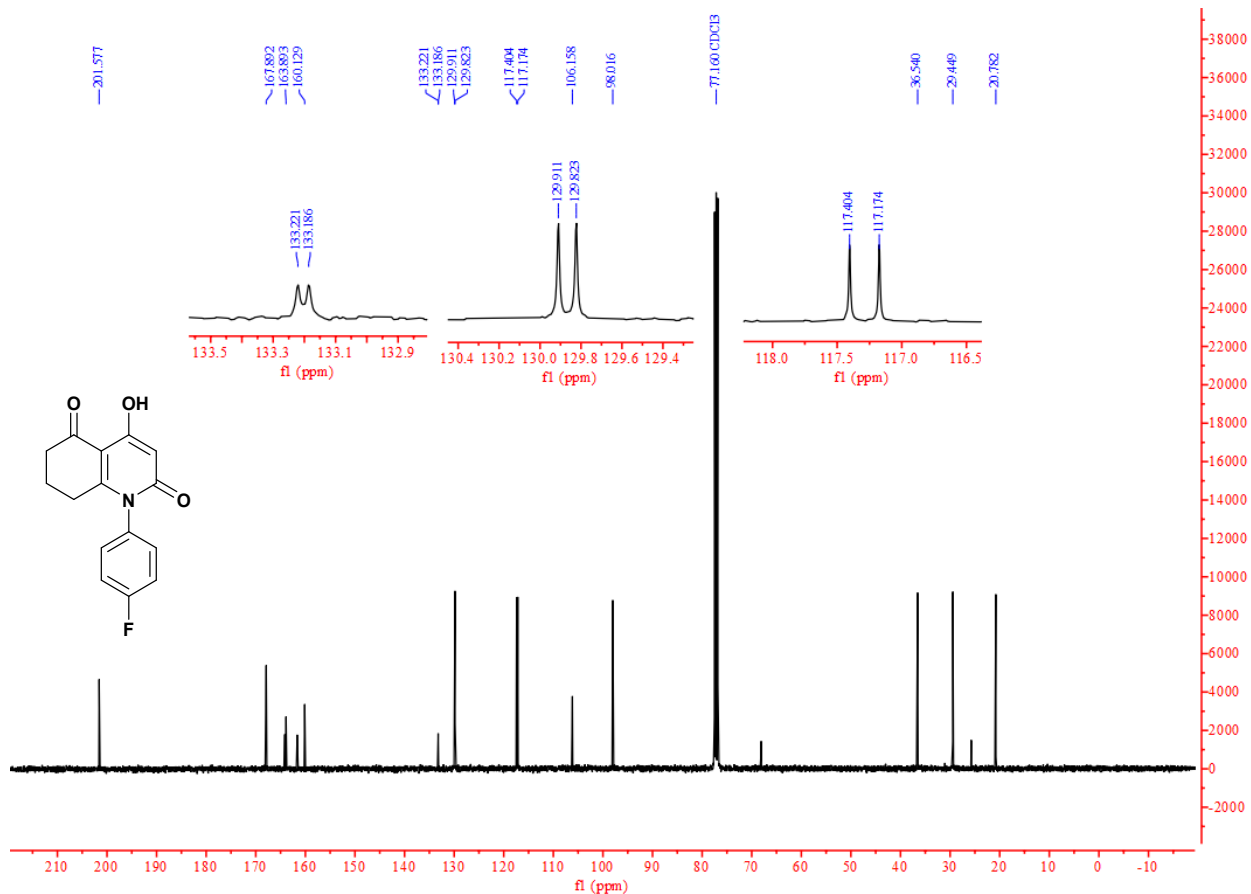
Line#:1 R.Time:----(Scan#:----)
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 Spectrum Mode:Averaged 0,567-0,600(35-37) Base Peak:202(1076800)
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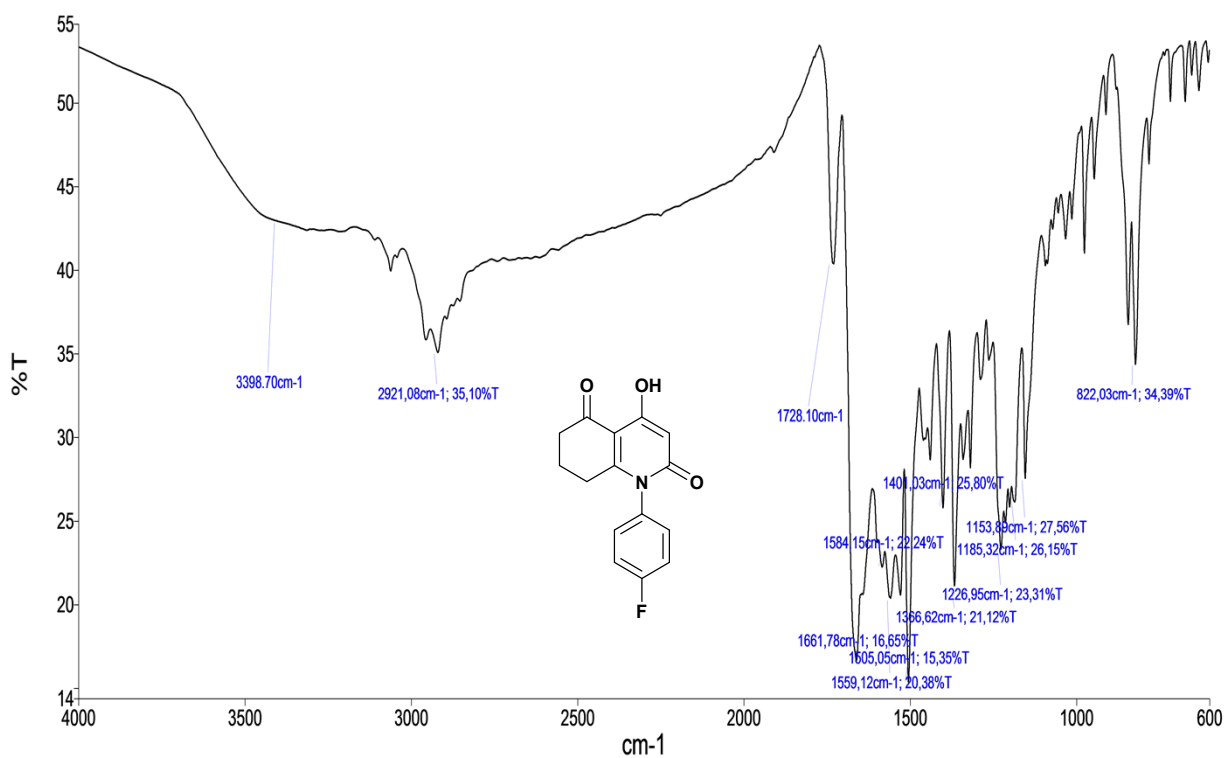
LC-MS spectrum: 1-(4-chlorophenyl)-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, CDCl₃): 1-(4-fluorophenyl)-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹³C spectrum (101 MHz, CDCl₃): 1-(4-fluorophenyl)-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione



IR spectrum: 1-(4-fluorophenyl)-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione

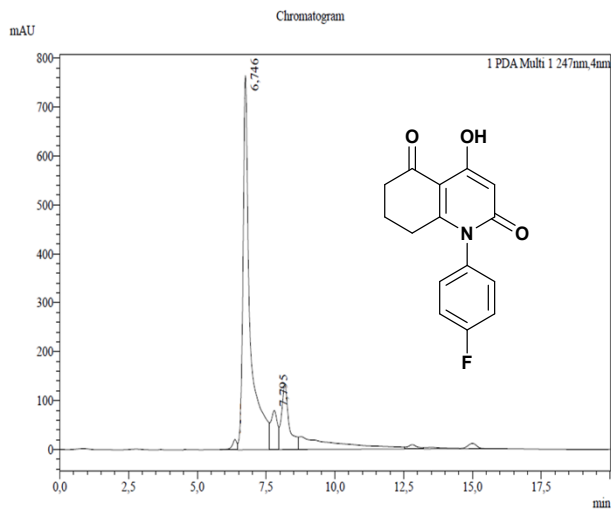
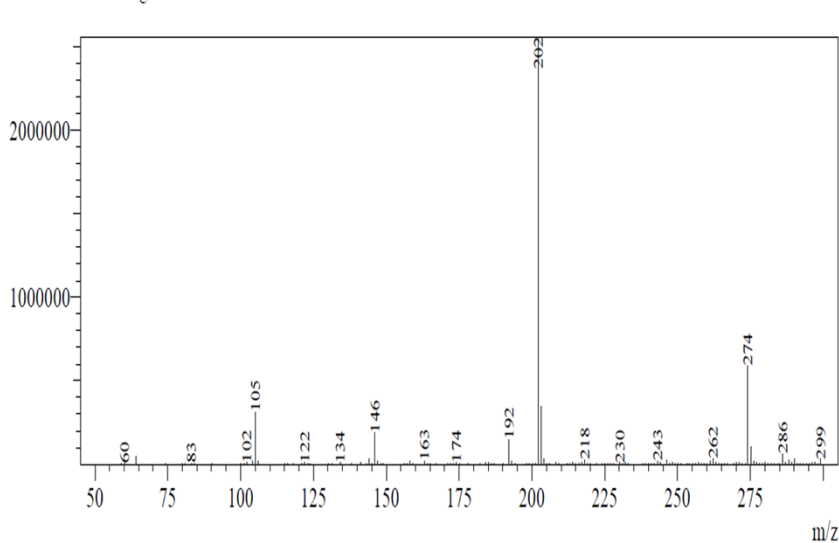
MS Spectrum

Line#:1 R.Time:----(Scan#:----)

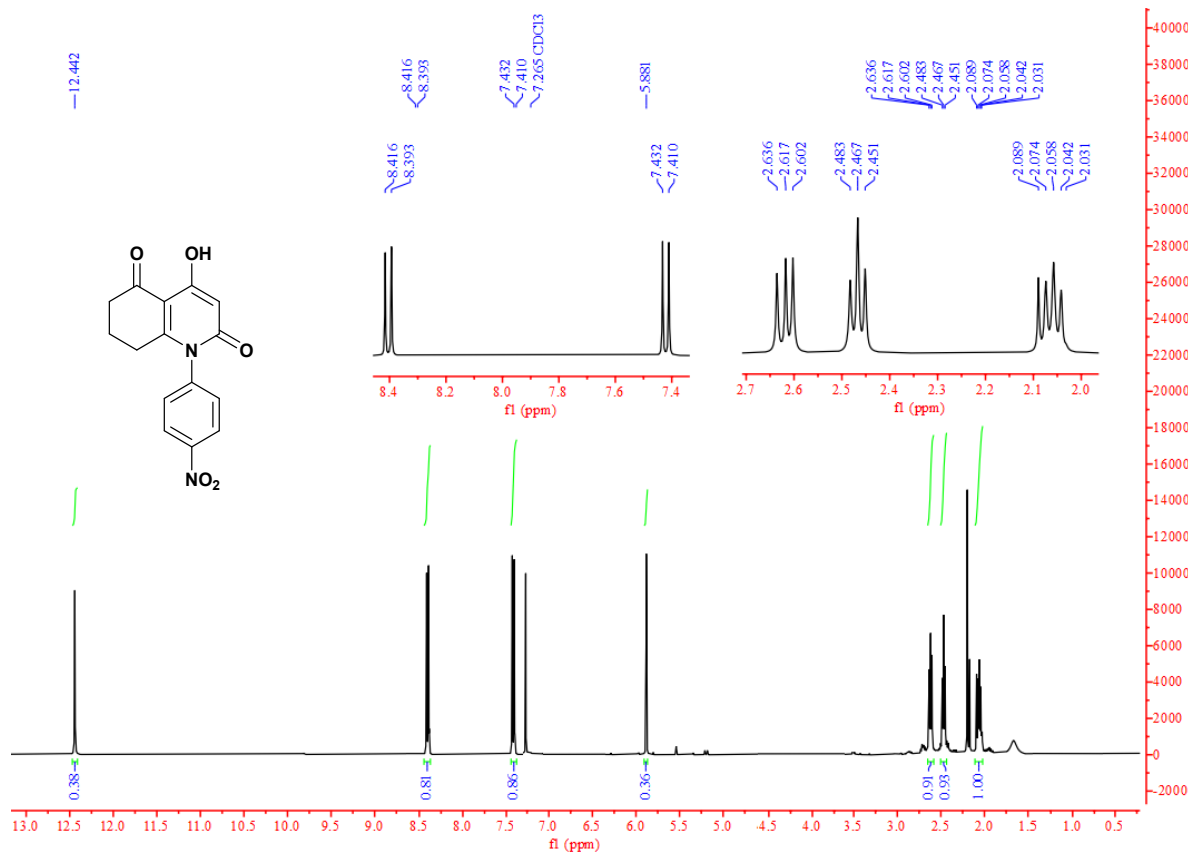
MassPeaks:231

Spectrum Mode:Averaged 0,583-0,617(36-38) Base Peak:202(2561290)

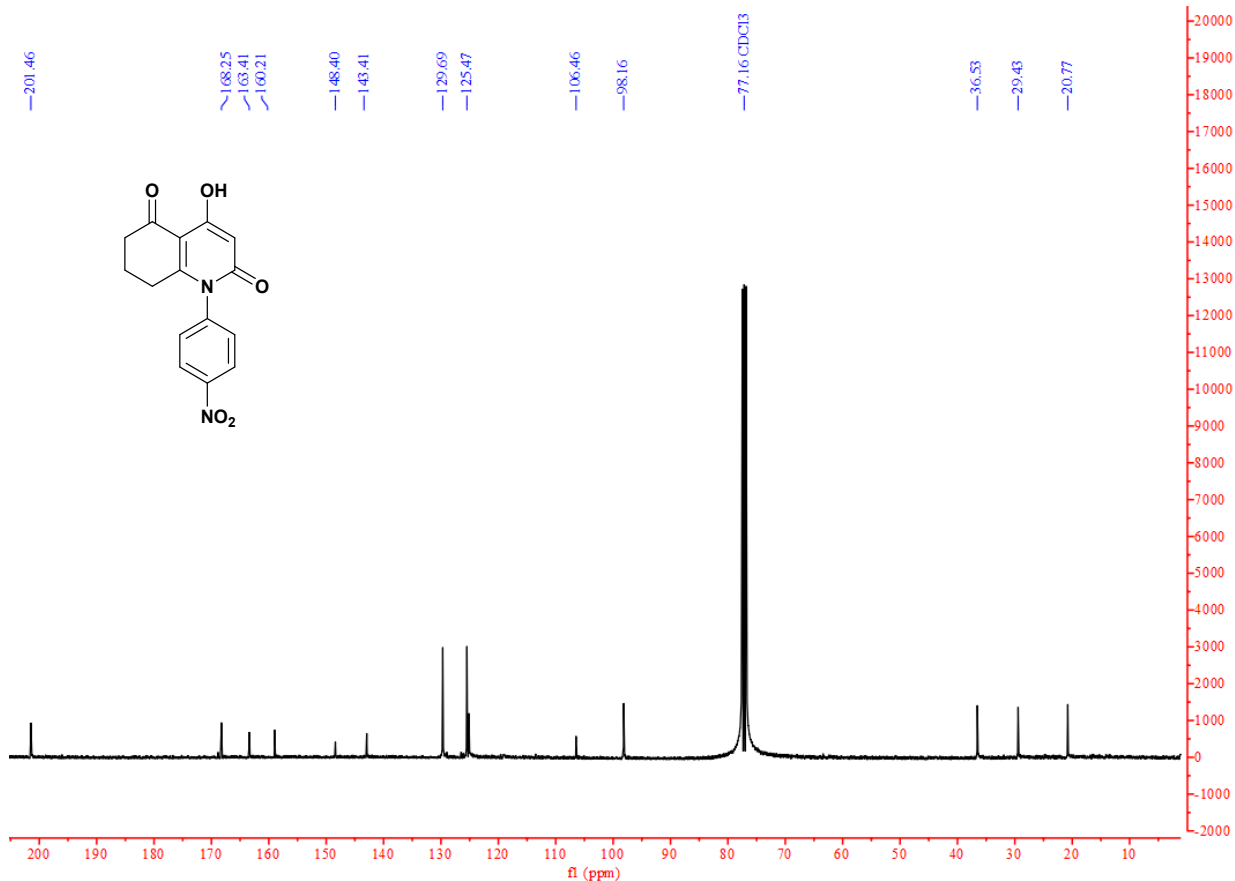
BG Mode:Calc Segment 1 - Event 1



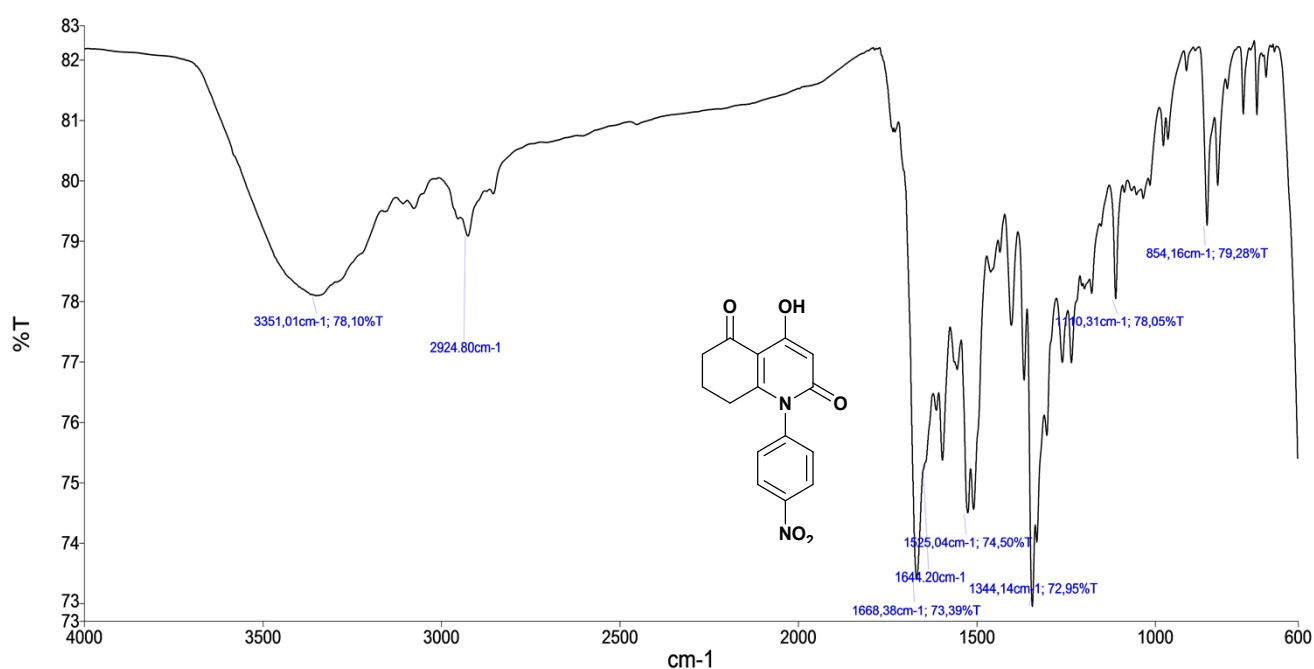
LC-MS spectrum: 1-(4-fluorophenyl)-4-hydroxy-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, CDCl₃): 4-hydroxy-1-(4-nitrophenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione

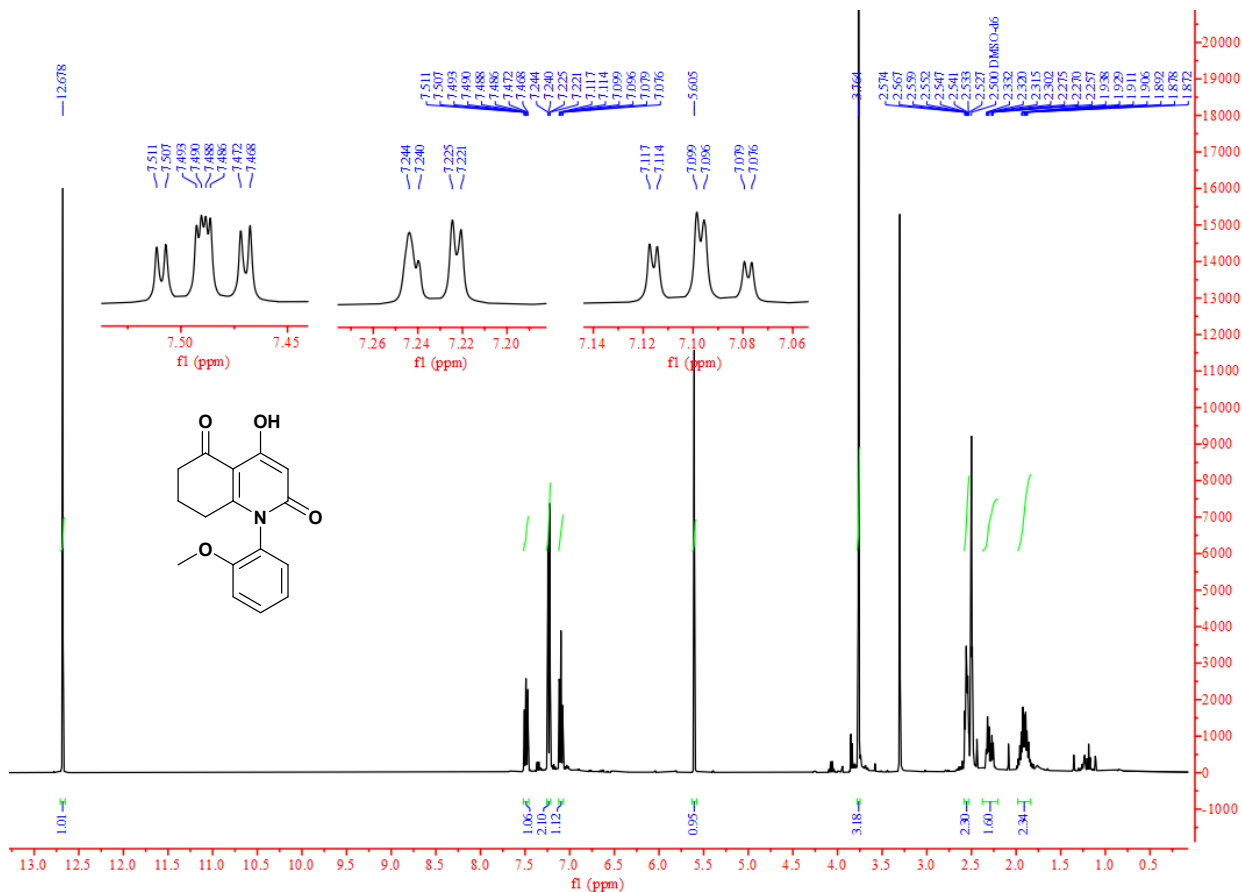


NMR ¹³C spectrum (101 MHz, CDCl₃): 4-hydroxy-1-(4-nitrophenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione

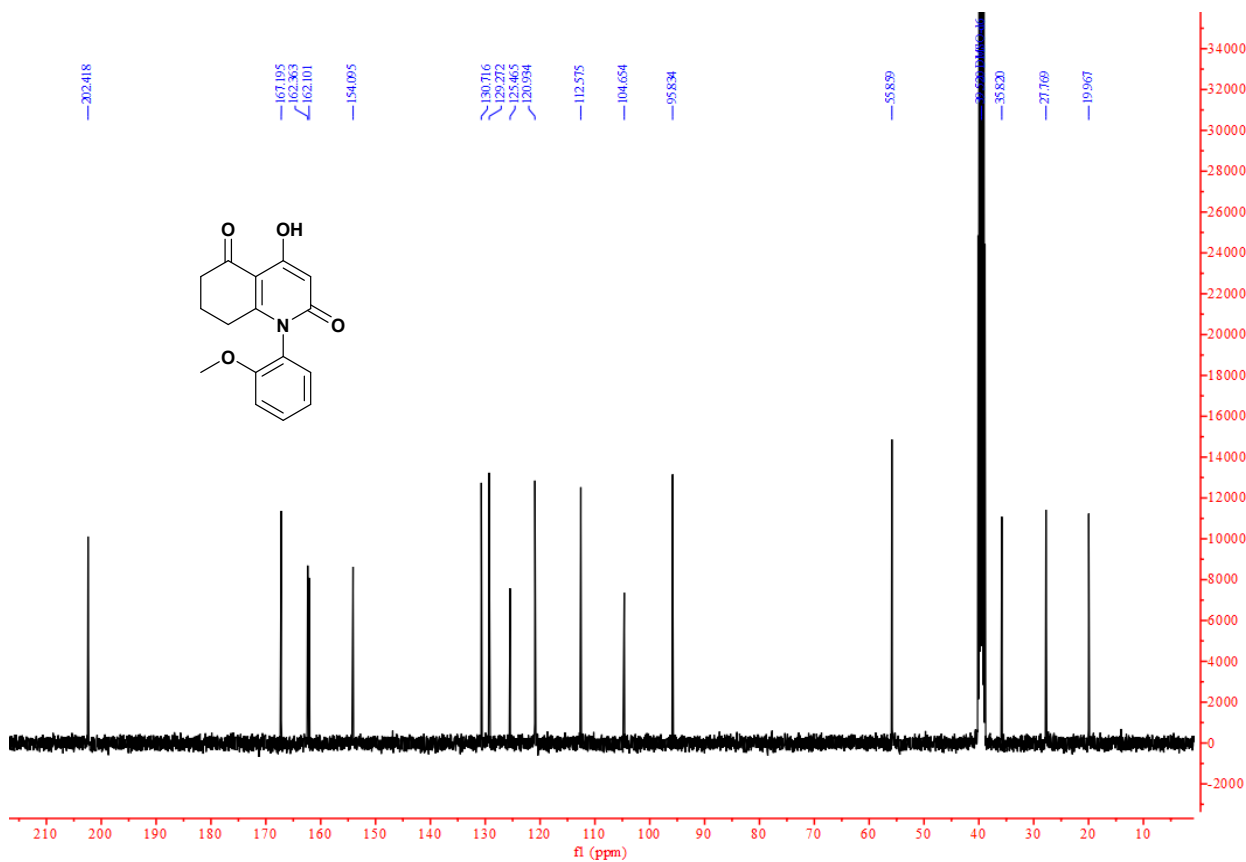


Nom Description
 — PService 1227_1 Échantillon 1227 Par PService Date lundi, décembre 12 2022

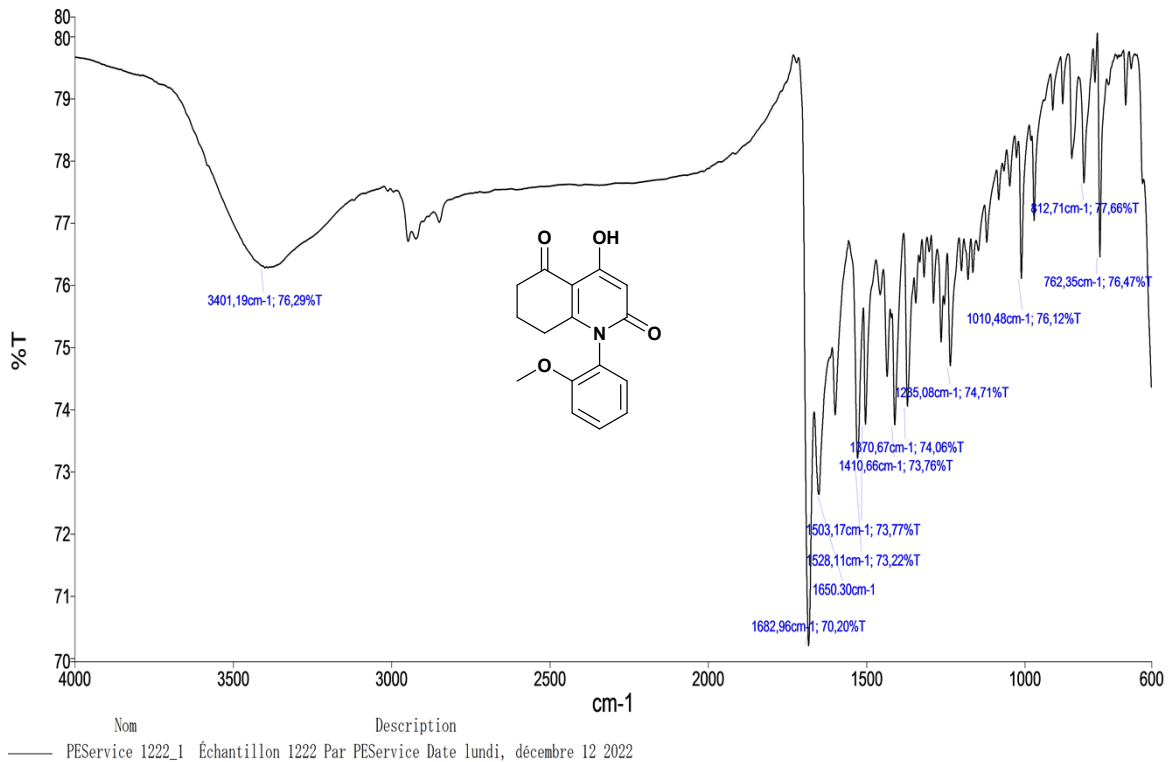
IR spectrum: 4-hydroxy-1-(4-nitrophenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, DMSO-d₆): 4-hydroxy-1-(2-methoxyphenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione



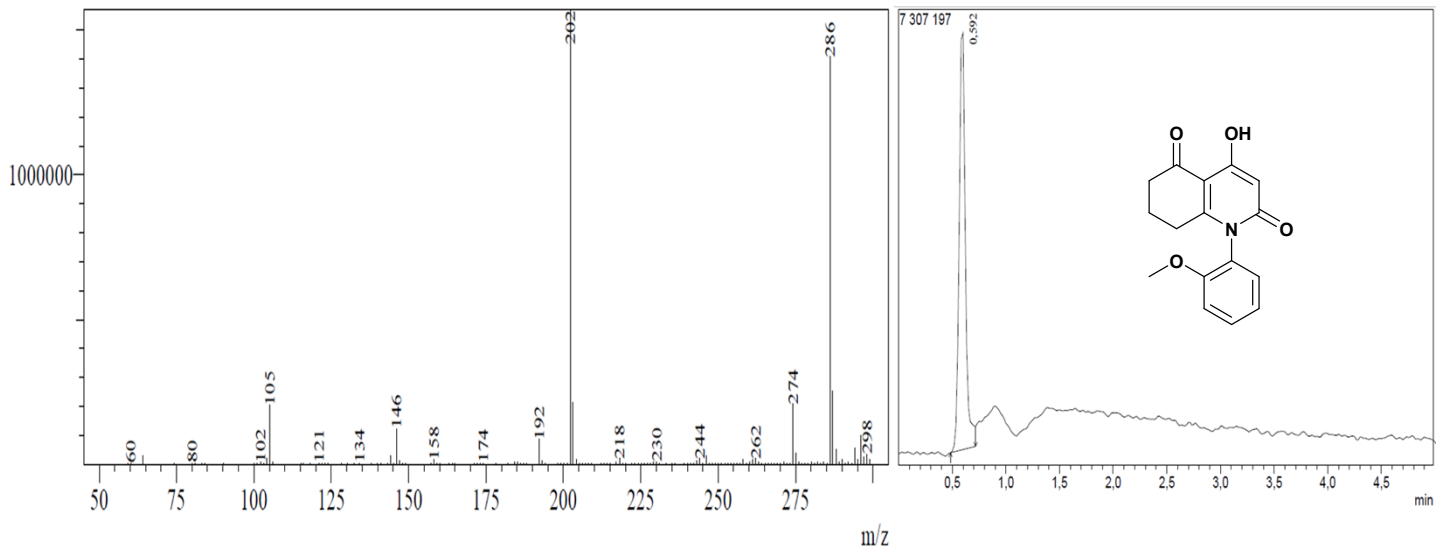
NMR ¹³C spectrum (101 MHz, DMSO-d₆): 4-hydroxy-1-(2-methoxyphenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione



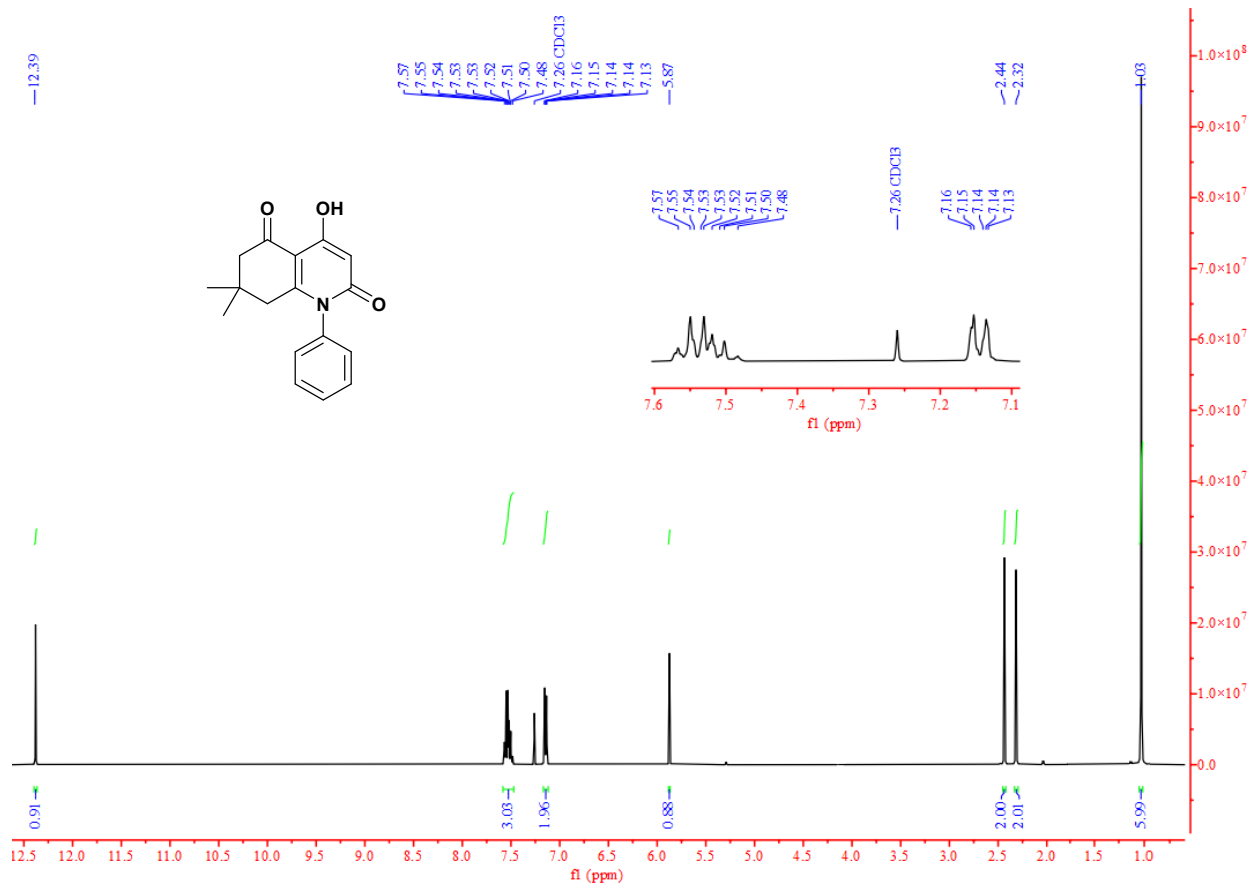
IR spectrum: 4-hydroxy-1-(2-methoxyphenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione

MS Spectrum

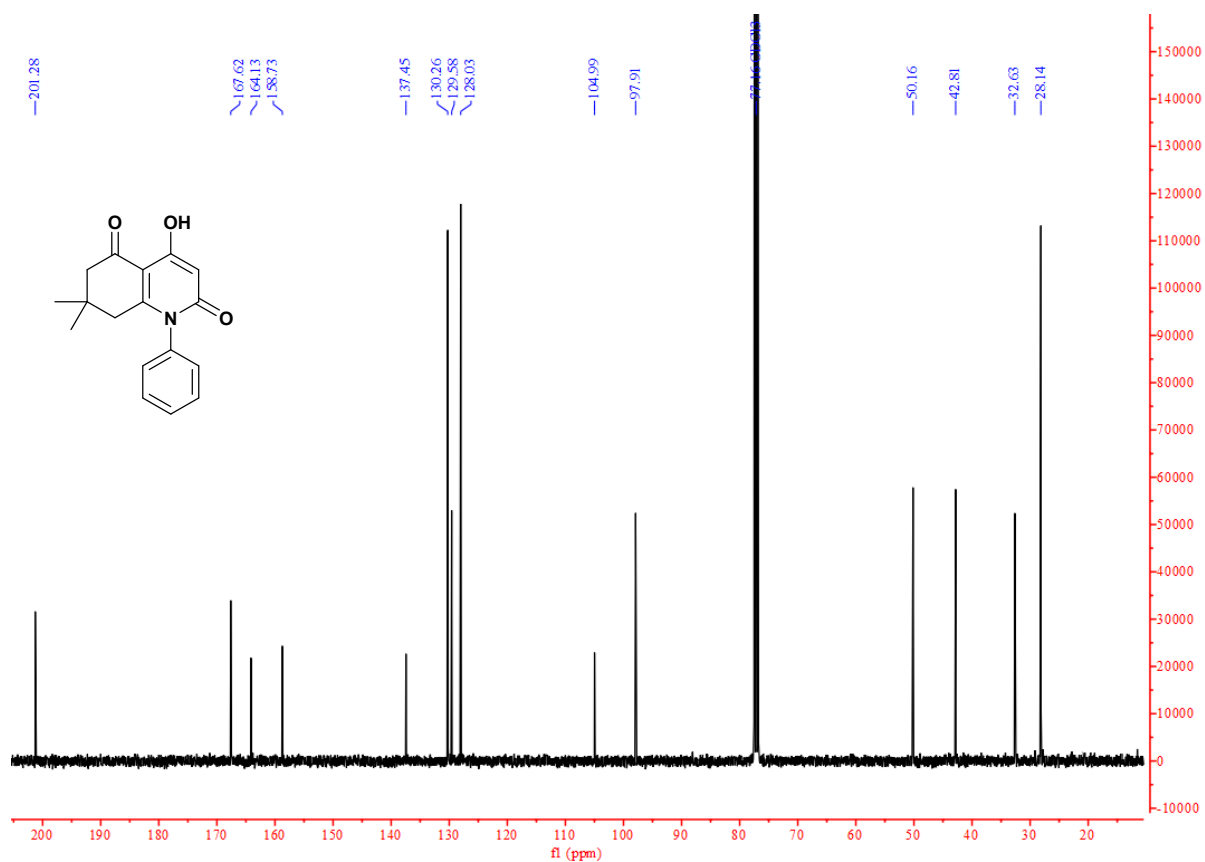
Line#:1 R.Time:----(Scan#:----)
 MassPeaks:229
 Spectrum Mode:Averaged 0,583-0,617(36-38) Base Peak:202(1569936)
 BG Mode:Calc Segment 1 - Event 1



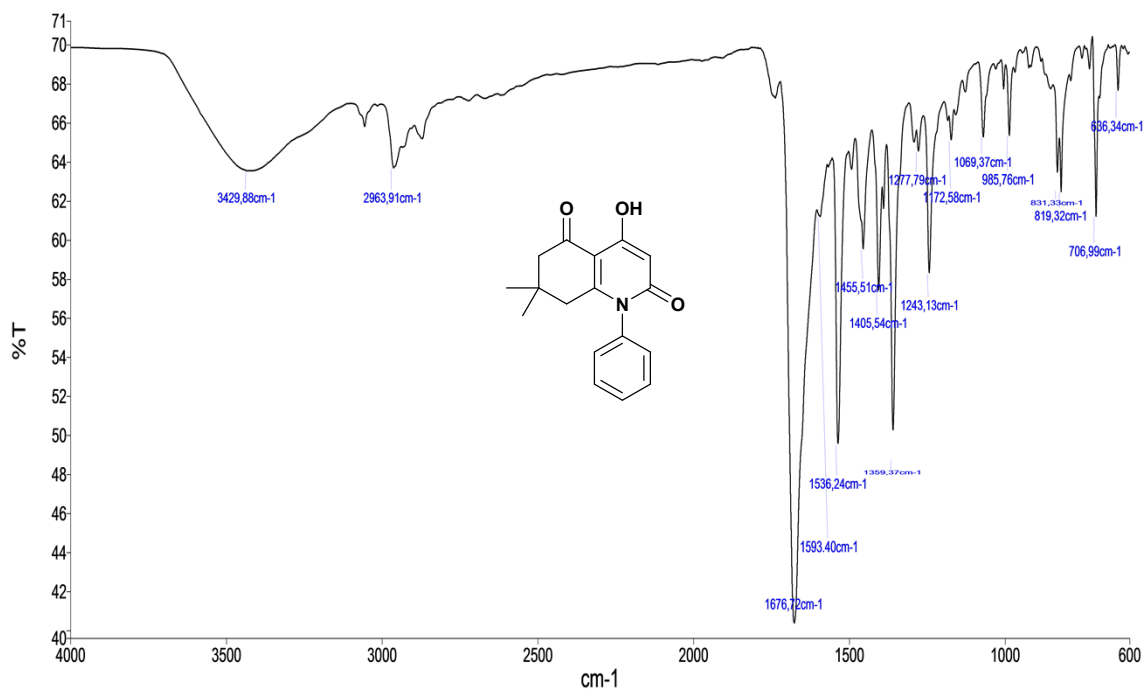
LC-MS spectrum: 4-hydroxy-1-(2-methoxyphenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, CDCl₃): 4-hydroxy-7,7-dimethyl-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹³C spectrum (101 MHz, CDCl₃): 4-hydroxy-7,7-dimethyl-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



IR spectrum: 4-hydroxy-7,7-dimethyl-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

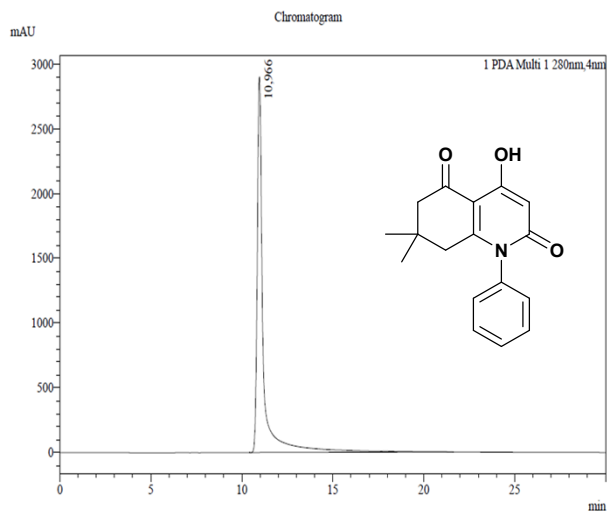
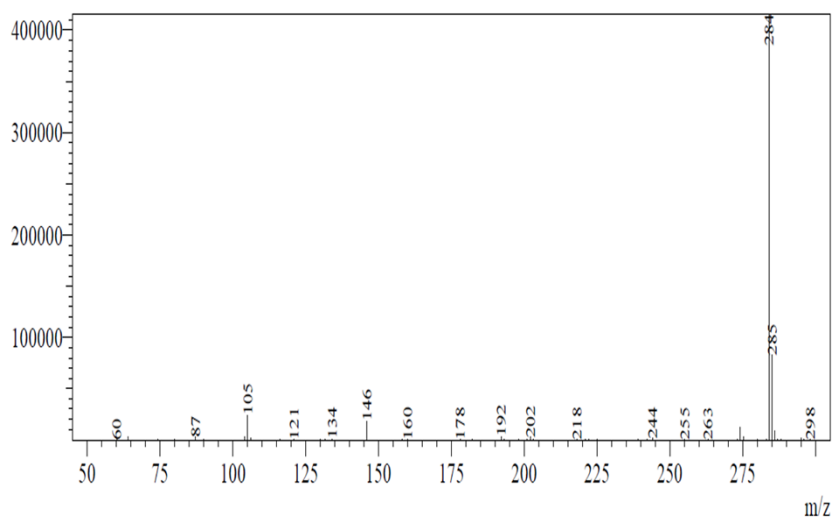
MS Spectrum

Line#:1 R.Time:----(Scan#:----)

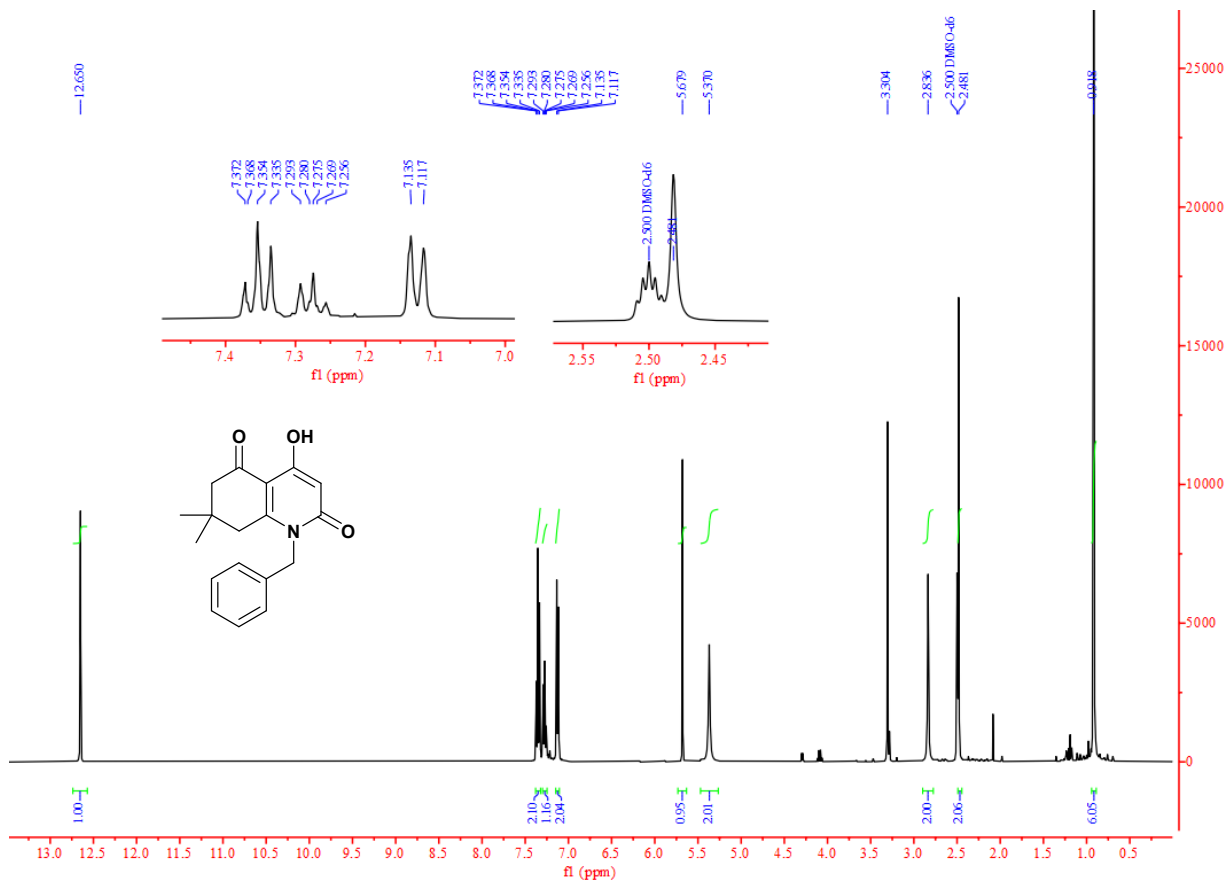
MassPeaks:147

Spectrum Mode:Averaged 0.650-0.833(40-51) Base Peak:284(416270)

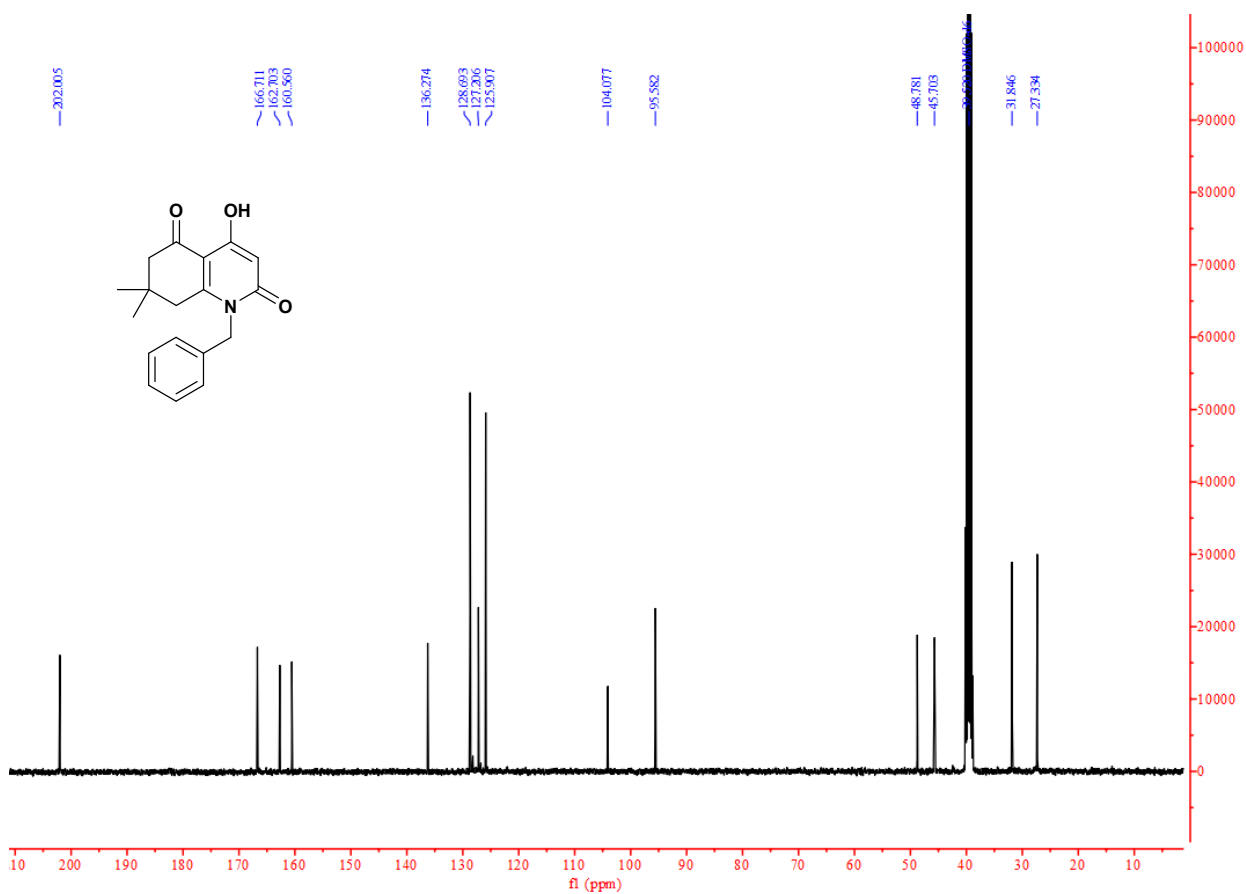
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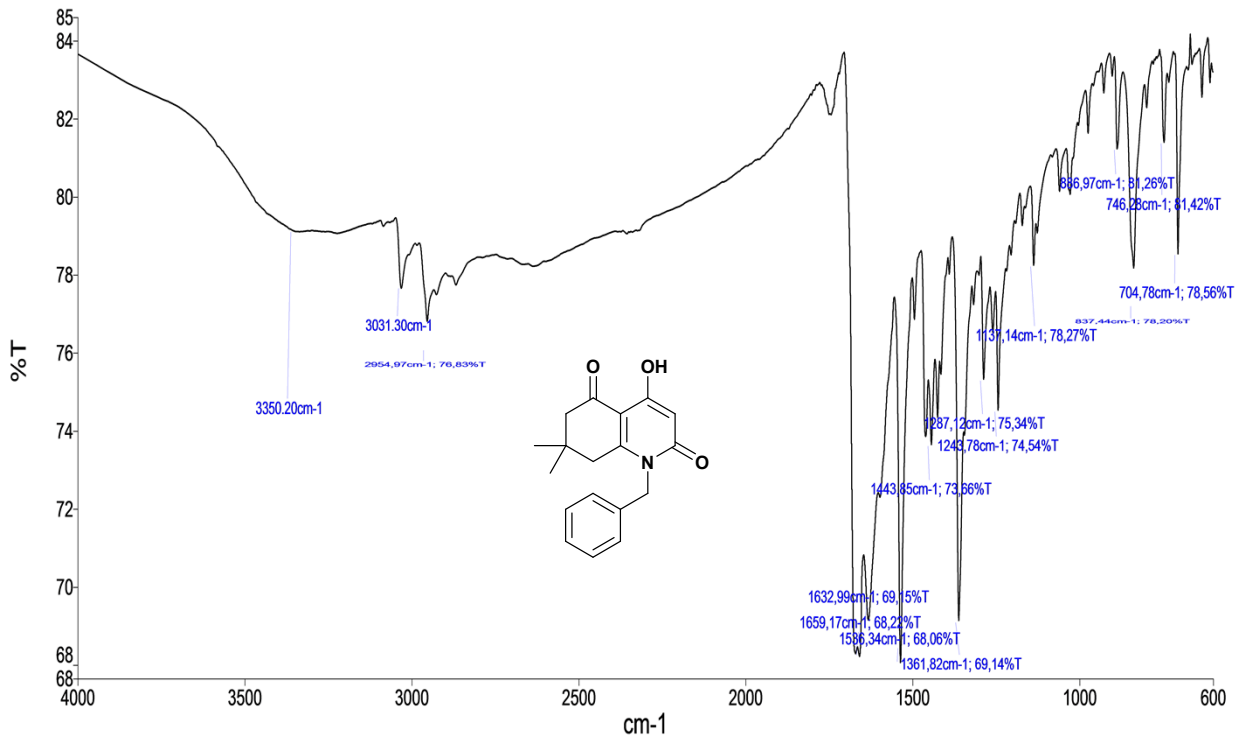
LC-MS spectrum: 4-hydroxy-7,7-dimethyl-1-phenyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ^1H spectrum (400 MHz, DMSO-d_6): 1-benzyl-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

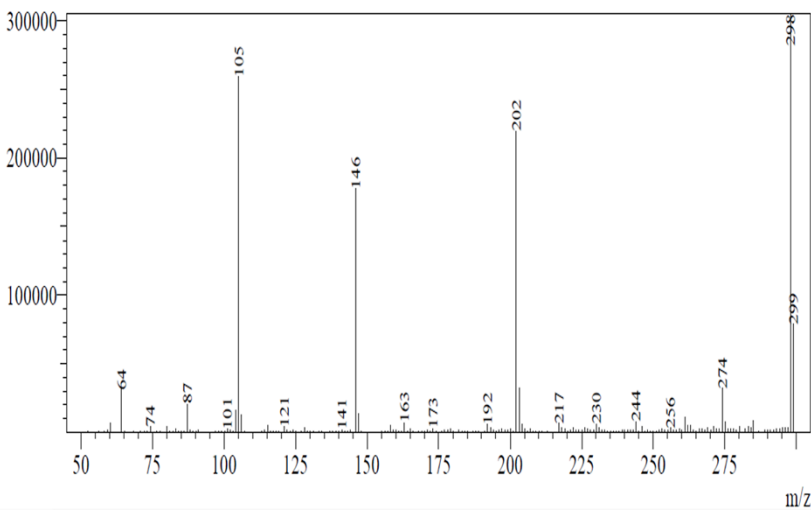


NMR ^{13}C spectrum (101 MHz, DMSO-d_6): 1-benzyl-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

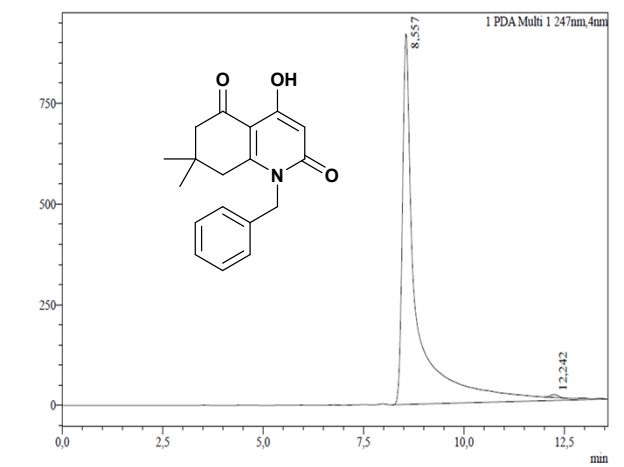


MS Spectrum

Line#:1 R.Time:----(Scan#:----)
 MassPeaks:222
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 BG Mode:Calc Segment 1 - Event 1

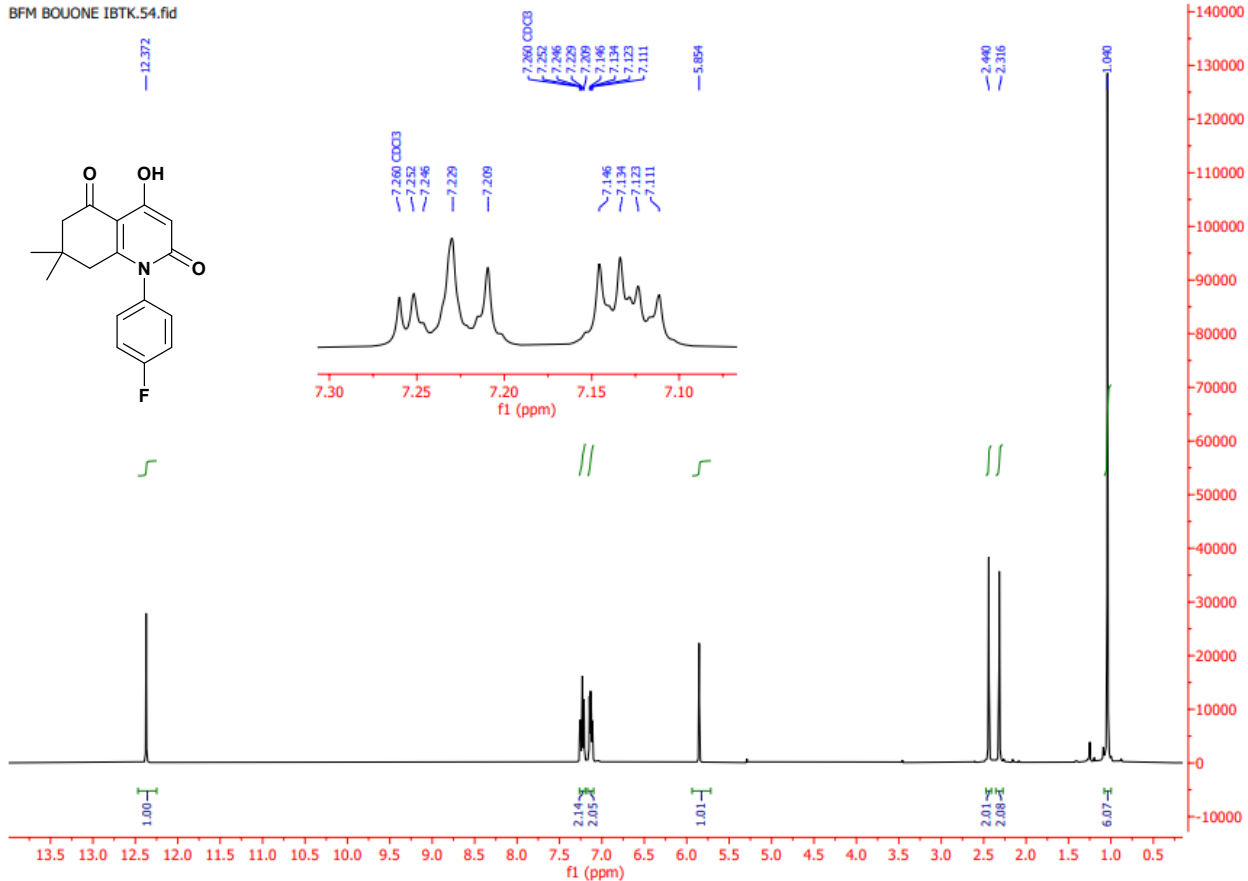


Chromatogram

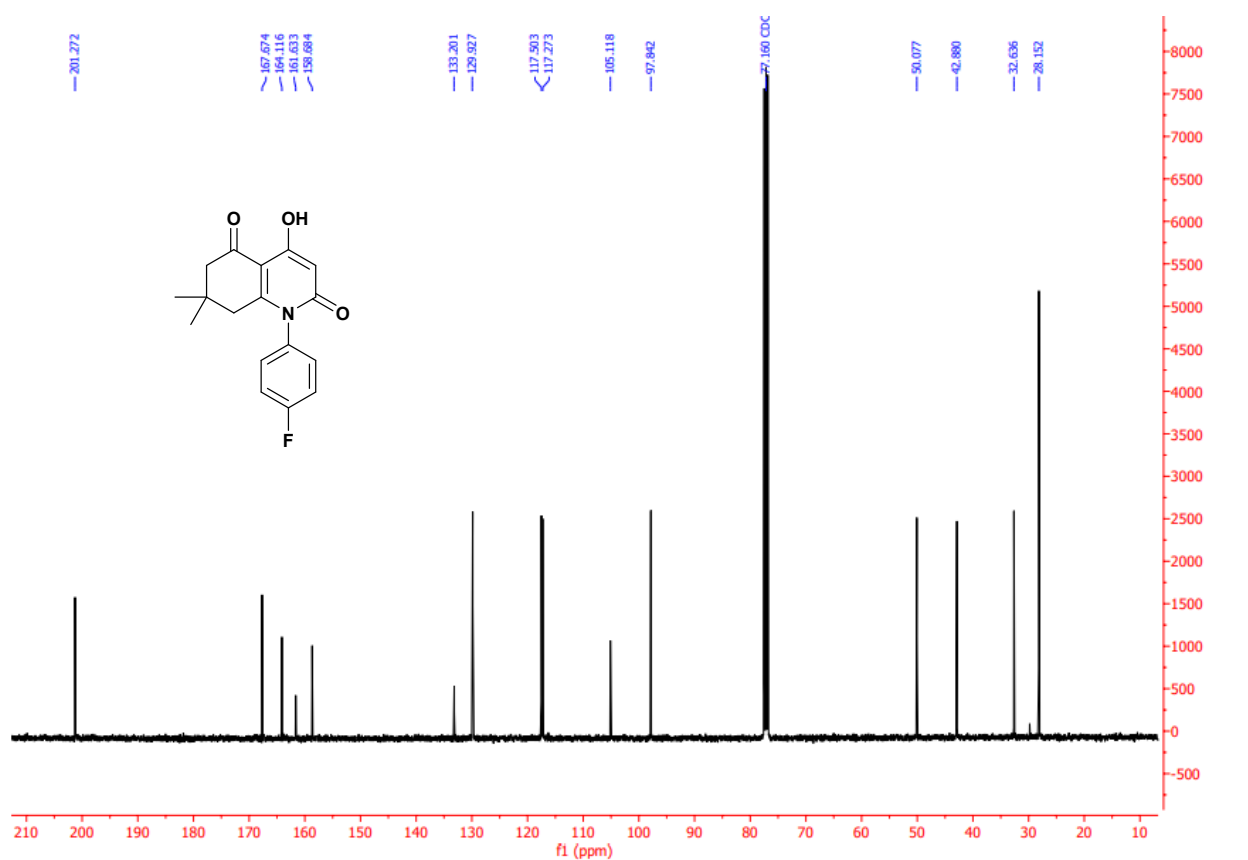


LC-MS spectrum: 1-benzyl-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

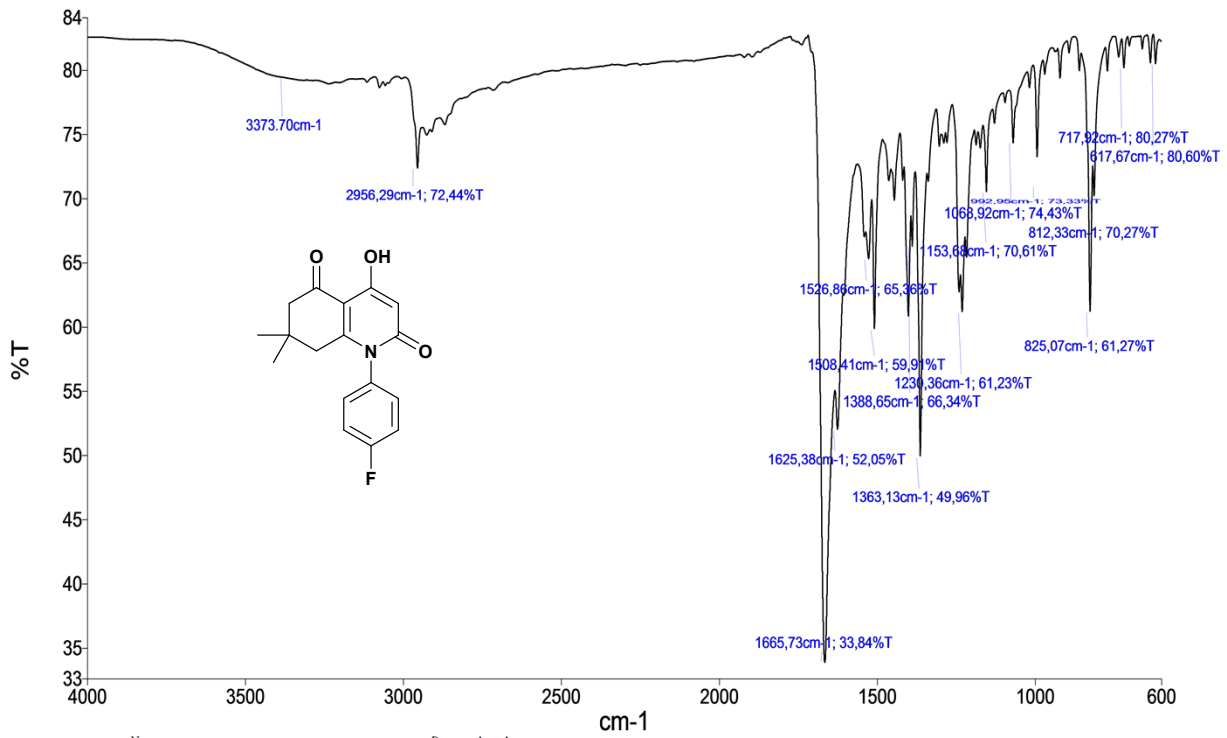
BFM BOUONE IBTK.54.fid



NMR ¹H spectrum (400 MHz, CDCl₃): 1-(4-fluorophenyl)-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹³C spectrum (101 MHz, CDCl₃): 1-(4-fluorophenyl)-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

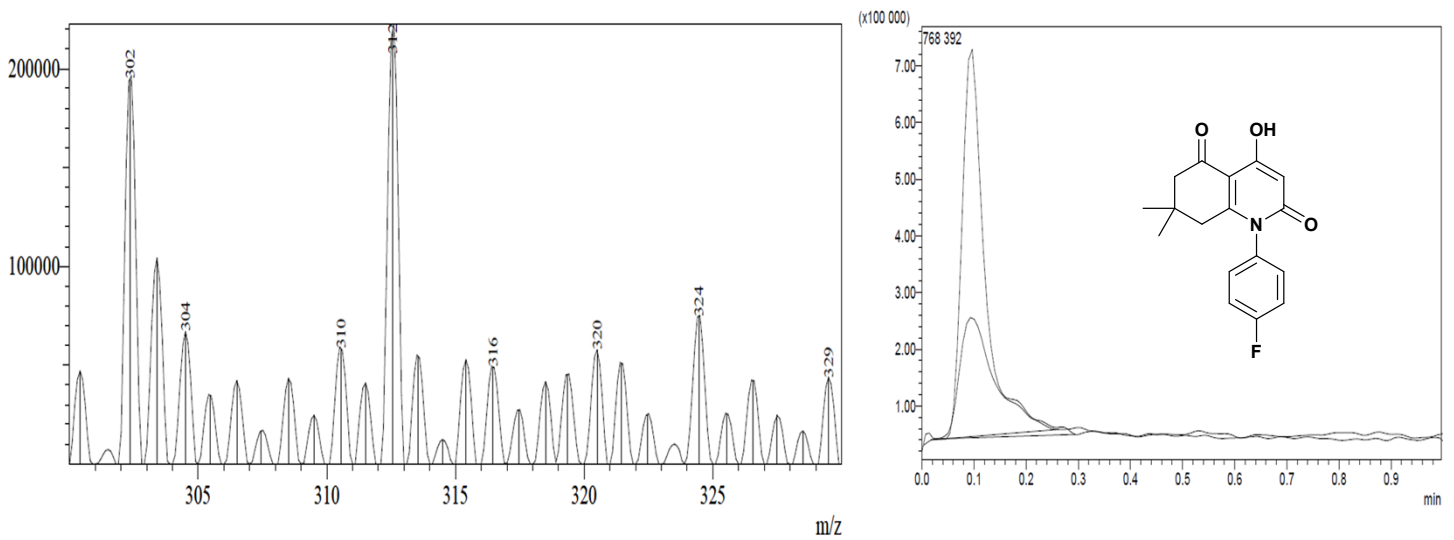


Nom Description
 PEService 824_1 Échantillon 824 Par PEService Date mardi, février 08 2022

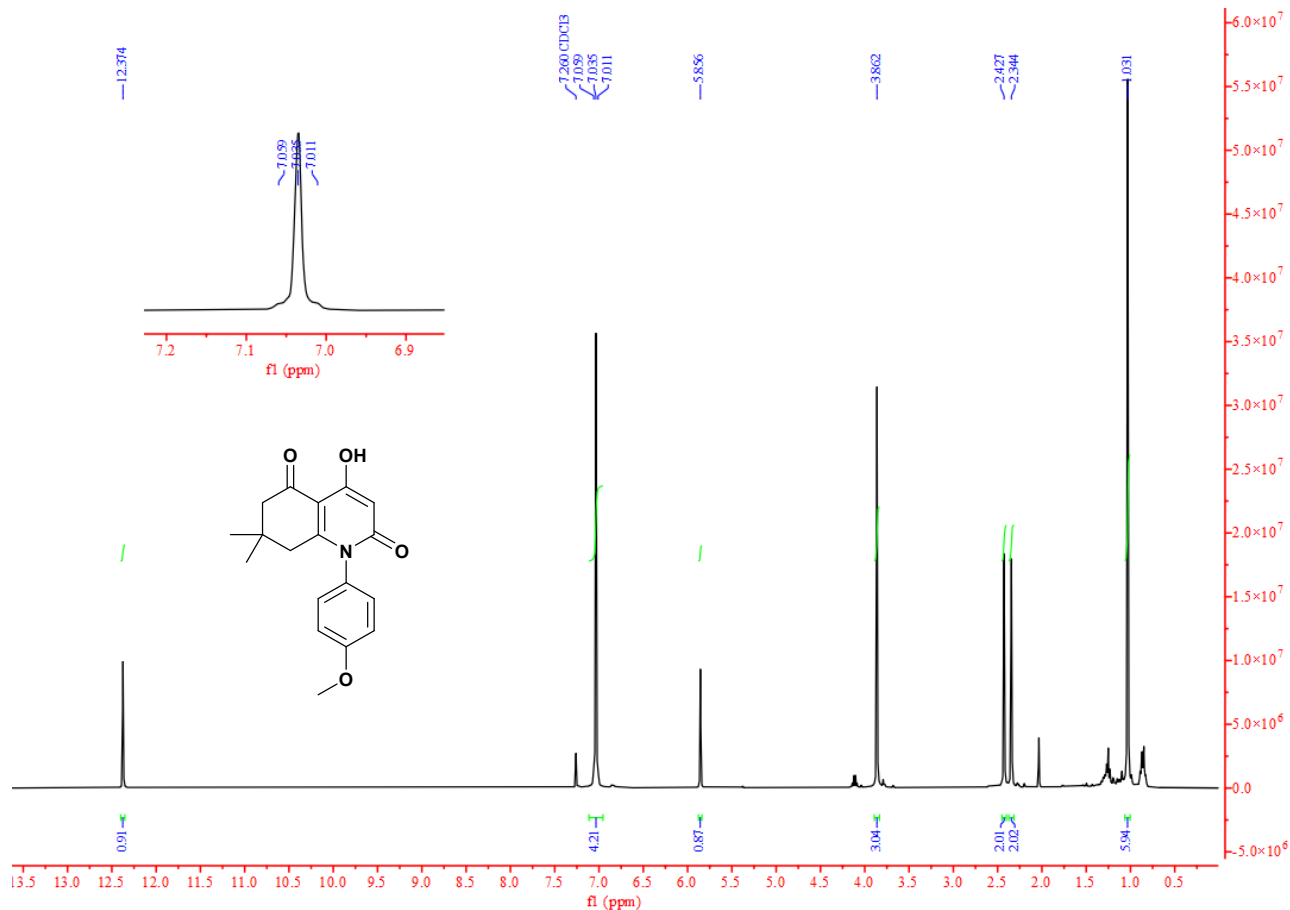
IR spectrum: 1-(4-fluorophenyl)-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

MS Spectrum

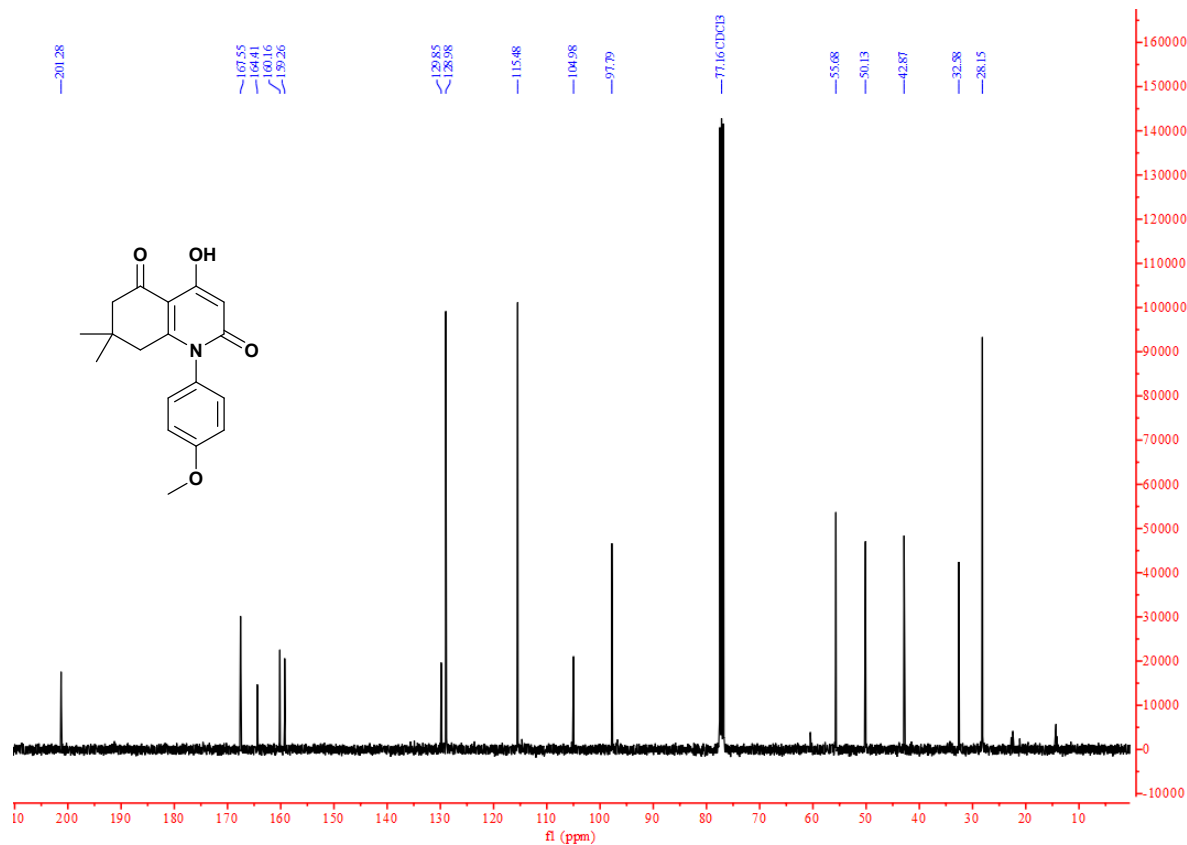
Line#:1 R.Time:----(Scan#:----)
 MassPeaks:28
 Spectrum Mode:Averaged 0.072-0.086(21-25) Base Peak:312(219040)
 BG Mode:Calc Segment 1 - Event 1



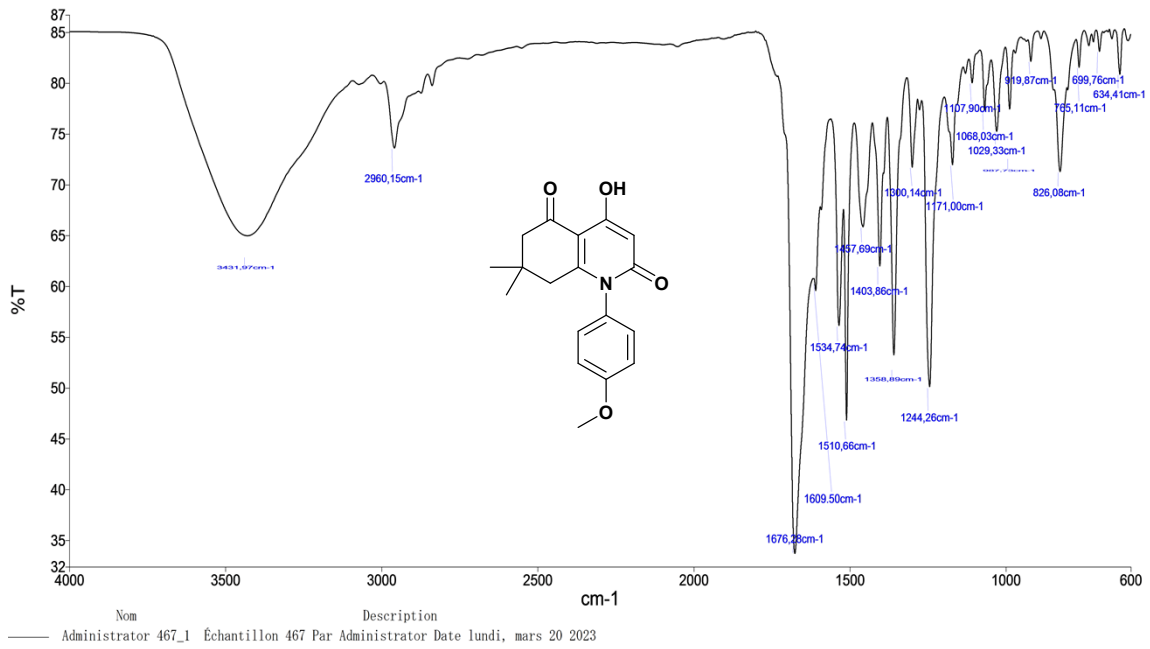
LC-MS spectrum: 1-(4-fluorophenyl)-4-hydroxy-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, CDCl₃): 4-hydroxy-1-(4-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



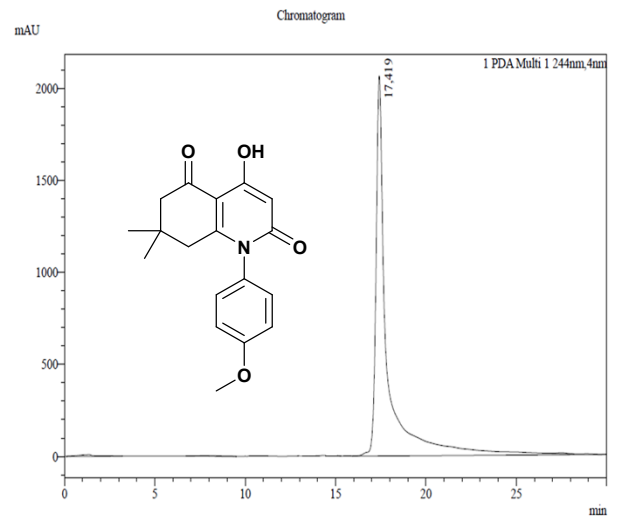
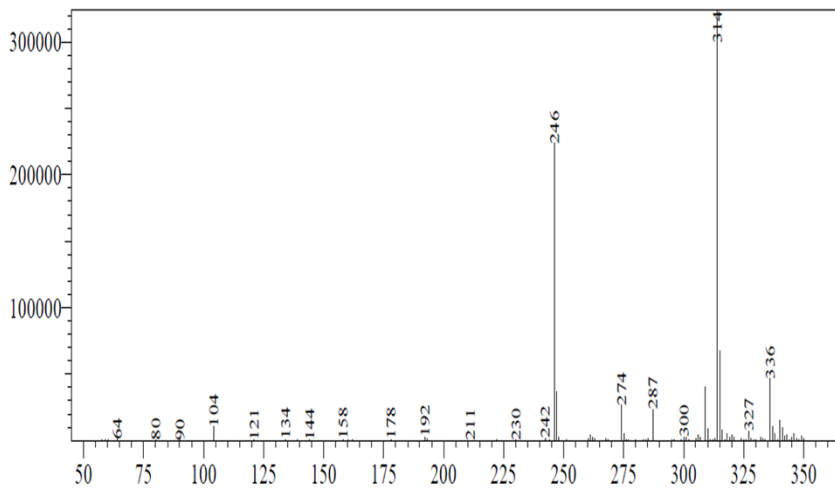
NMR ¹³C spectrum (101 MHz, CDCl₃): 4-hydroxy-1-(4-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



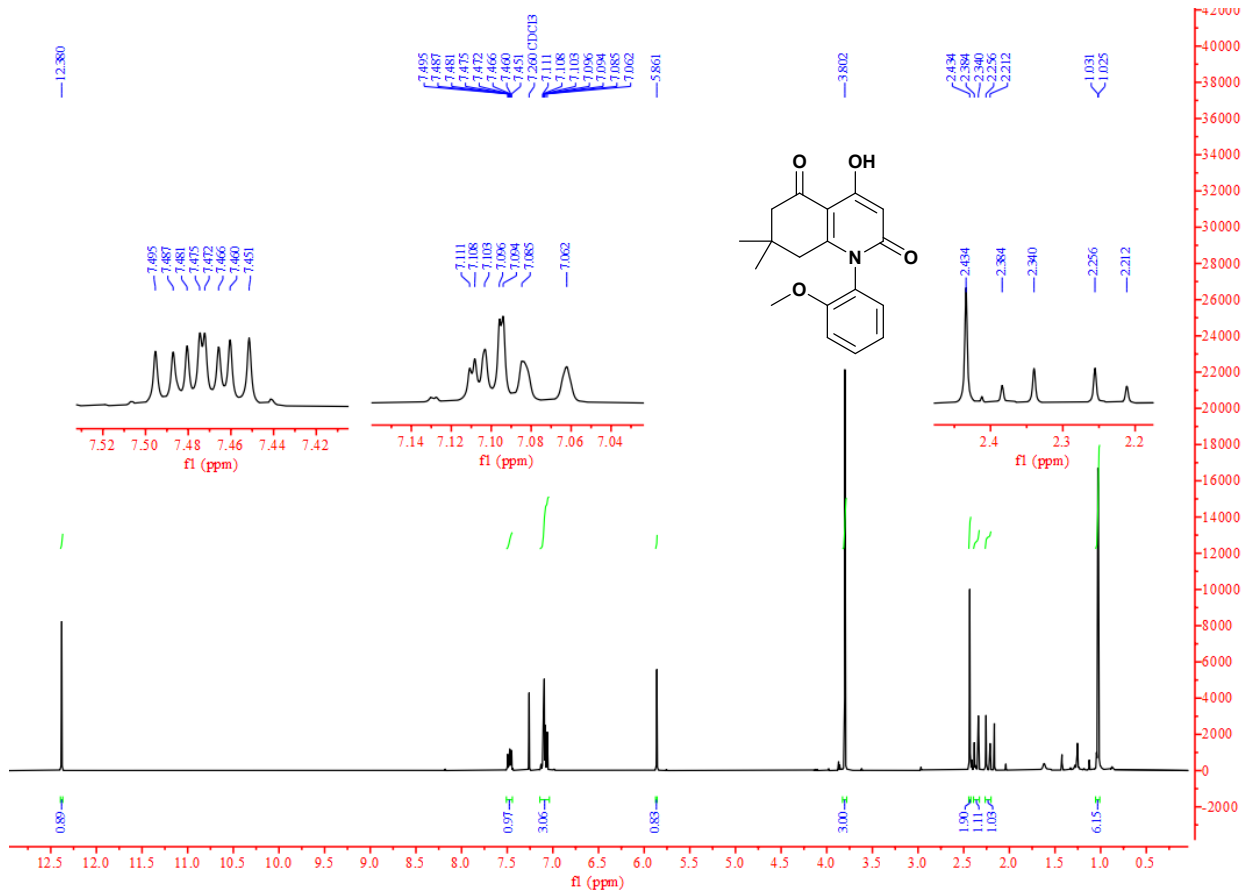
IR spectrum: 4-hydroxy-1-(4-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

MS Spectrum

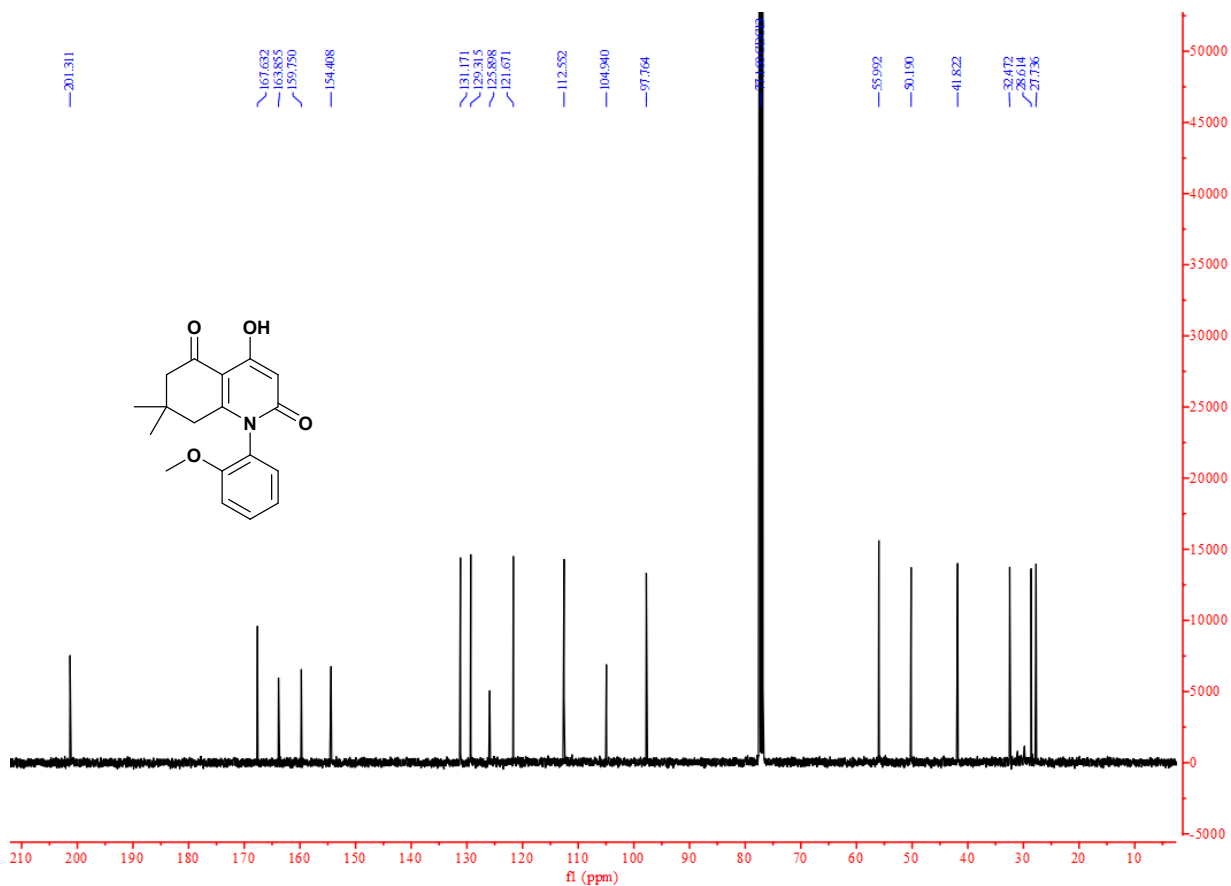
Line#:1 R.Time:---(Scan#:---)
 MassPeaks:134
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 BG Mode:Averaged 0,000-4,983(1-300) Segment 1 - Event 1



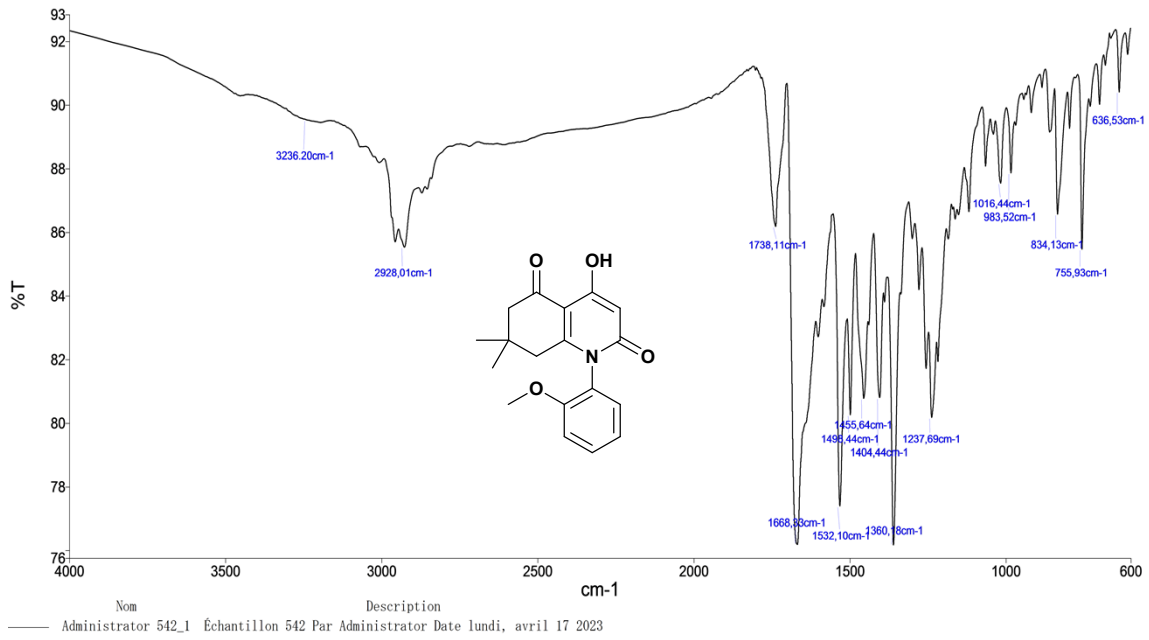
LC-MS spectrum: 4-hydroxy-1-(4-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



NMR ¹H spectrum (400 MHz, CDCl₃): 4-hydroxy-1-(2-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



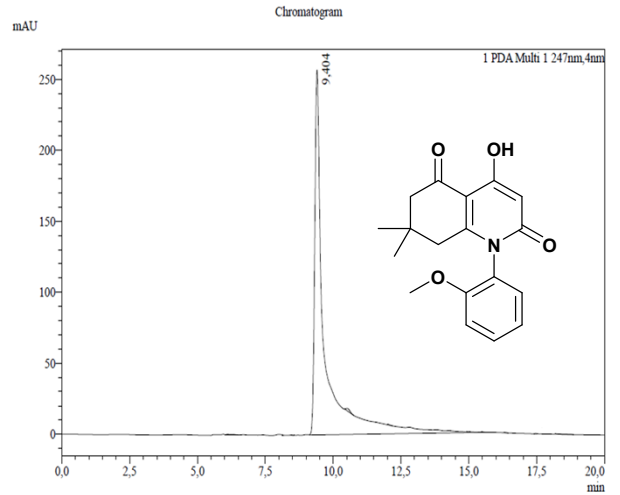
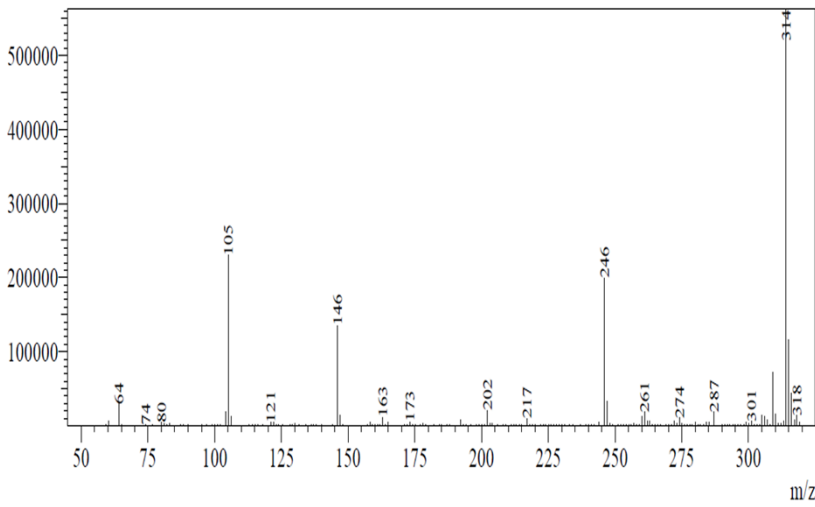
NMR ¹³C spectrum (101 MHz, CDCl₃): 4-hydroxy-1-(2-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione



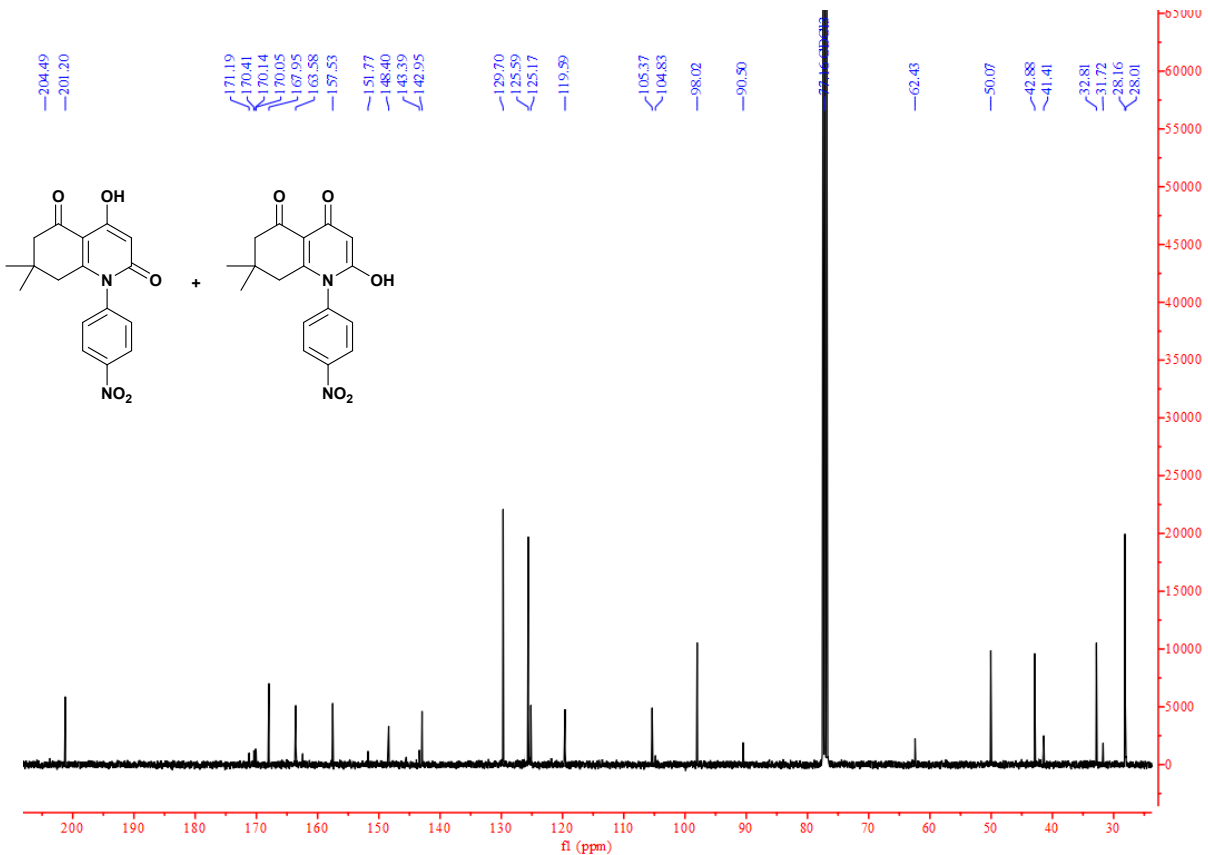
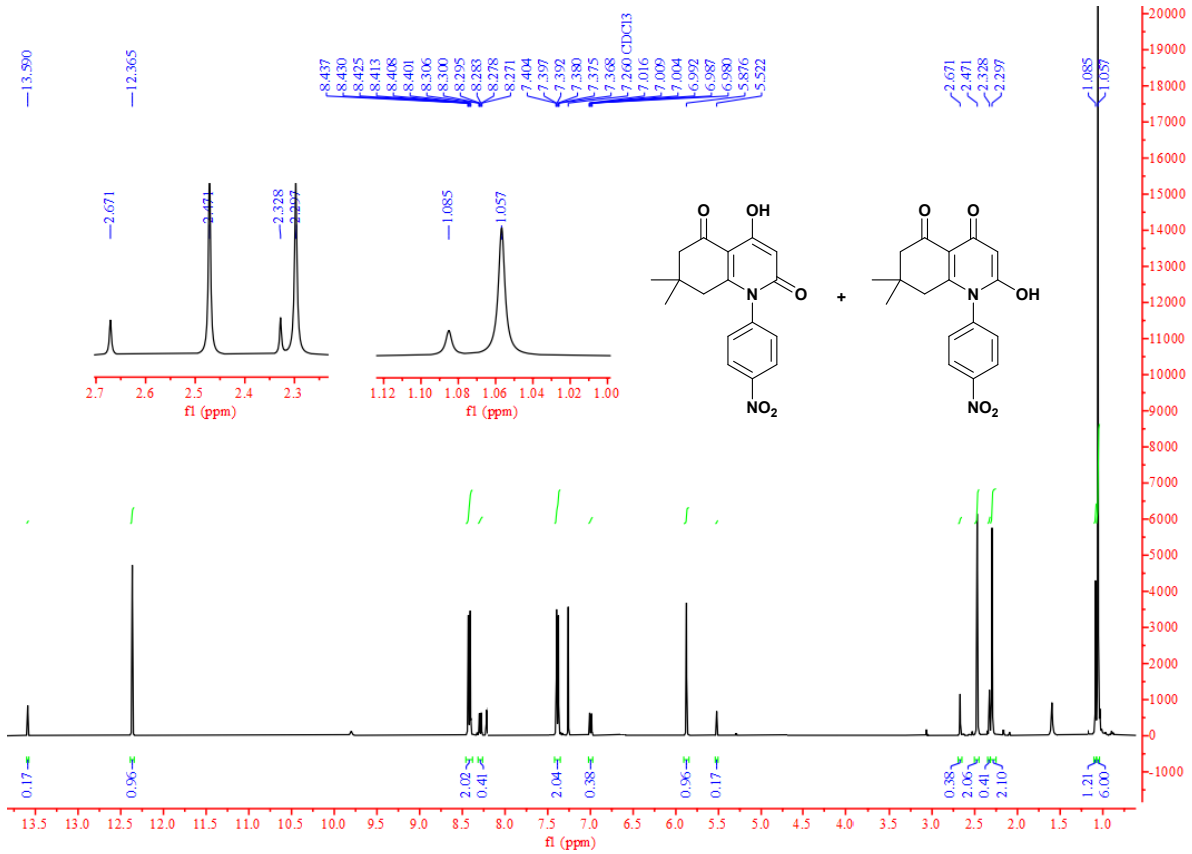
IR spectrum: 4-hydroxy-1-(2-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione

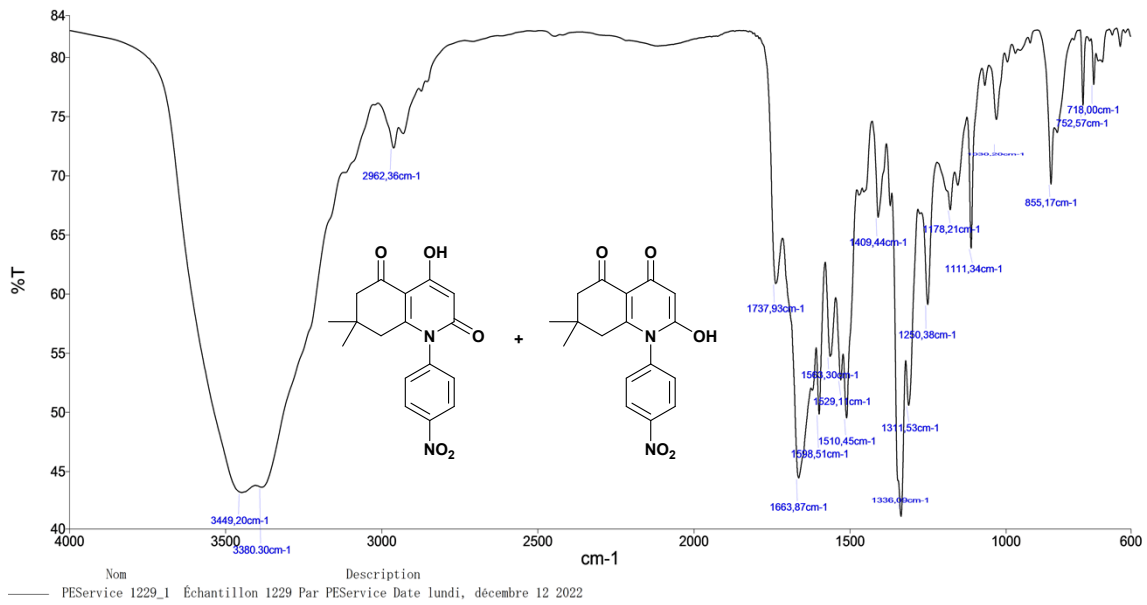
MS Spectrum

Line#:1 R.Time:---(Scan#:---)
 MassPeaks:229
 Spectrum Mode:Averaged 0,567-0,600(35-37) Base Peak:314(562611)
 BG Mode:Calc Segment 1 - Event 1



LC-MS spectrum: 4-hydroxy-1-(2-methoxyphenyl)-7,7-dimethyl-7,8-dihydroquinoline-2,5(1H,6H)-dione





IR spectrum: 4-hydroxy-7,7-dimethyl-1-(4-nitrophenyl)-7,8-dihydroquinoline-2,5(1H,6H)-dione + 2-hydroxy-7,7-dimethyl-1-(4-nitrophenyl)-7,8-dihydroquinoline-4,5(1H,6H)-dione