Synthesis and antimicrobial evaluation of promising 7-arylamino-5,8-dioxo-5,8-dihydroisoquinoline-4-carboxylates and their halogenated amino compounds for treating Gram-negative bacterial infections

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Supporting Information

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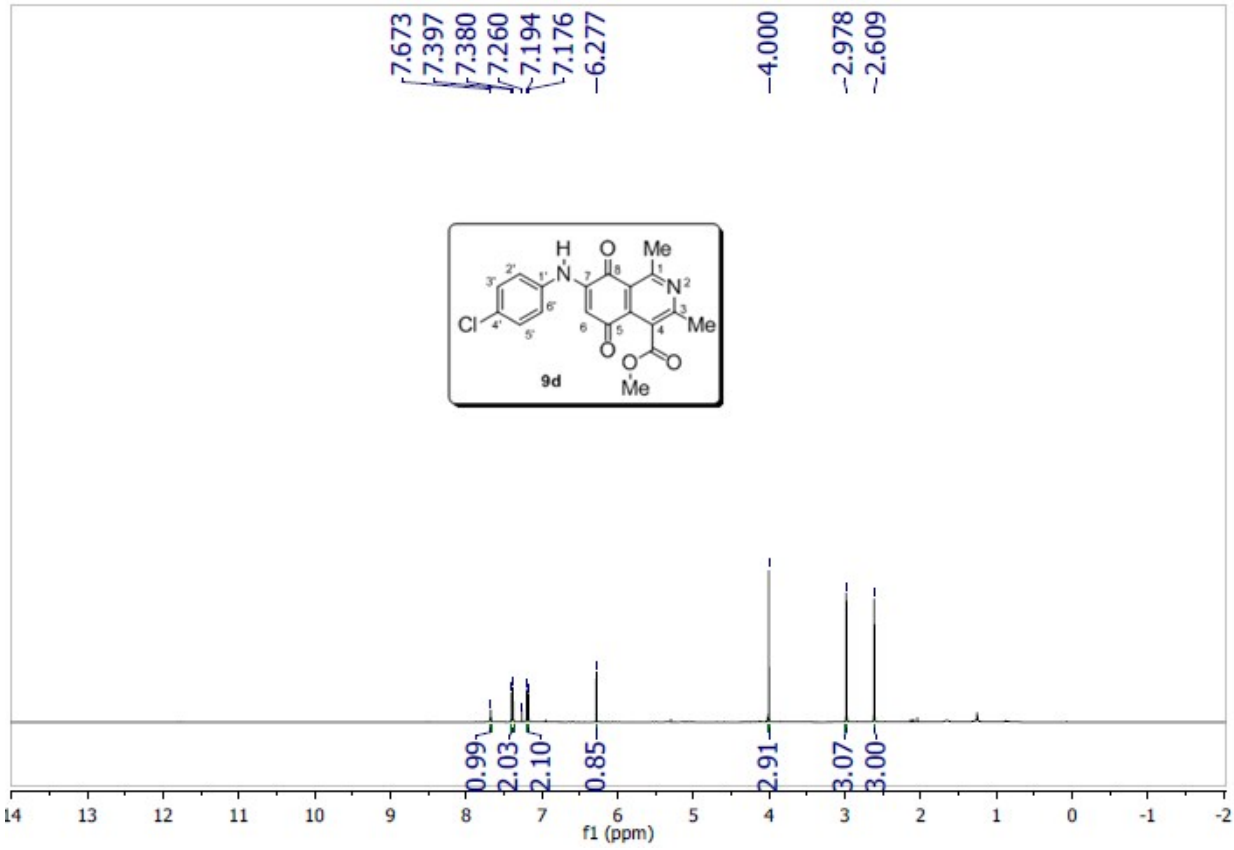
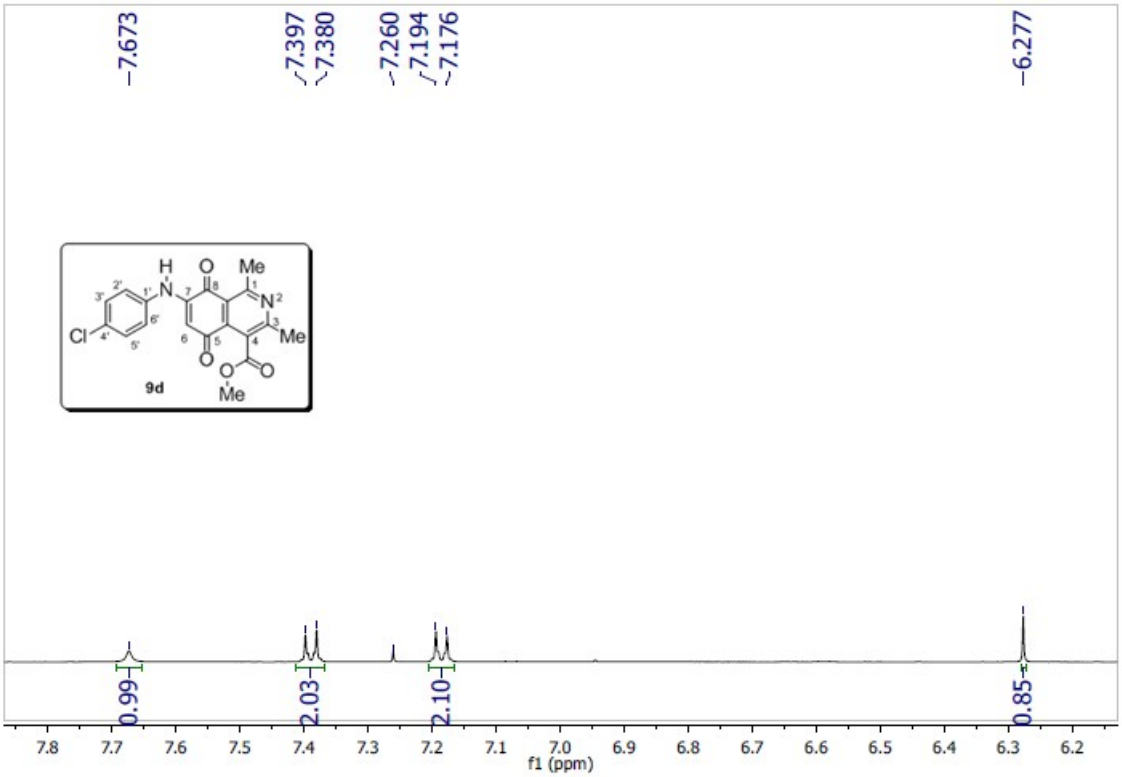
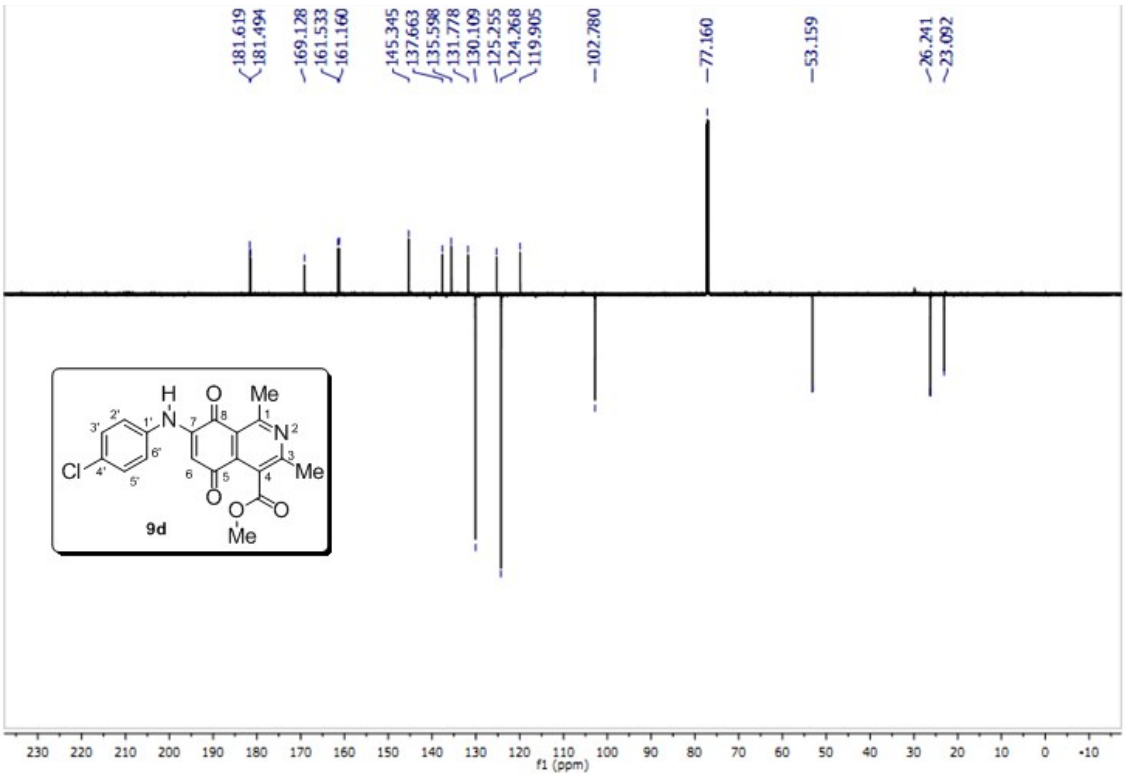


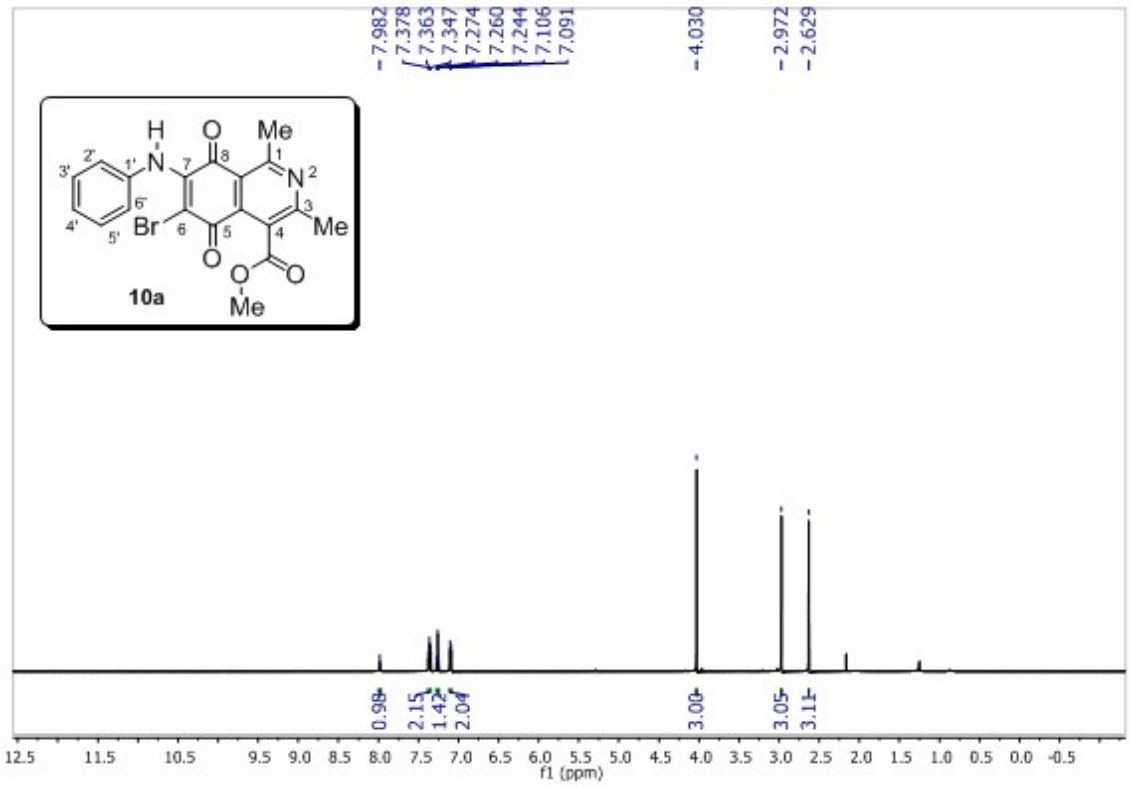
^{1}H NMR spectrum of methyl 7-(4-chlorophenyl)amino-1,3-dimethyl-5,8-dioxo- 5,8-dihydroisoquinoline-4-carboxylate (**9d**) ($CDCl_3$, 500 MHz).



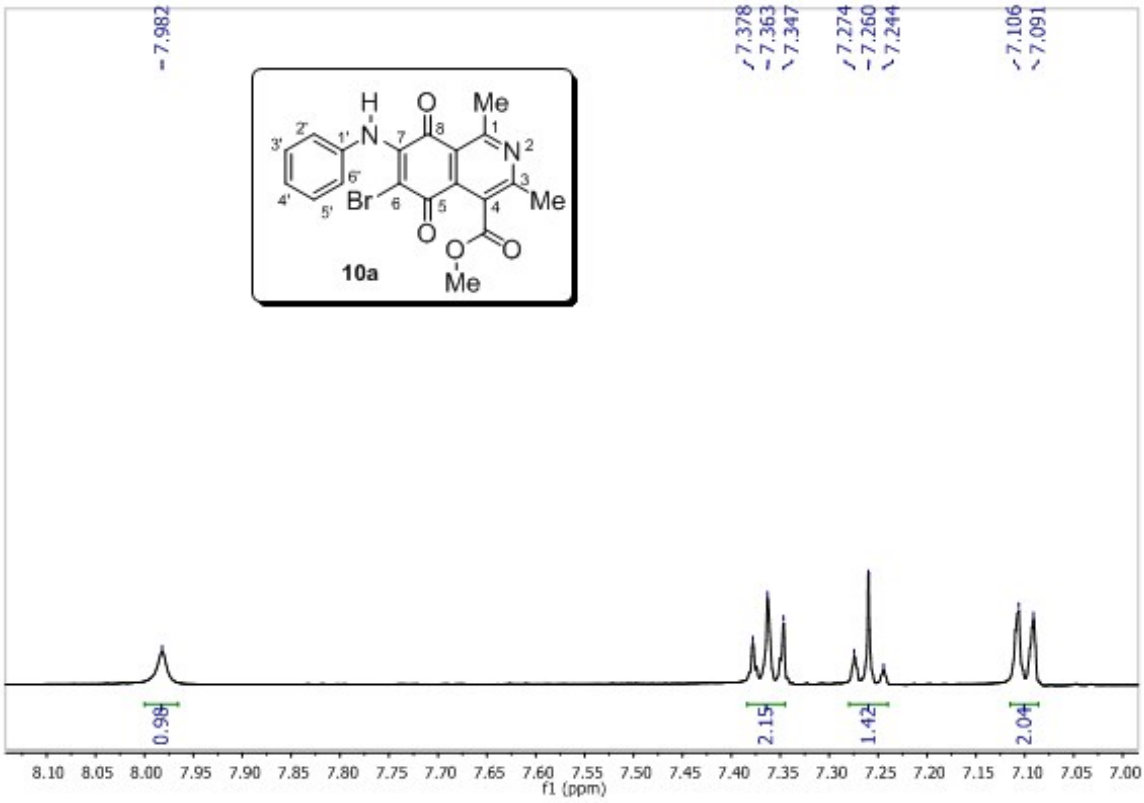
Expansion of the ^{1}H NMR spectrum of compound **9d** ($CDCl_3$, 500 MHz).



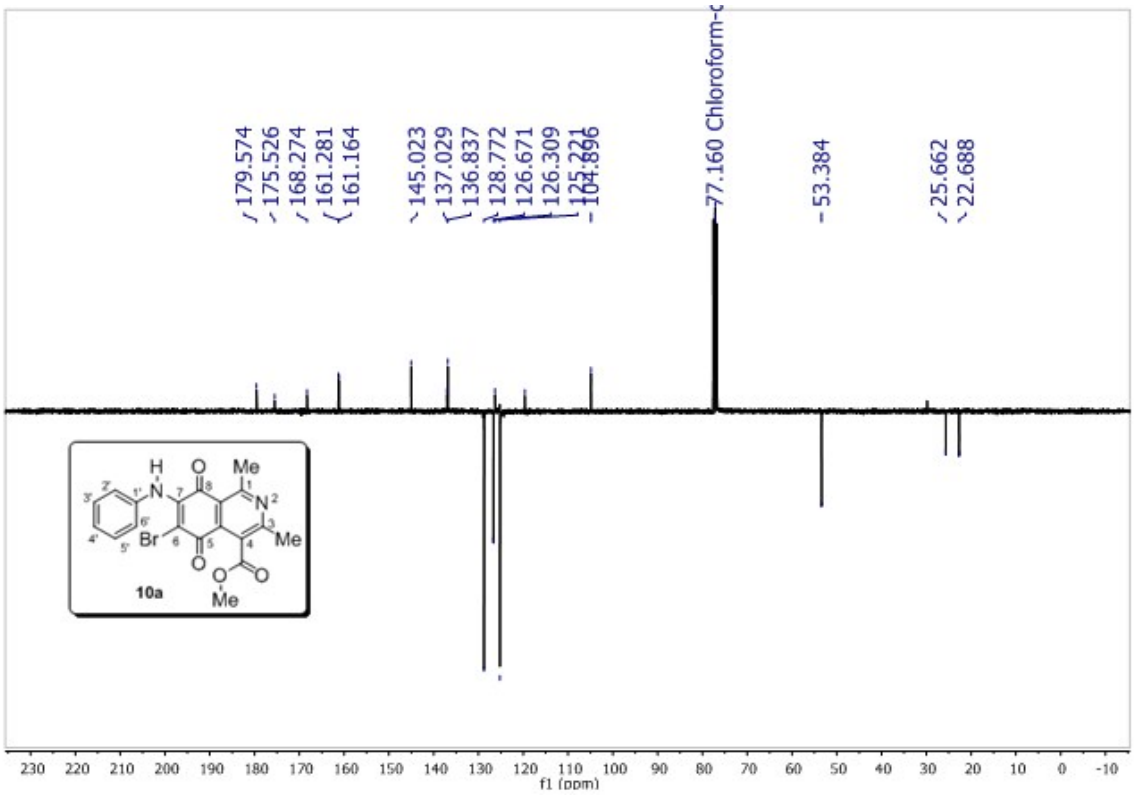
^{13}C NMR spectrum of compound **9d** ($CDCl_3$, 125 MHz).



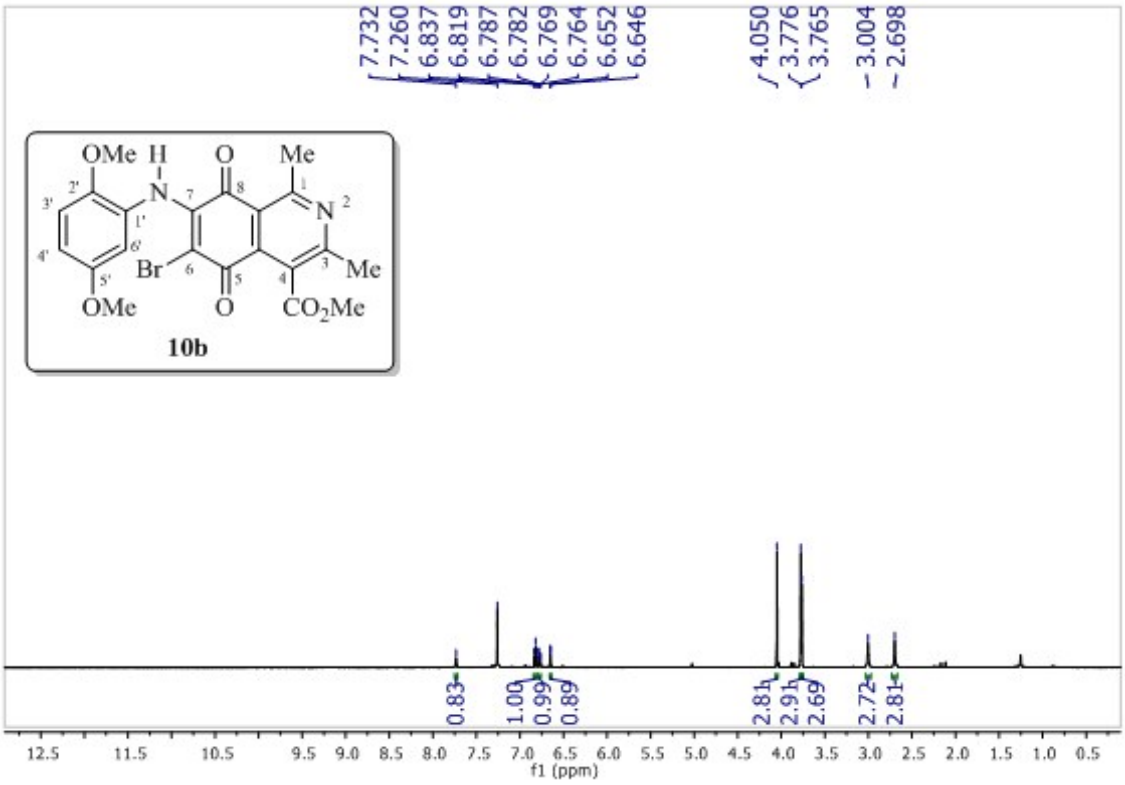
^{1}H NMR spectrum of methyl 6-bromo -7-phenylamino-1,3-dimethyl-5,8-dioxo-5,8-dihydroisoquinoline-4-carboxylate (**10a**) ($CDCl_3$, 500 MHz).



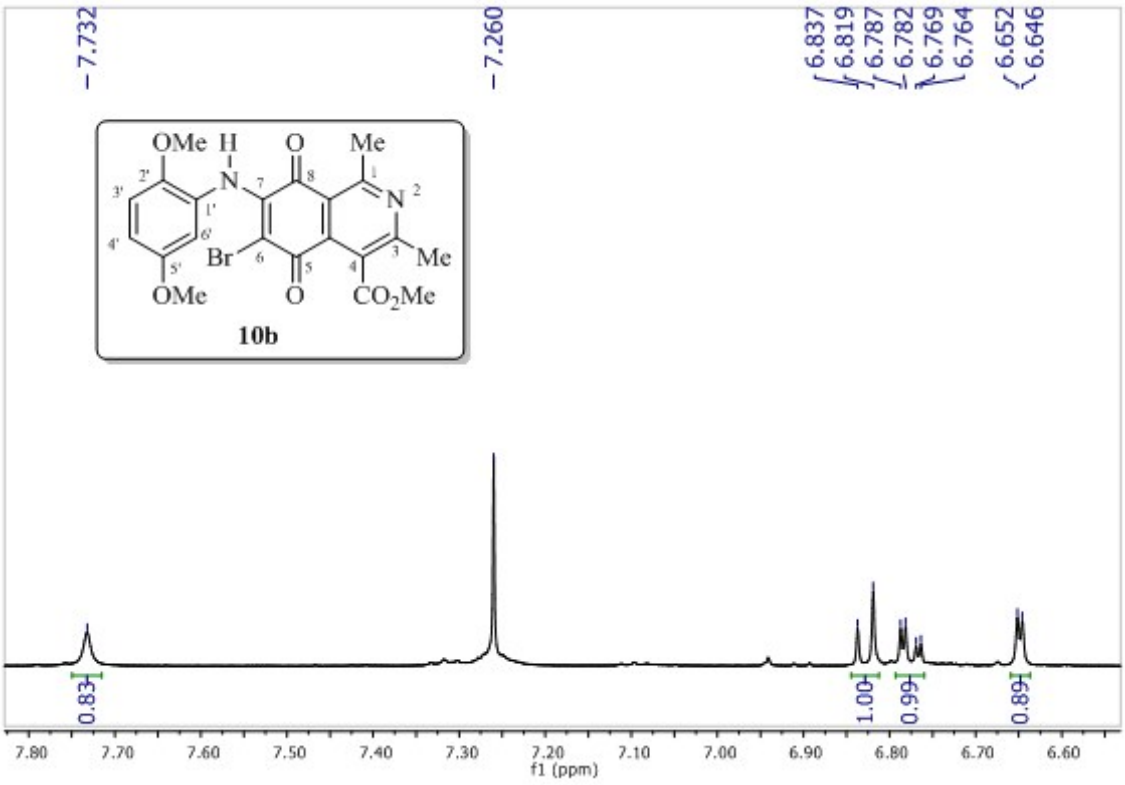
Expansion of the ^{1}H NMR spectrum of compound **10a** ($CDCl_3$, 500 MHz).



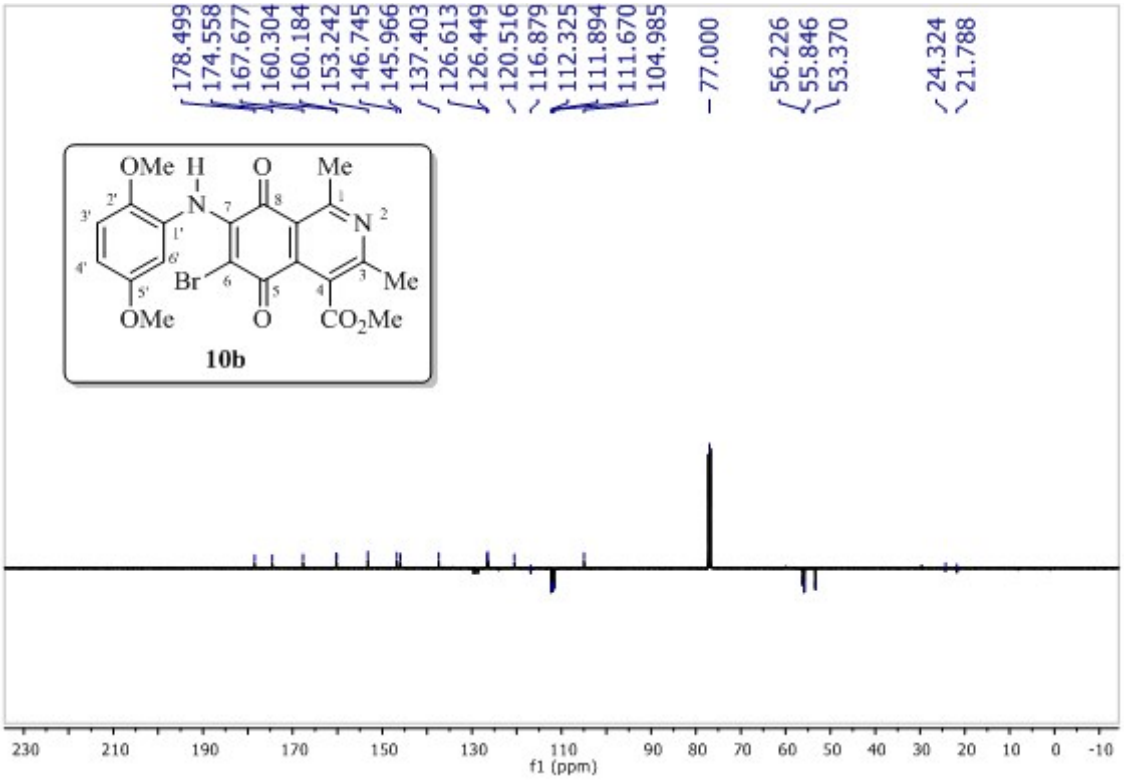
^{13}C NMR spectrum of compound **10a** ($CDCl_3$, 125 MHz).



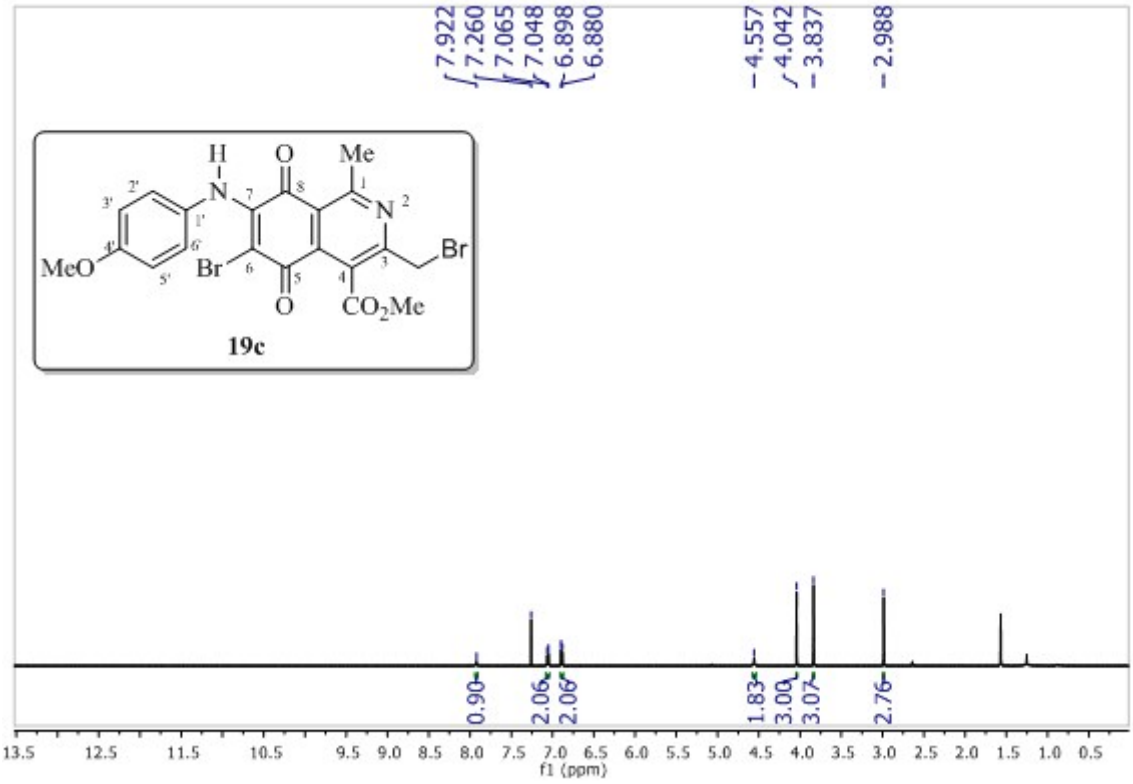
^{1}H NMR spectrum of methyl 6-bromo- 7-(2,5-dimethoxyphenyl)amino-1,3-dimethyl-5,8- dioxo-5,8-dihydroisoquinoline-4-carboxylate (**10b**) ($CDCl_3$, 500 MHz).



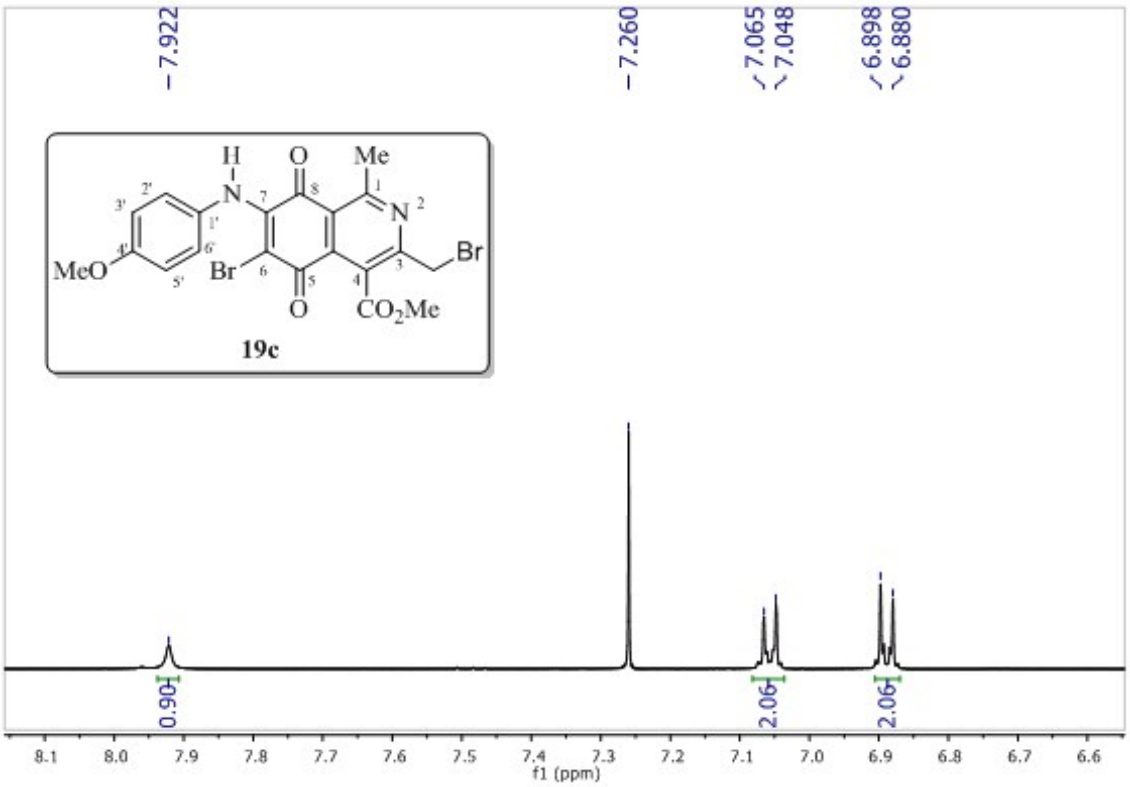
Expansion of the ^{1}H NMR spectrum of compound **10b** ($CDCl_3$, 500 MHz).



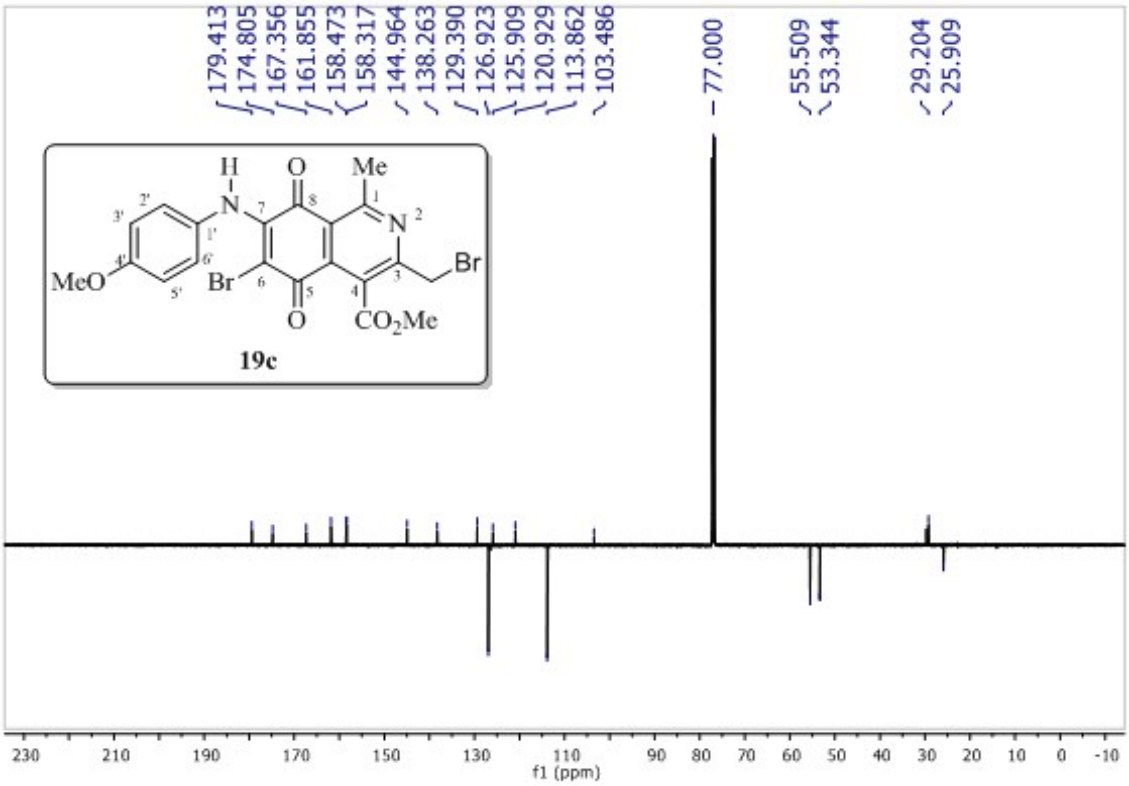
^{13}C NMR spectrum of compound **10b** ($CDCl_3$, 125 MHz).



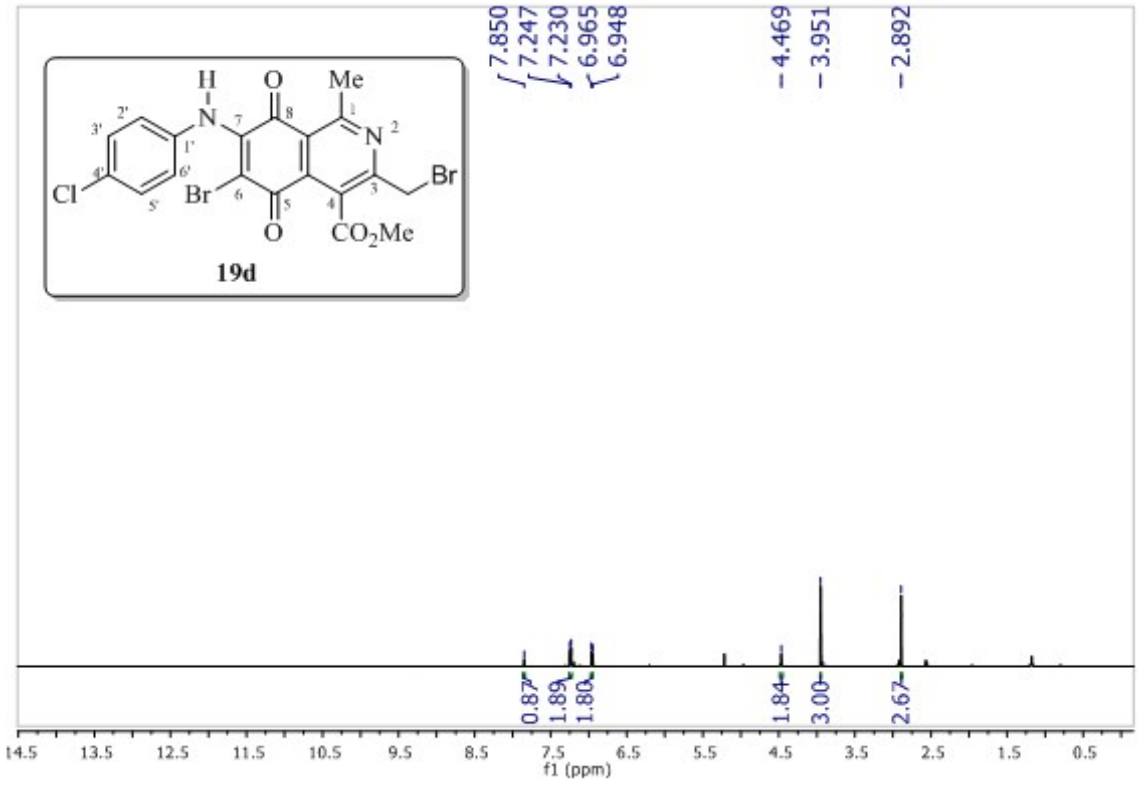
^{1}H NMR spectrum of methyl 6-bromo- 3-bromoethyl-7-(4-methoxyphenyl)amino-1-methyl-5,8- dioxo-5,8-dihydroisoquinoline-4-carboxylate (**19c**) ($CDCl_3$, 500 MHz).



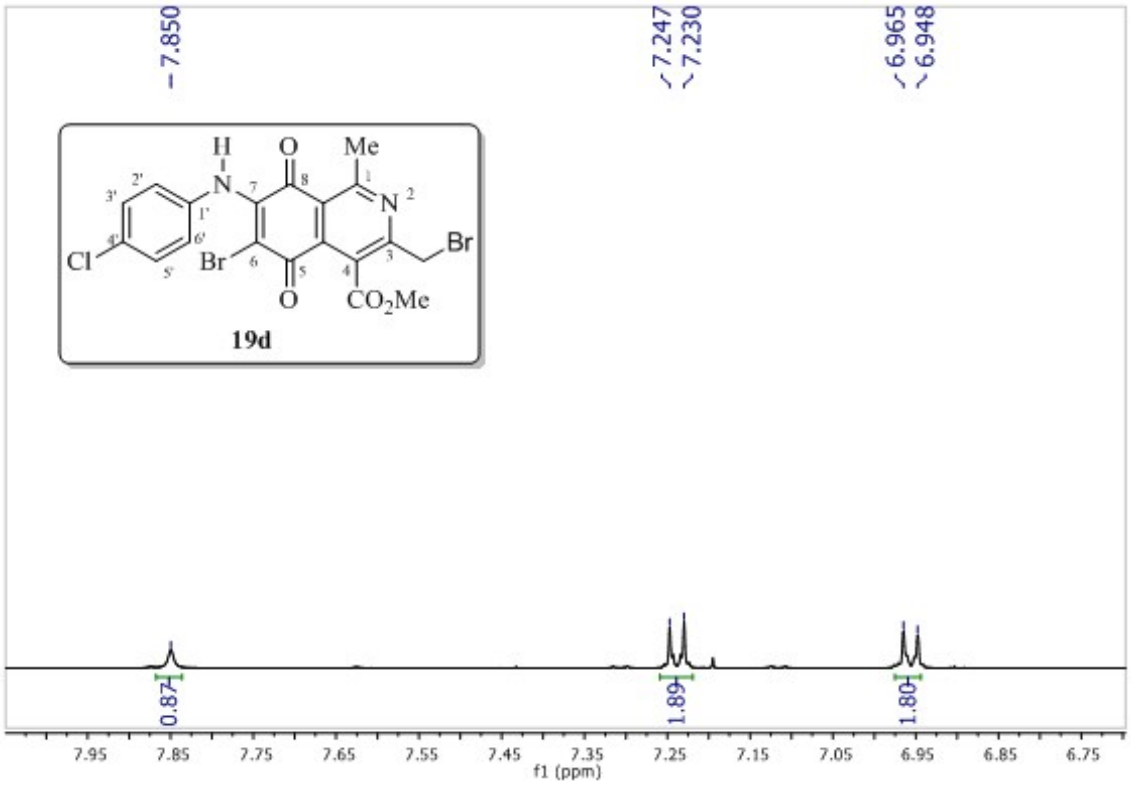
Expansion of the ^{1}H NMR spectrum of compound **19c** ($CDCl_3$, 500 MHz).



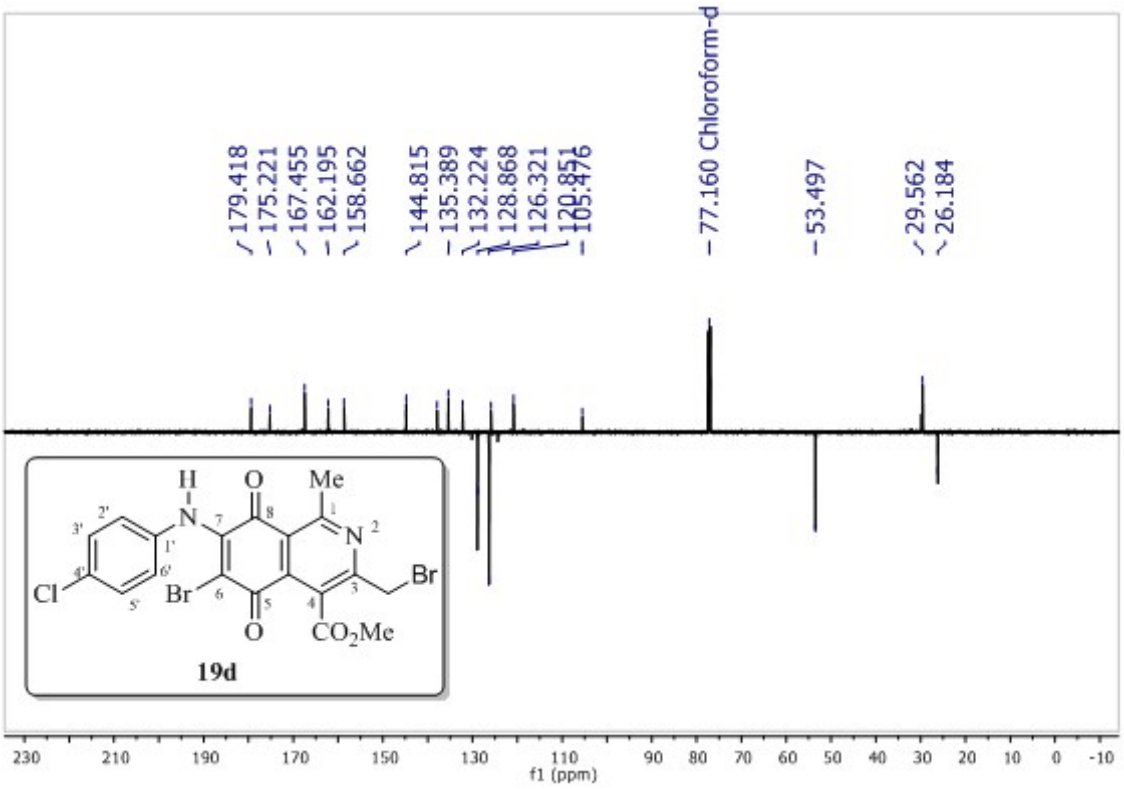
^{13}C NMR spectrum of compound **19c** ($CDCl_3$, 125 MHz).



^{1}H NMR spectrum of methyl 6-bromo- 3-bromoethyl-7-(4-chlorophenyl)amino-1-methyl-5,8- dioxo-5,8-dihydroisoquinoline-4-carboxylate (**19d**) ($CDCl_3$, 500 MHz).



Expansion of the ^{1}H NMR spectrum of compound **19d** ($CDCl_3$, 300 MHz).



^{13}C NMR spectrum of compound **19d** ($CDCl_3$, 125 MHz).

X-ray diffraction data was carried out with radiation MoKa (λ= 0.71073Å) in Bruker D8 Venture diffractometer, for aminoquinone **19d**, and in Bruker-Noinius Kappa CCD diffractometer, for derivative **10d**. The structure was solved by direct methods and refined by full-matrix least squares on F^2 with SHELX package. The positions of hydrogen atoms were generated geometrically and refined according to a riding model. All non-hydrogen atoms were refined anisotropically.

Table. Crystallografic data of compounds **10d** and **19d**.

Compound	**10d**	**19d**
Empirical formula	$C_{19}H_{14}BrClN_2O_4$	$C_{19}H_{13}Br_2ClN_2O_4$
Formula weight	449.68	528.58
Temperature/K	298	298
Crystal system	Monoclinic	Orthorhombic
Space group	C2/c	$P2_12_12$
a/Å	14.560(3)	20.5261 (10)
b/Å	10.207(2)	9.0318 (5)
c/Å	25.110(5)	10.5375 (6)
β/°	102.18(3)	90
Volume/$Å^3$	3647.6(13)	1953.52 (18)
Z	8	4
$\rho_{calc}g/cm^3$	1.638	1.797
μ/mm^{-1}	2.429	4.315
F(000)	1808	1040
Crystal size/mm^3	0.03 × 0.14 × 0.17	0.02 × 0.07 × 0.07
2Θ range for data collection/°	6.258 to 51.998	4.346 to 52.032
Index ranges	$-17 \le h \le 17$, $-12 \le k \le 12$, $0 \le l \le 30$	$-25 \le h \le 23$, $-11 \le k \le 7$, $-10 \le l \le 12$
Reflections collected	6491	5549
Independent reflections	3565 [R_{int} = 0.0846, R_{sigma} = 0.1226]	3687 [Rint = 0.0479, Rsigma = 0.1054]
Data/restraints/parameters	3565/0/244	3687/0/255
Goodness-of-fit on F^2	0.938	1.005
Final R indexes [I>=2σ (I)]	R_1 = 0.0507, wR_2 = 0.1128	R1 = 0.0520, wR2 = 0.1117
Final R indexes [all data]	R_1 = 0.0987, wR_2 = 0.1283	R1 = 0.0917, wR2 = 0.1267
Largest diff. peak/hole / e $Å^{-3}$	0.58/-0.49	0.42/-0.43