Electronic Supplementary Information (ESI)

Three-Step Synthesis of N-(7-chloro-4-morpholinoquinolin-2-yl) benzamide from 4,7-Dichloroquinoline

Deiby F. Aparicio Acevedo, Marlyn C. Ortiz Villamizar, and Vladimir V. Kouznetsov *

Laboratorio de Química Orgánica y Biomolecular, Escuela de Química, Universidad Industrial de Santander, Cl. 9 # Cra 27, A.A. 680006, Bucaramanga, Colombia.

Contents

1. FT-IR spectra of the title compound and their precursors.

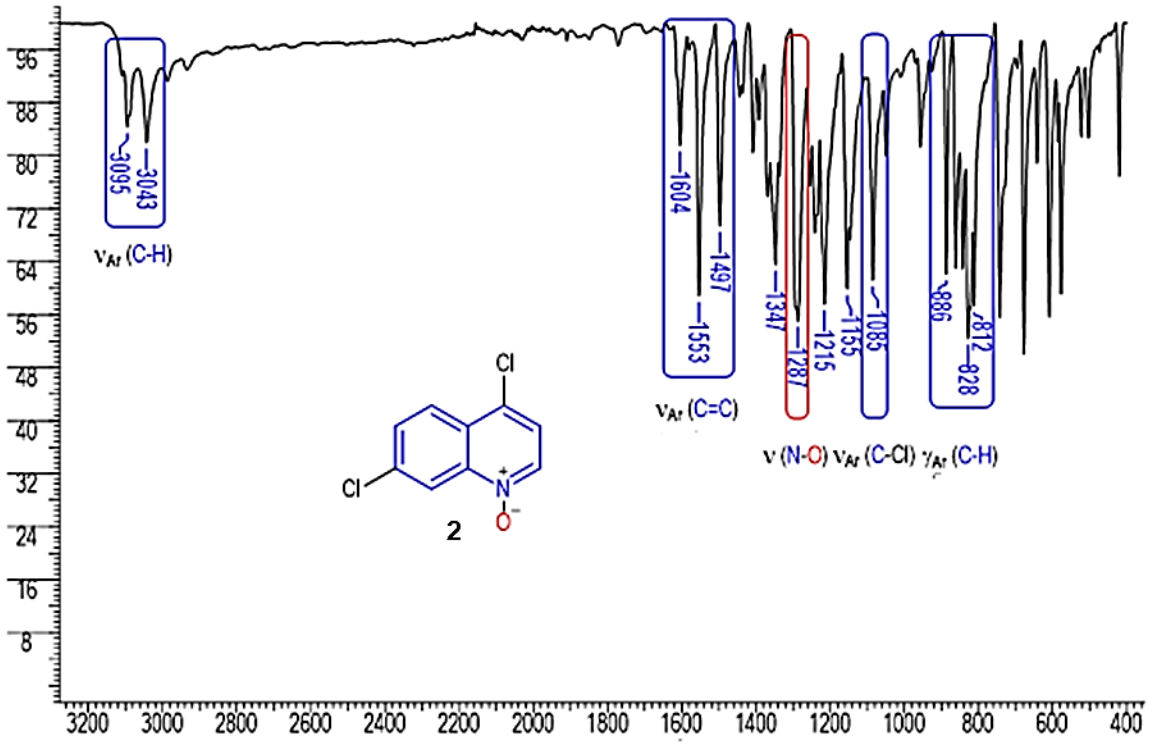


Figure S1. FT-IR spectrum of compound **2**.

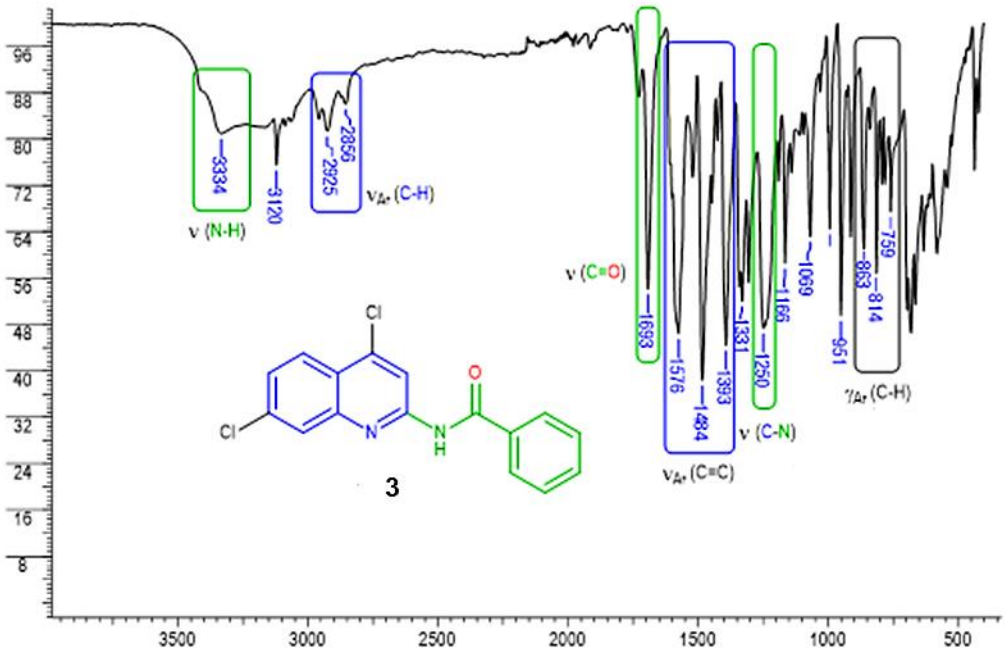


Figure S2. FT-IR spectrum of compound **3**.

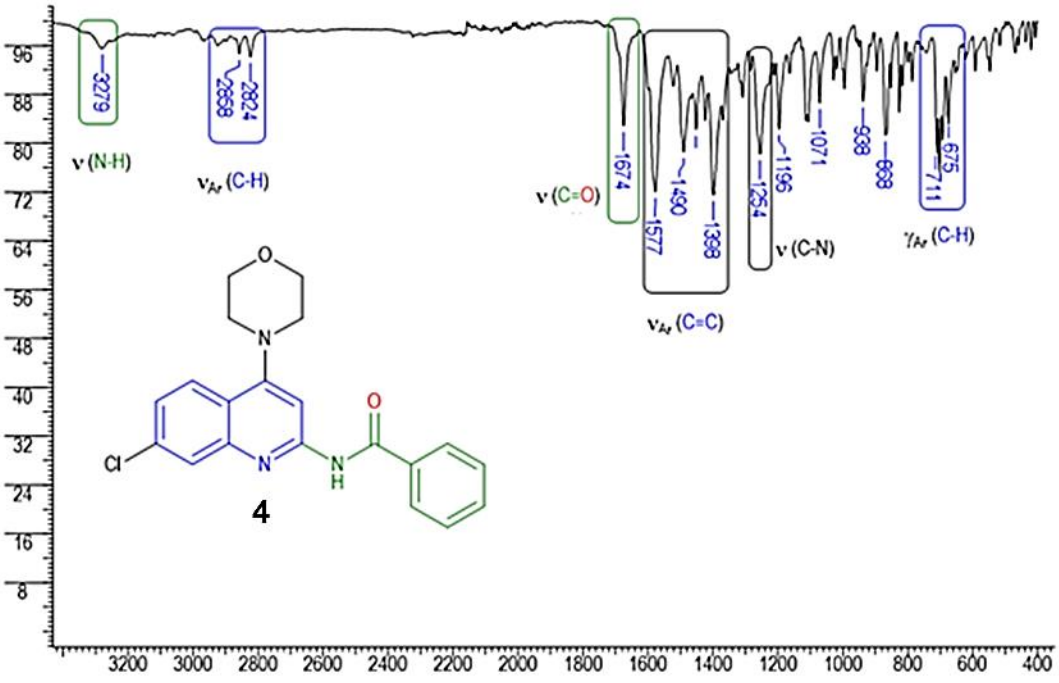


Figure S3. FT-IR spectrum of compound **4**.

2.ESI-MS spectra of synthesized compounds

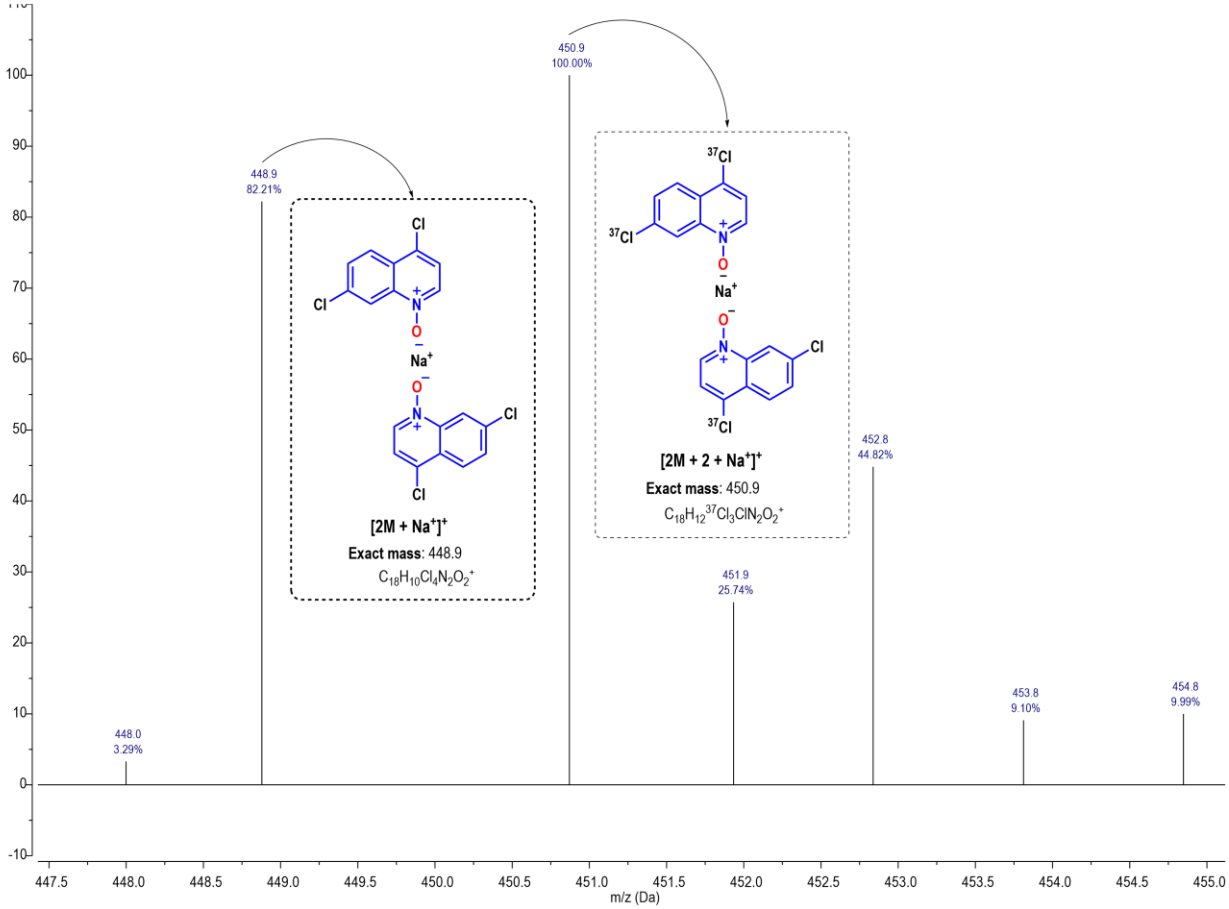


Figure S4. ESI-MS spectrum of compound **2**.

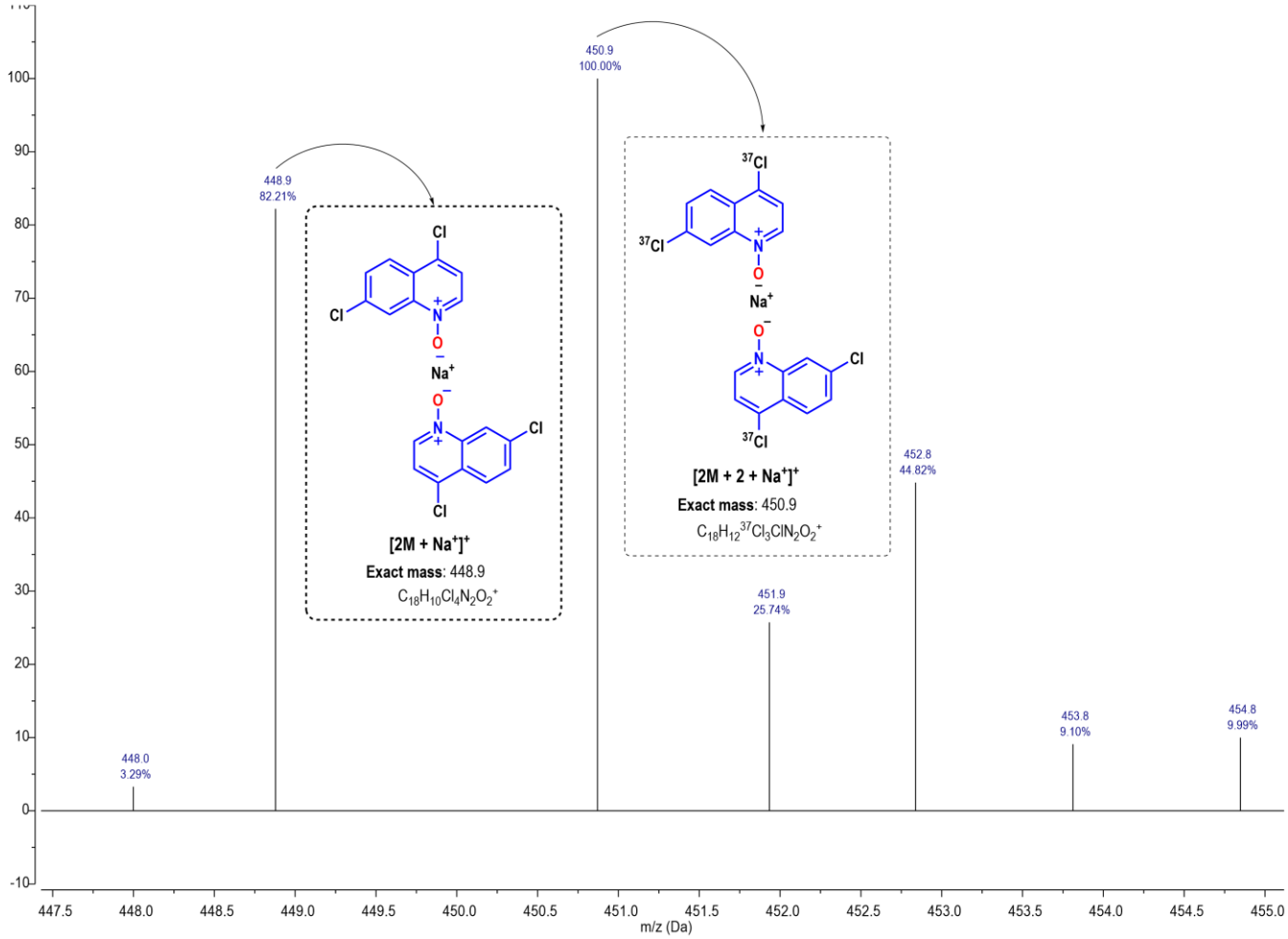


Figure S5. ESI-MS spectrum of compound **3**.

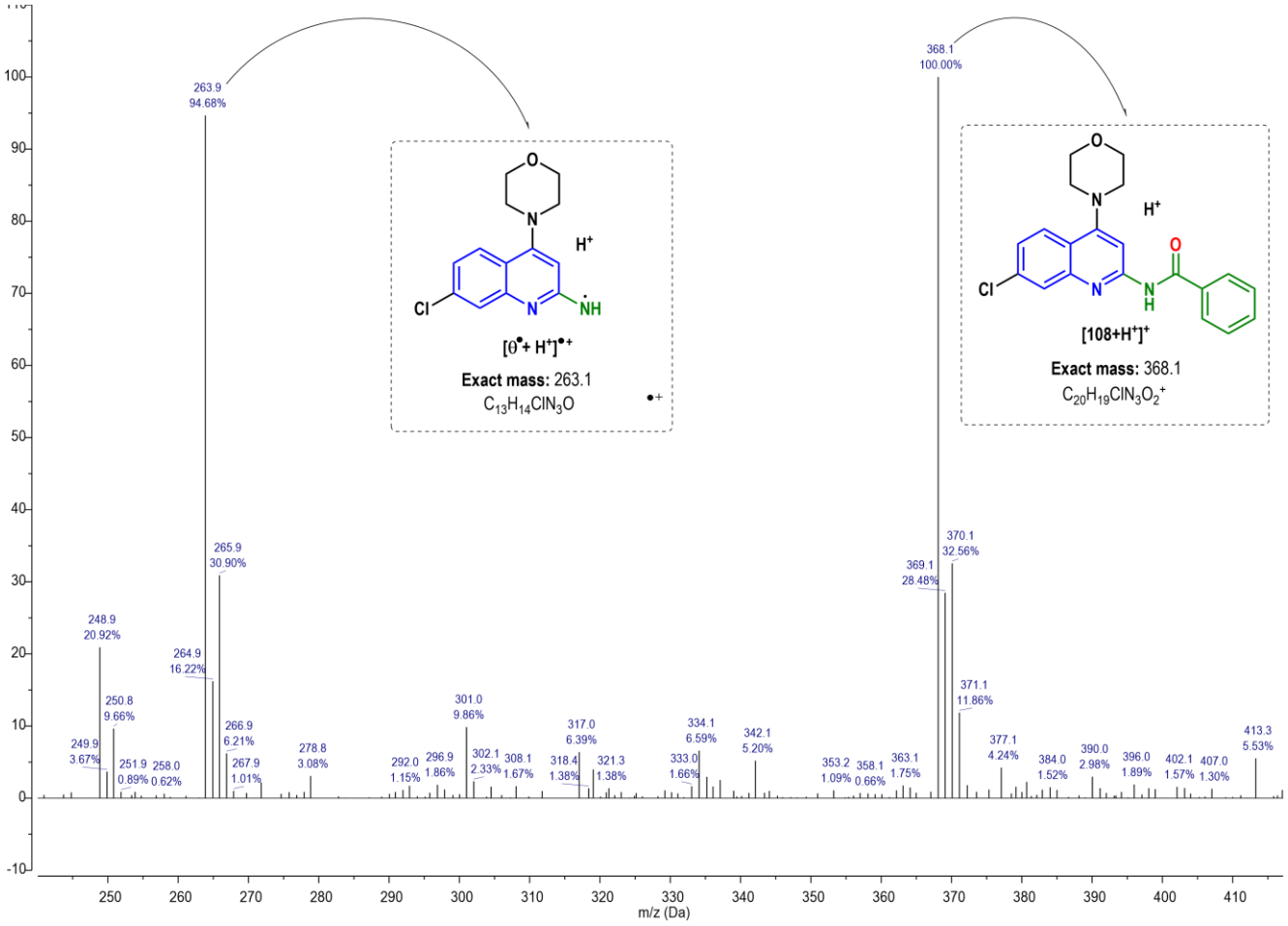


Figure S6. ESI-MS spectrum of compound **4**.

3. ^{1}H-NMR and ^{13}C-NMR spectra of synthesized compounds

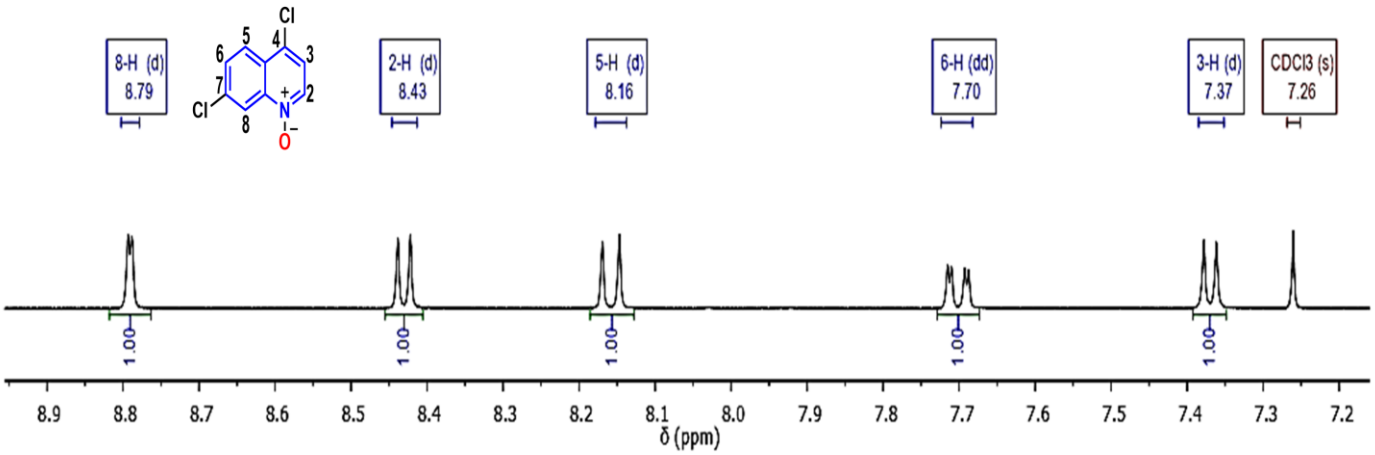


Figure S7. ^{1}H-NMR spectrum of compound **2** (Expansion of the aromatic zone of the spectrum)

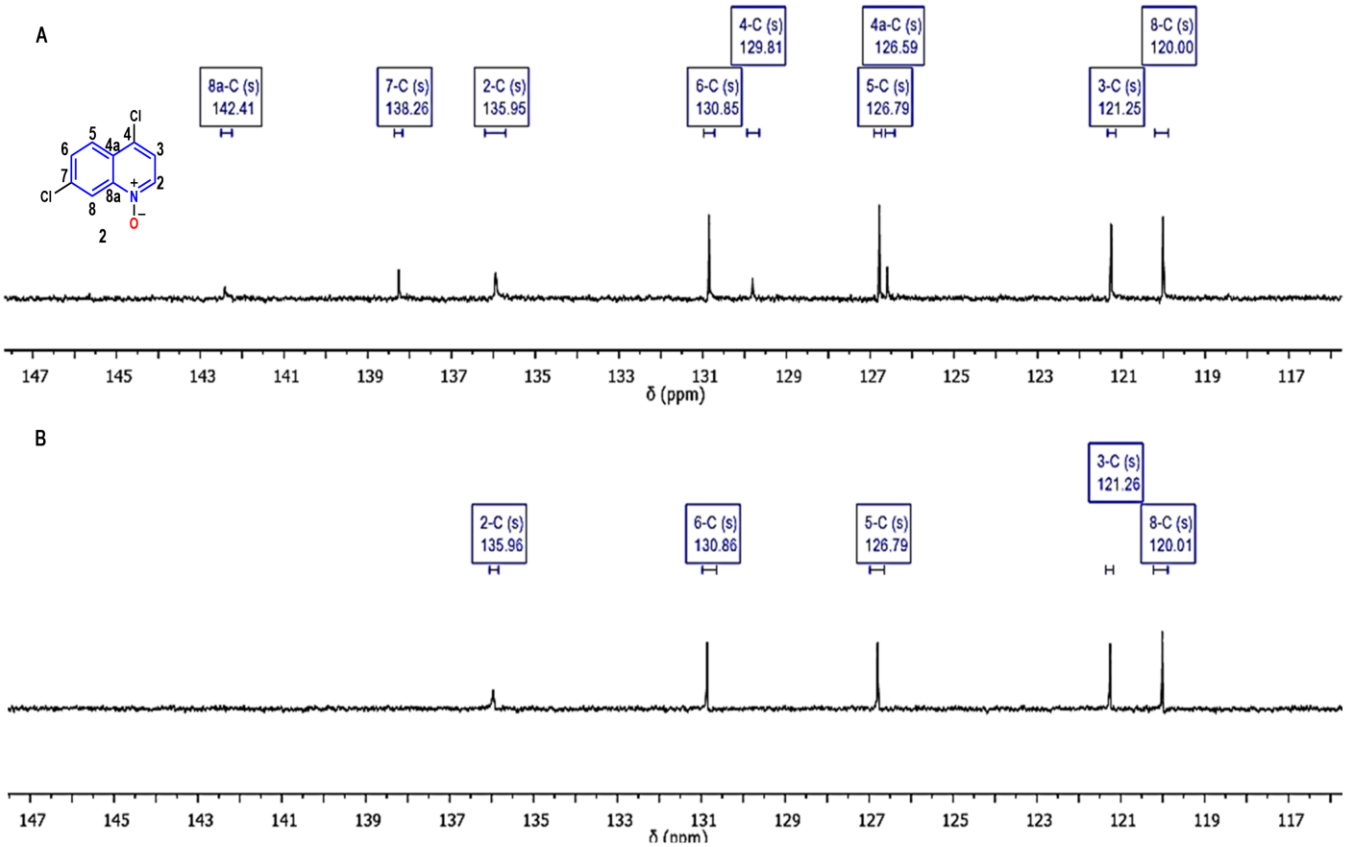


Figure S8. ^{13}C-NMR spectrum of compound **2**: **A**) ^{13}C-NMR spectrum. **B**) DEPT-135 spectrum

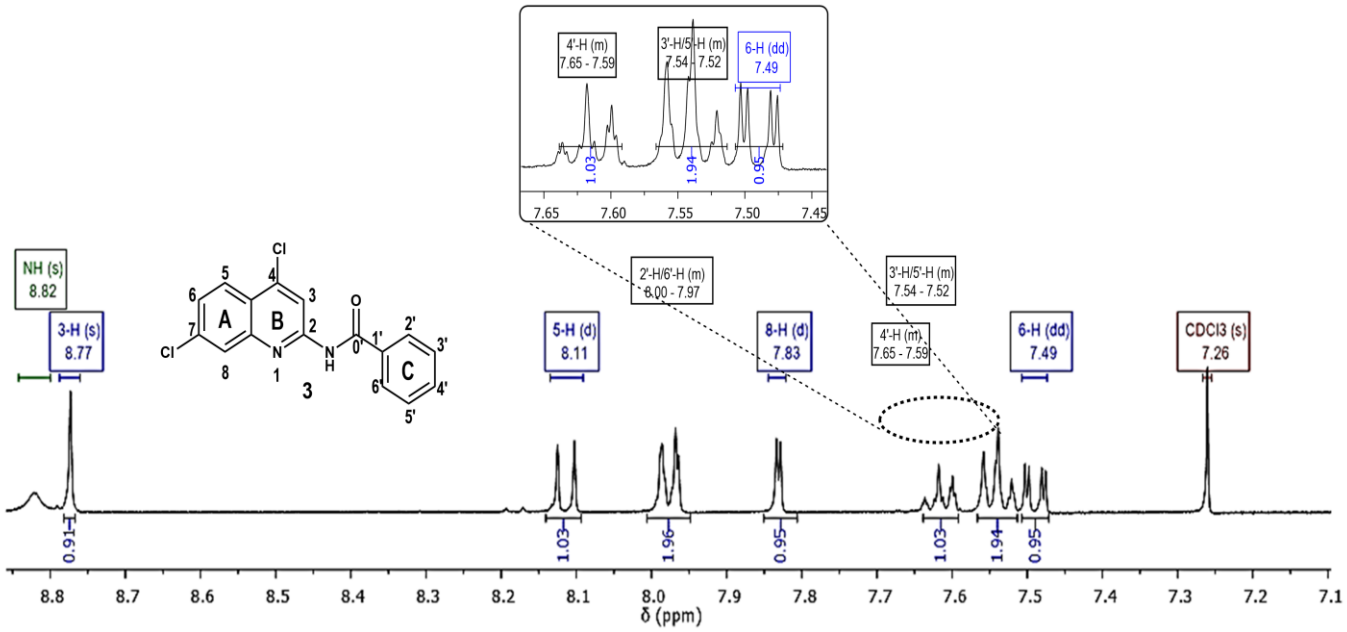


Figure S9. [1]H-NMR spectrum of compound **3** and its expansion of the aromatic zone

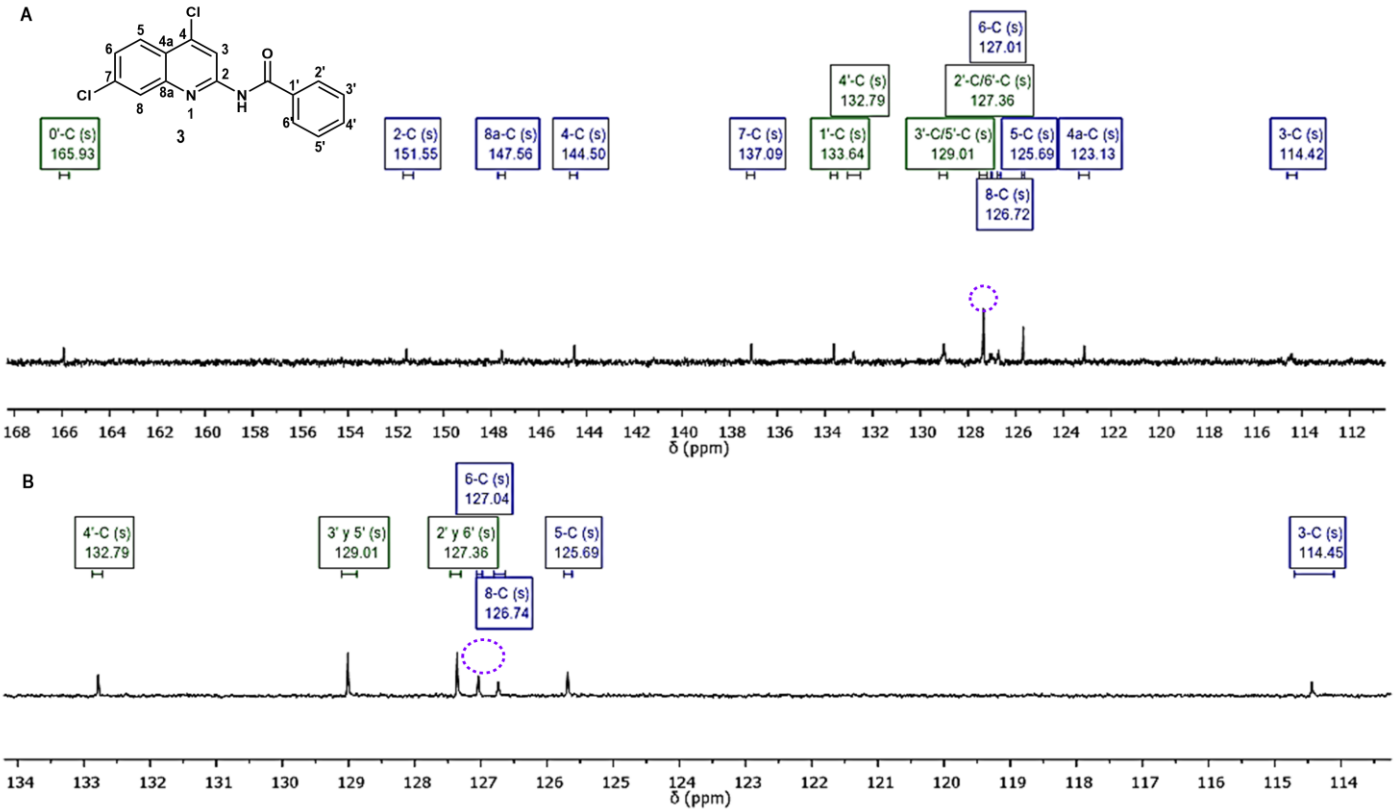


Figure S10. [13]C-NMR spectrum of compound **3**: **A**) [13]C-NMR spectrum. **B**) DEPT-135 spectrum

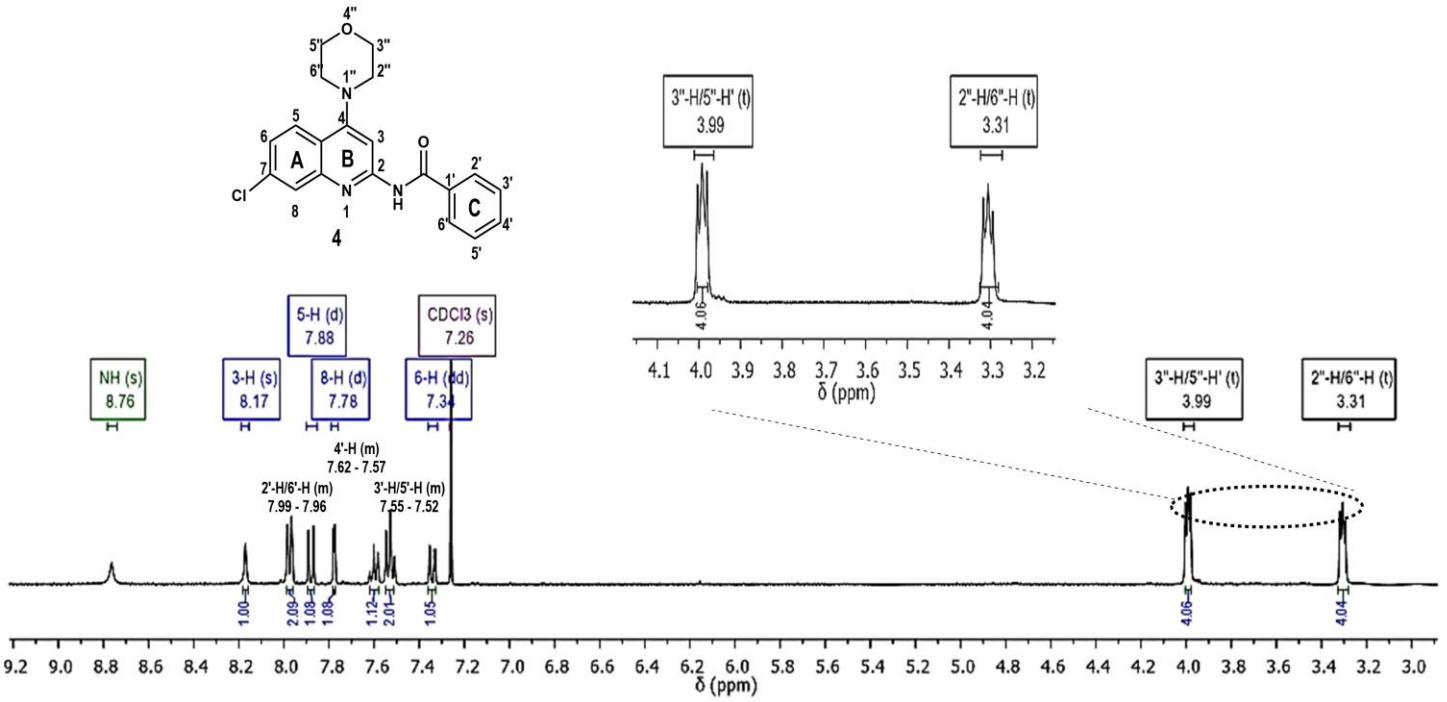


Figure S11. ^{1}H-NMR spectrum of compound **4**.

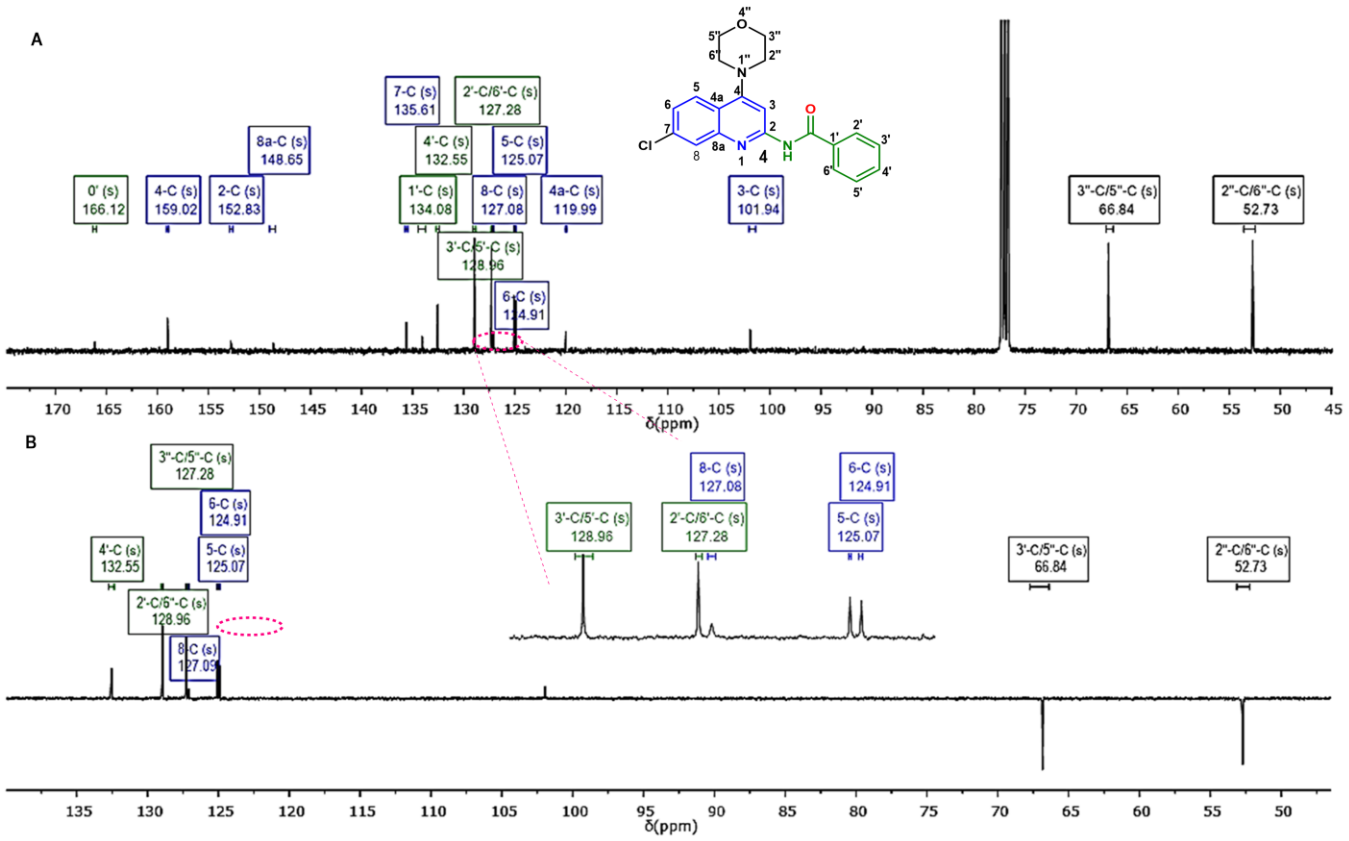


Figure S12. ^{13}C-NMR spectrum of compound **4**: A) ^{13}C-NMR spectrum. **B**) DEPT-135 spectrum

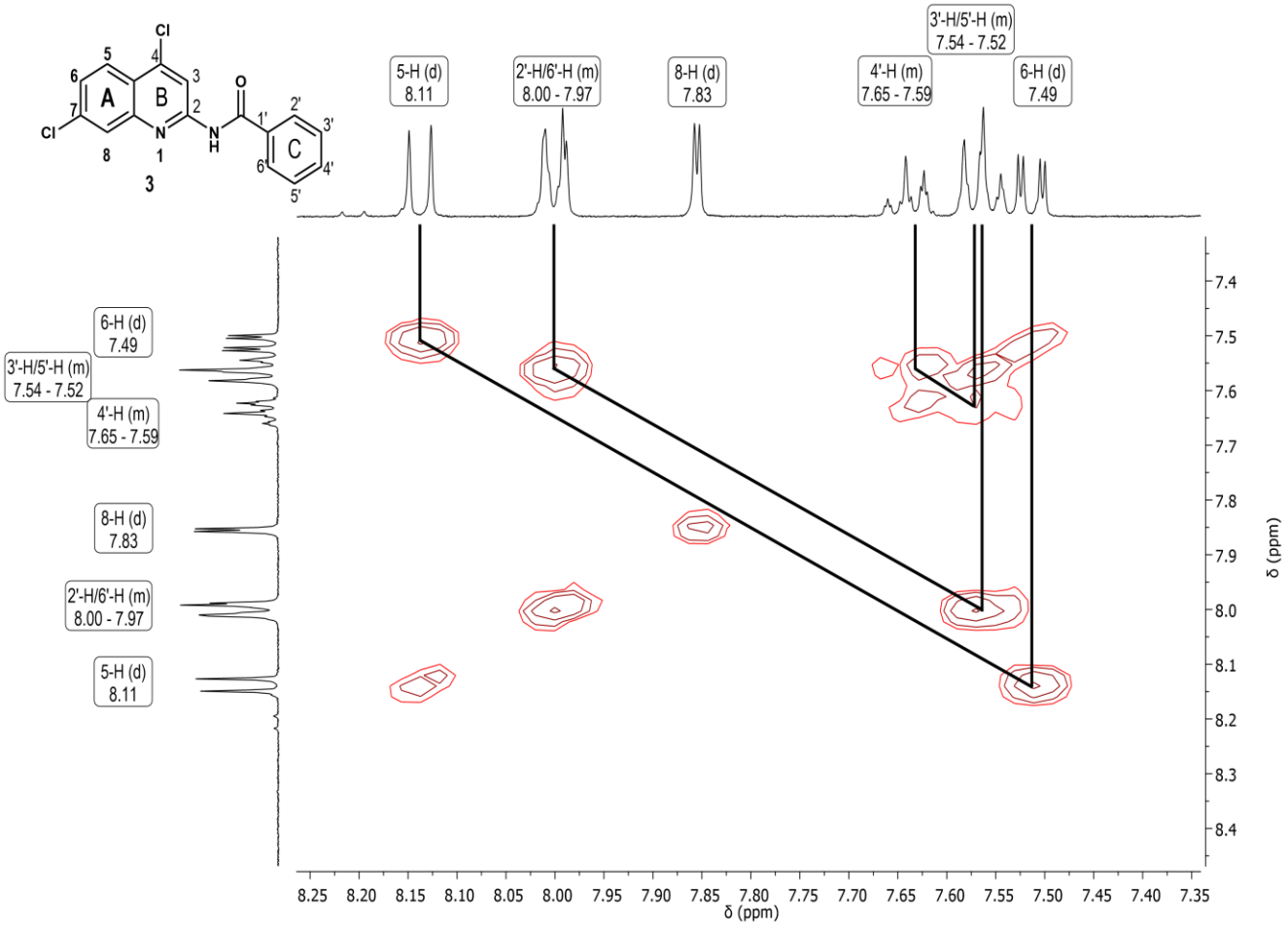


Figure S13. Expansion of the aromatic zone of the COSY spectrum of compound **3**

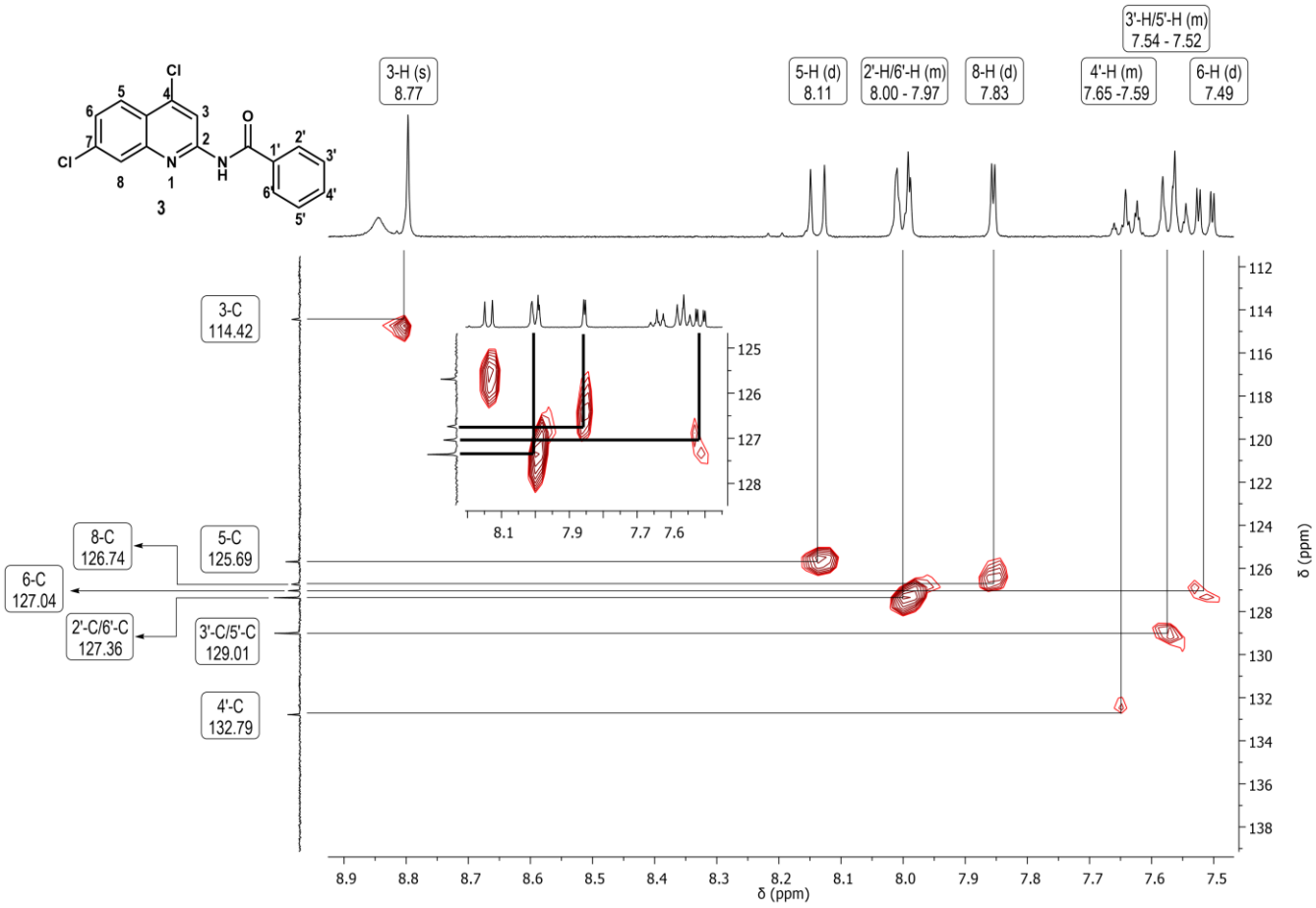


Figure S14. Expansion of the aromatic zone of the HSQC spectrum of compound **3**

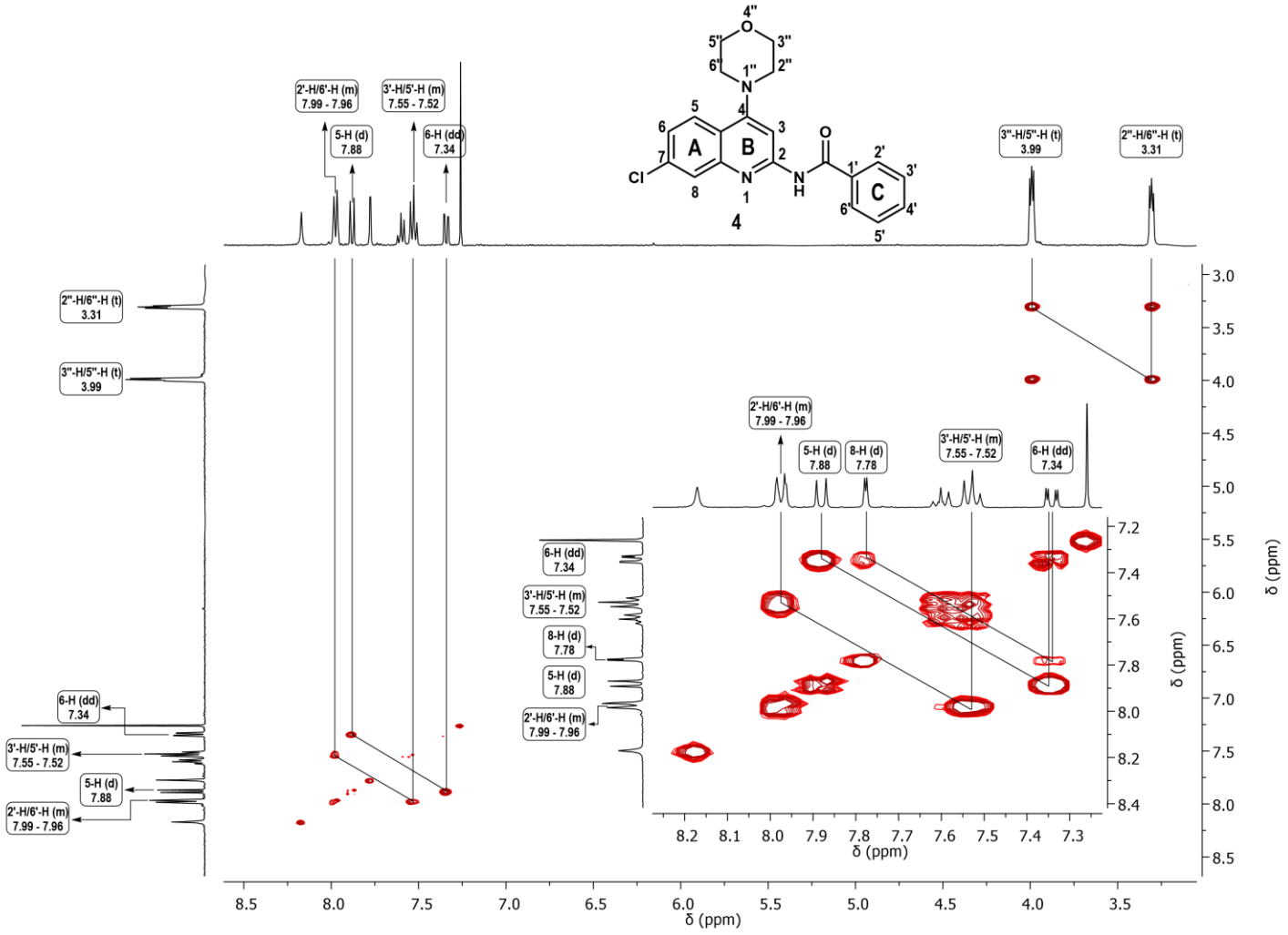


Figure S15. Expansion of the aromatic zone of the COSY spectrum of compound **4**

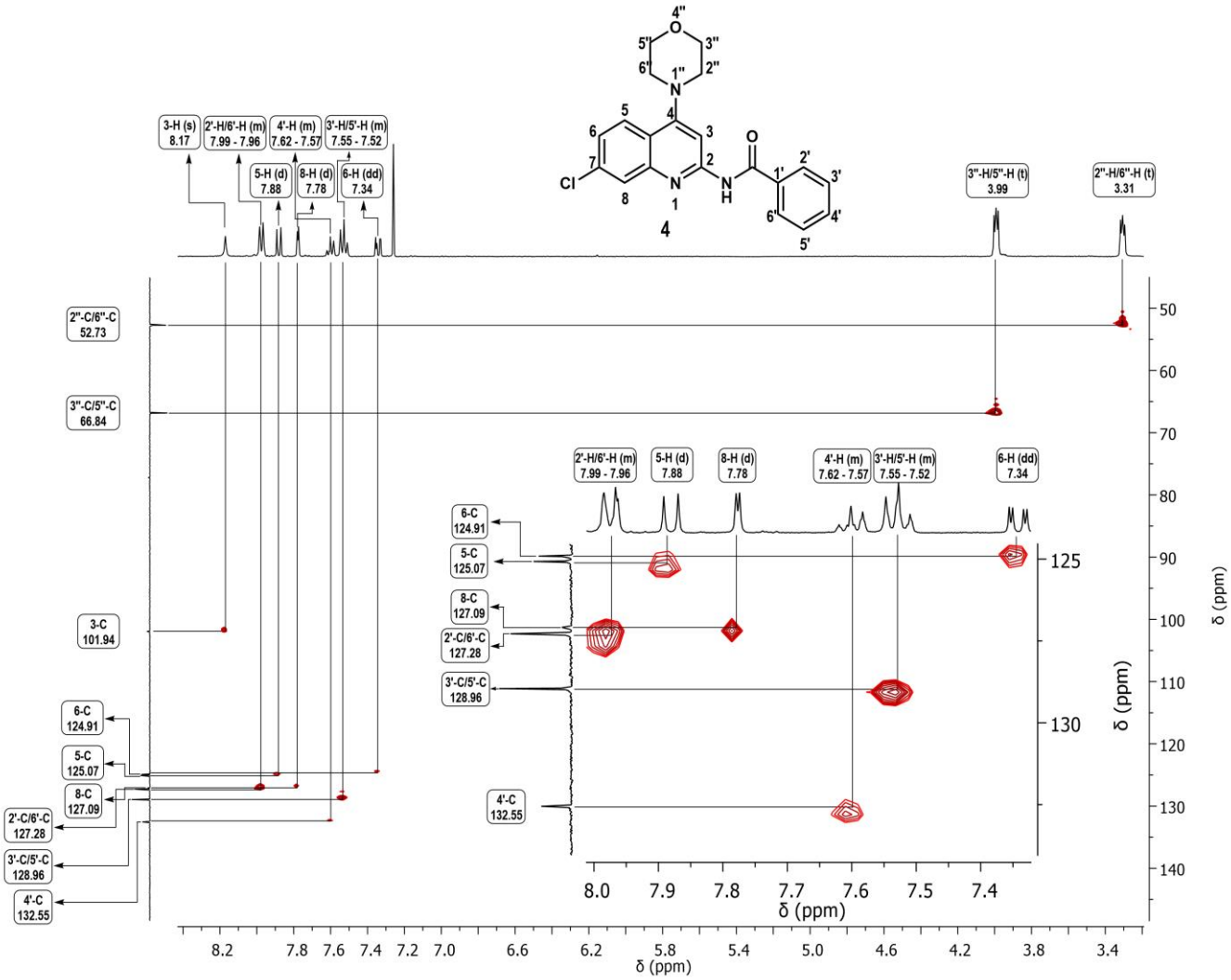


Figure S16. Expansion of the aromatic zone of the HSQC spectrum of compound **4**

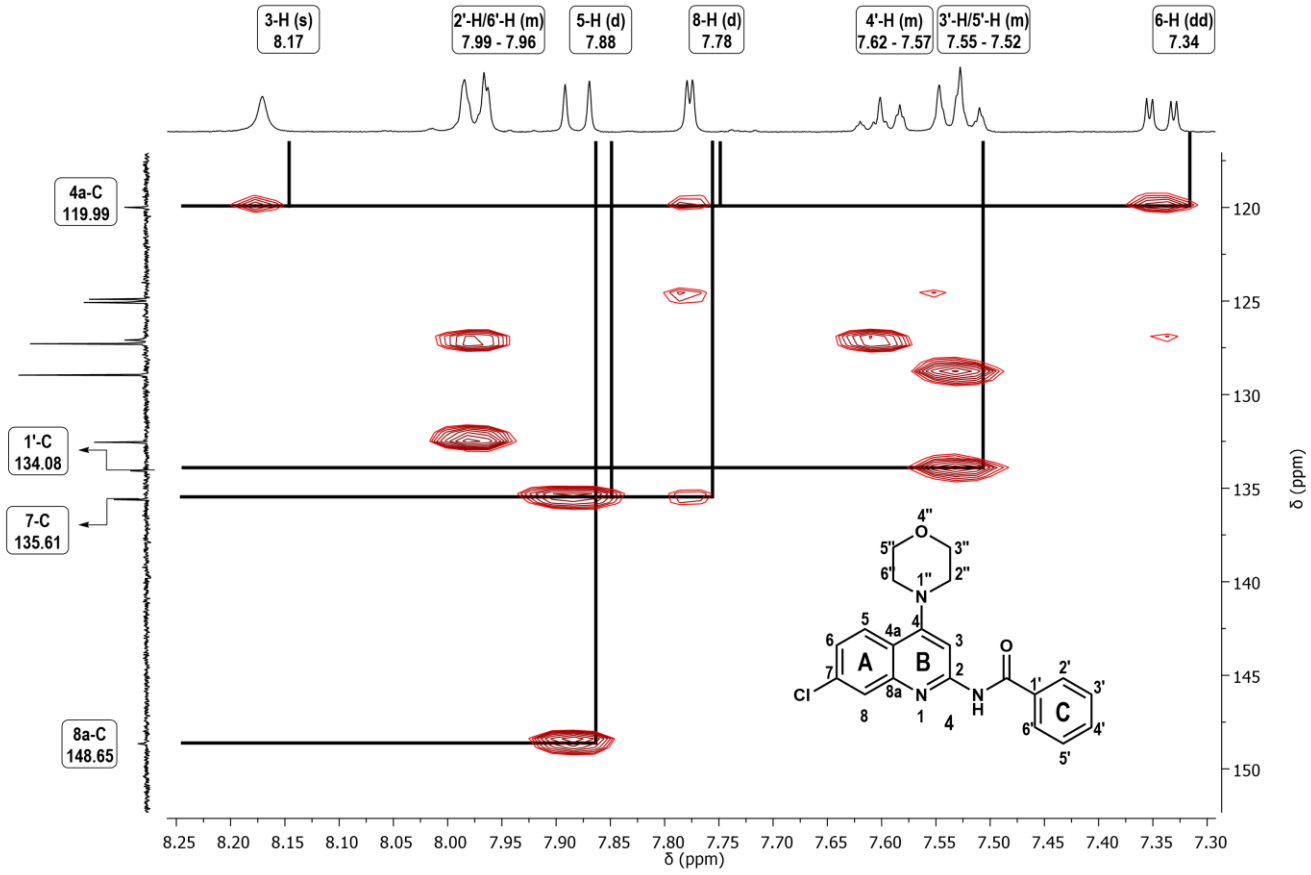
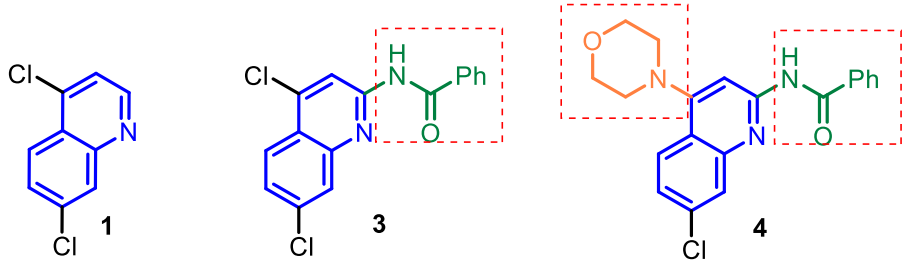
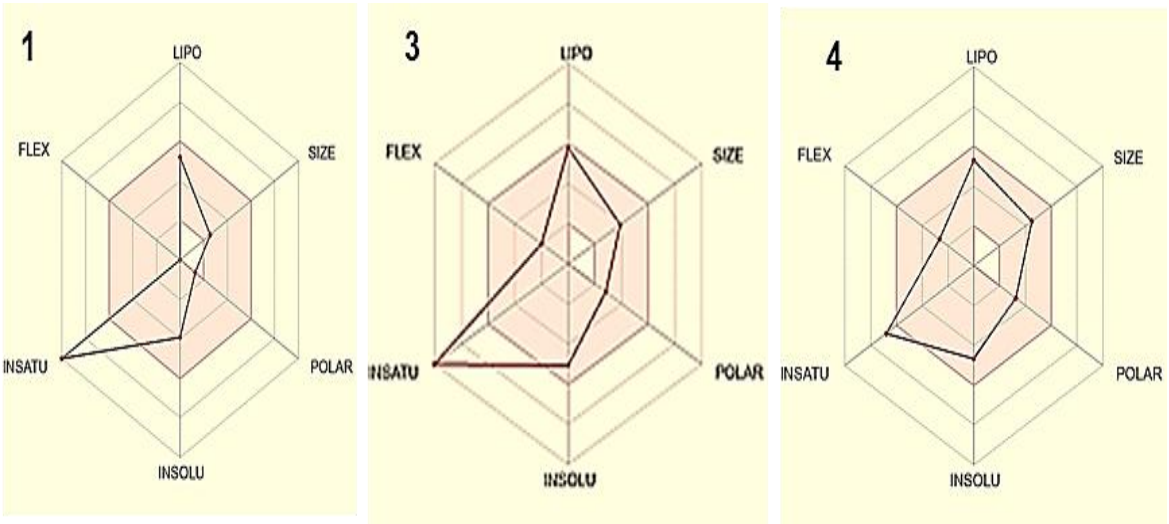


Figure S17. HMBC spectrum of compound **4**

4. *In silico* prediction of physicochemical properties

Table S1. Bioavailability radars, the calculated molecular descriptors for quinoline molecules **1,3-4** according to the online SwissADME database and Lipinski's rule analysis.





Comp.	MW[a]	cLogP[b]	HBA[c]	HBD[d]	RB[e]	TPSA[f]	Lipinski's rule violations
1	198.05	3.21	1	0	0	12.89	0
3	317.17	3.89	2	1	3	41.99	0
4	367.84	3.16	3	1	4	54.46	0

[a] Molecular Weight (g/mol); [b] Logarithm of the partition coefficient between *n*-octanol and water; [c] Number of hydrogen-bond acceptors, [d] Number of hydrogen-bond donors; [e] Number of Rotatable Bonds [f] Polar Surface Area (Å^2).

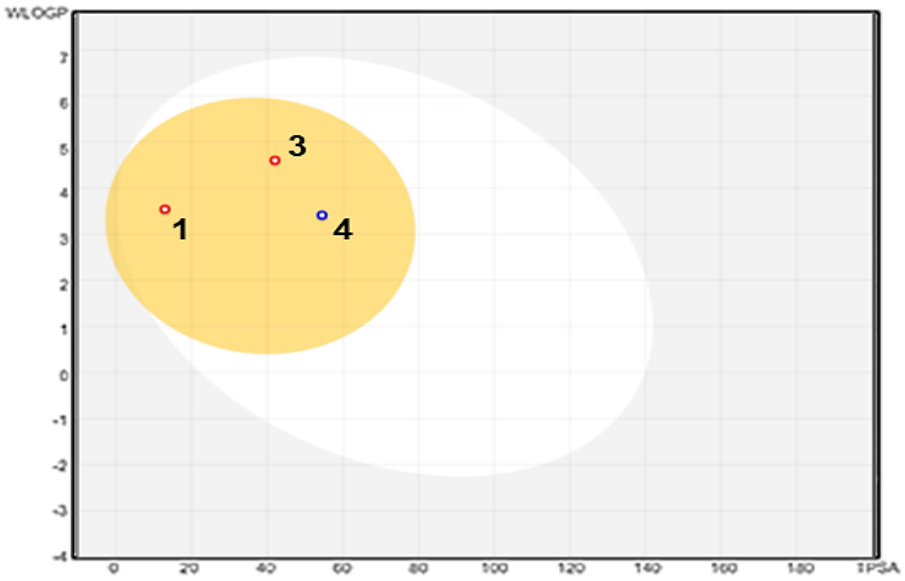


Figure S18. Overview of the BOILED-Egg construction for molecules **1,3-4** using the online SwissADME database. Brain or IntestinaL EstimateD permeation graph (BOILED-Egg), an accurate predictive model that combines the lipophilicity (cLogP) and polarity (TPSA) of the tested small molecules.

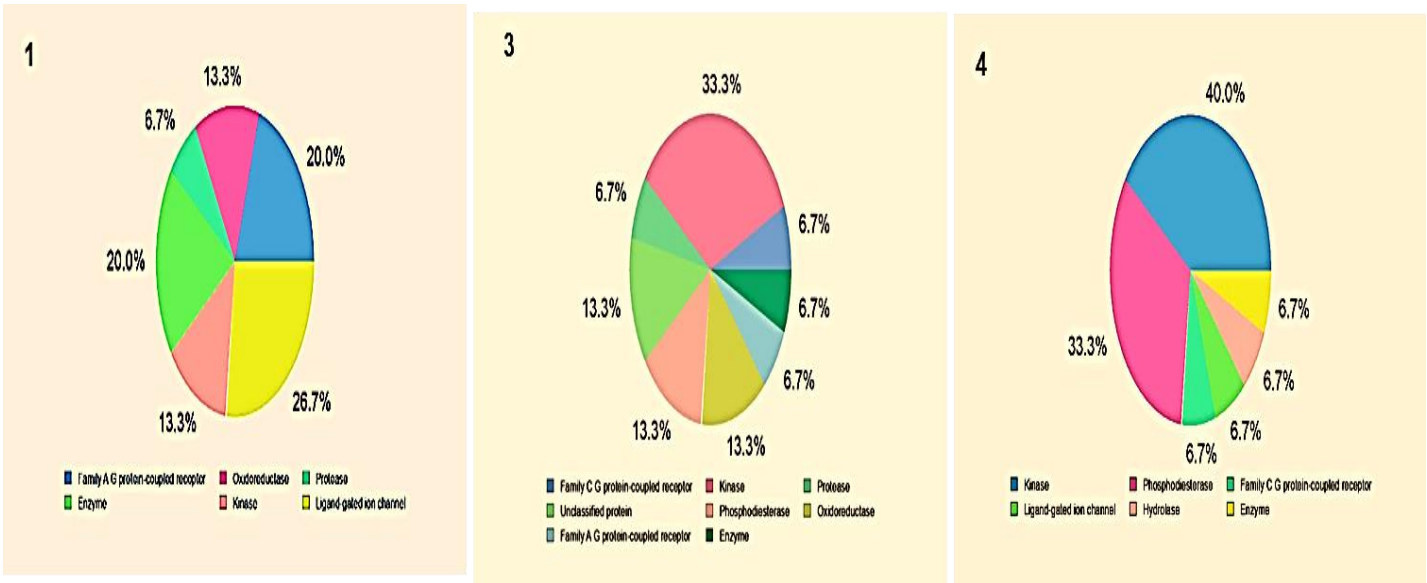


Figure S19. Estimation of the most probable macromolecular targets of small quinoline molecule **1,3-4**, according to the SwissTargetPrediction.