SUPPLEMENTARY MATERIALS

(*E*)-5-Benzyl-7-(3,4-dimethoxybenzylidene)-3-(3,4-dimethoxyphenyl)-2-phenyl-3,3a,4,5,6,7-hexahydro-2*H*-pyrazolo[4,3-*c*]pyridine

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(a) (b)

Figure S1. The crystal of the products, (a) monoketone curcumin analogue **(2)**, (b) pyrazolo-pyridine analogue **(3)** or the title compound.

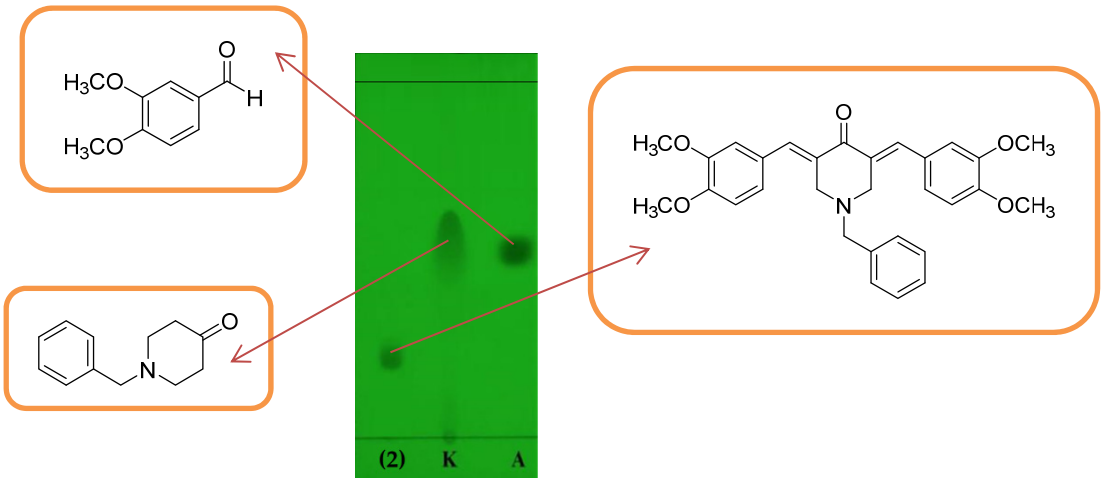


Figure S2. TLC chromatogram of monoketone curcumin analogue **(2)** under 254 nm UV lamp using *n*-hexane and DCM (7:3) as mobile phase, compared to the starting materials, 1-benzyl-4-piperidone (K) and 3,4-dimethoxybenzaldehyde (A).

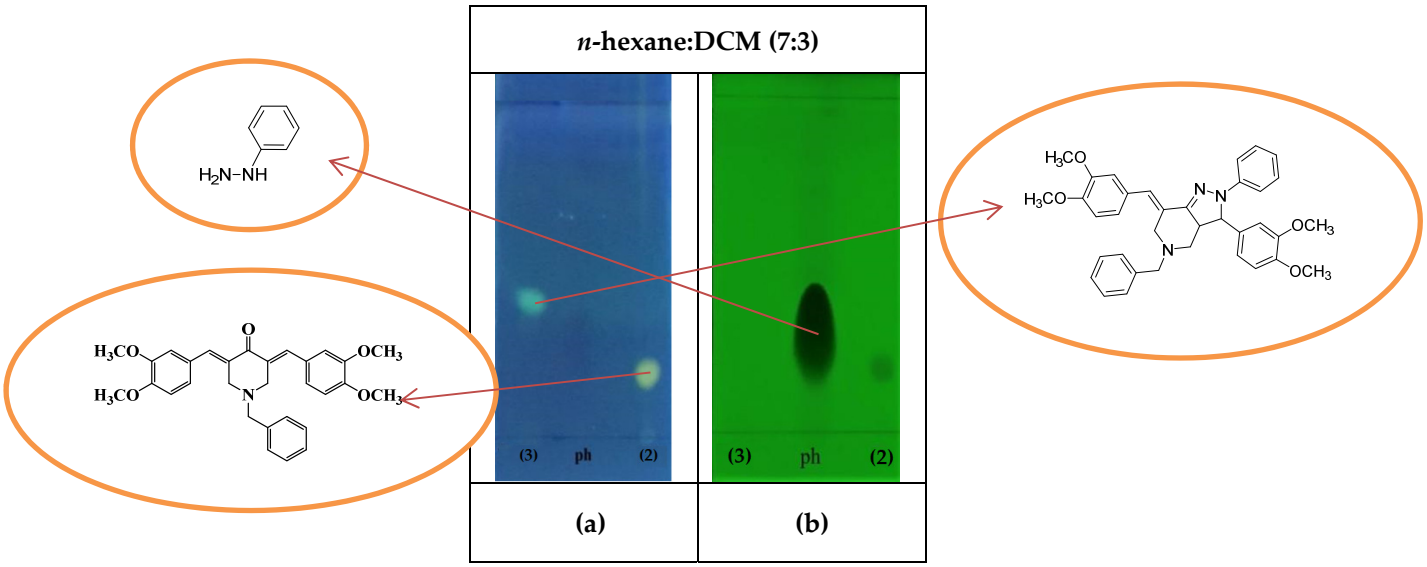


Figure S3. TLC chromatogram of the title compound **(3)**, compared with the starting materials, monoketone curcumin analogue **(2)** and phenylhydrazine (ph), (a) under UV lamp of 366 nm, (b) under UV lamp of 254 nm.

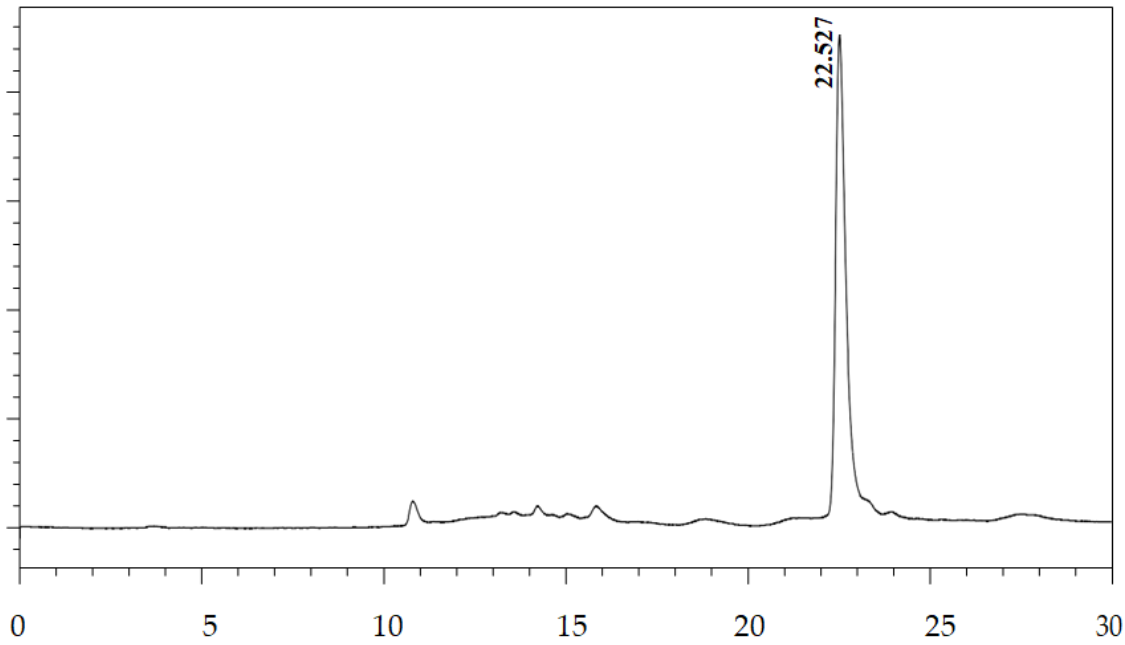


Figure S4. HPLC chromatogram of the title compound. Analysis was performed using reverse phase column, Shim-Pack VP-ODS (250 x 4.6 mm), using mixture of methanol and water as mobile phase with an elution gradient system with a flow rate of 1 mL / minute (UV detector, 350 nm).

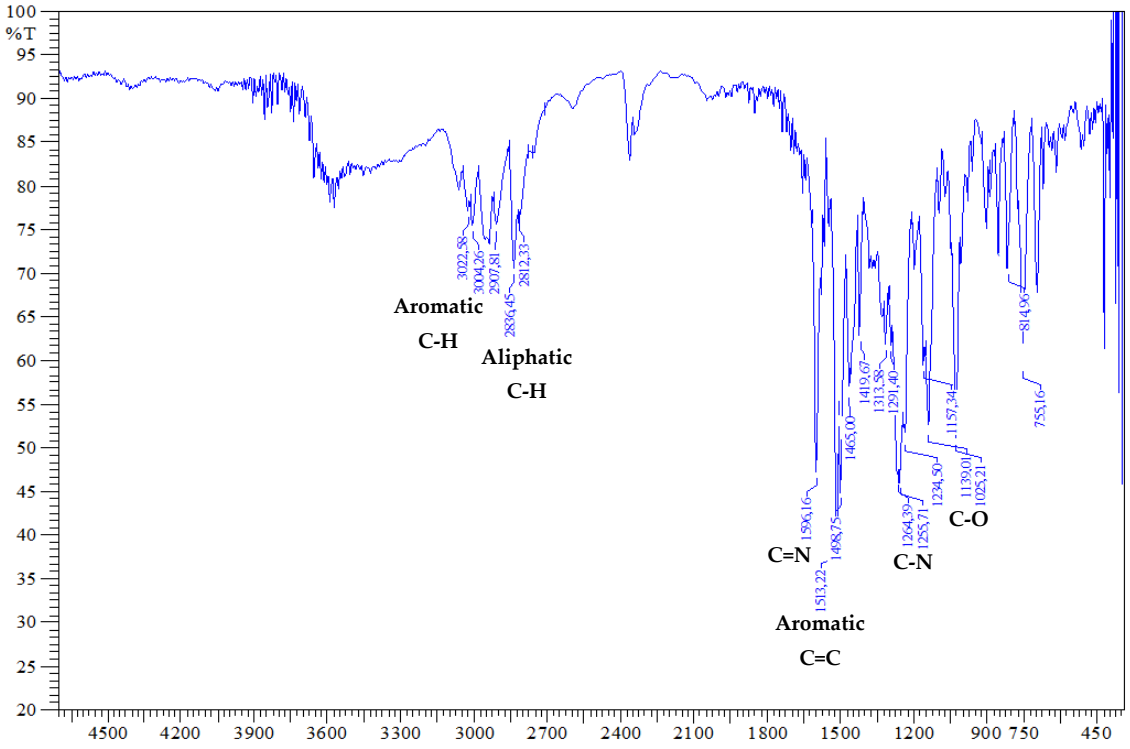


Figure S5. FT-IR Spectra of the title compound.

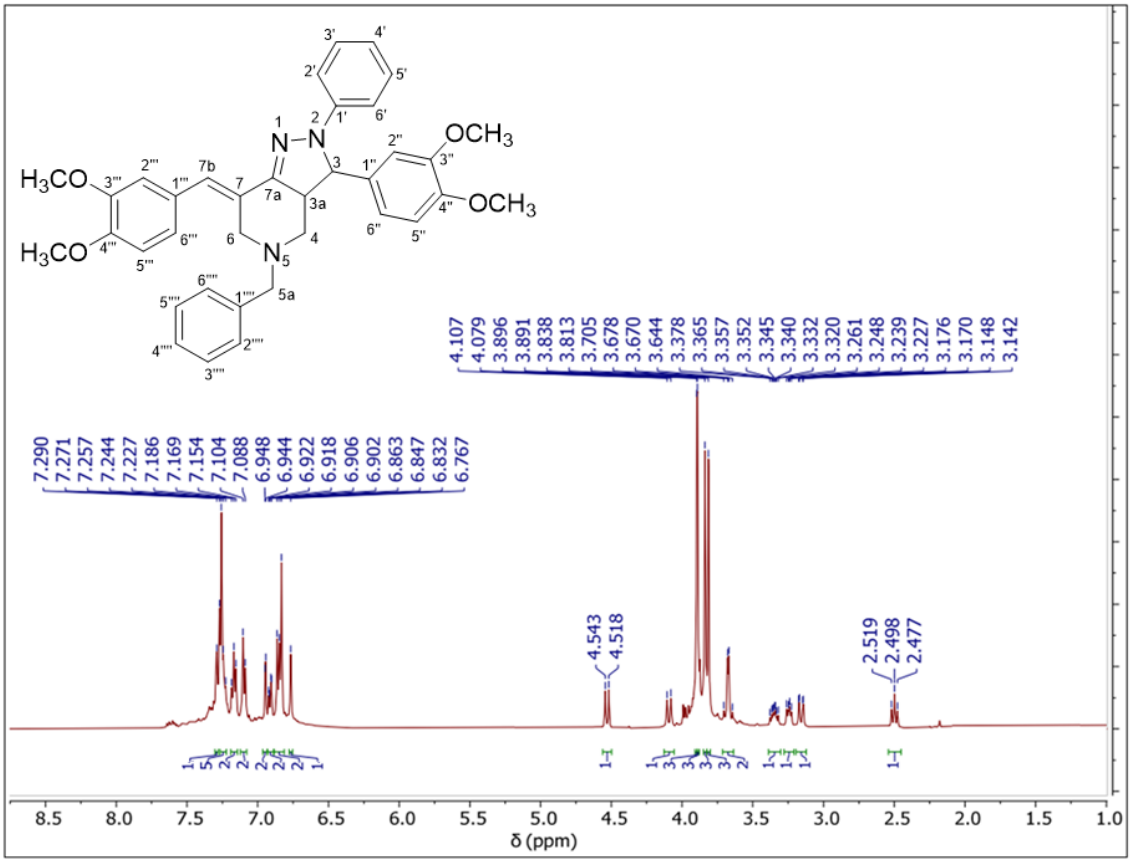


Figure S6. The ^{1}H-NMR spectra of the title compound ($CDCl_3$, 500 MHz).

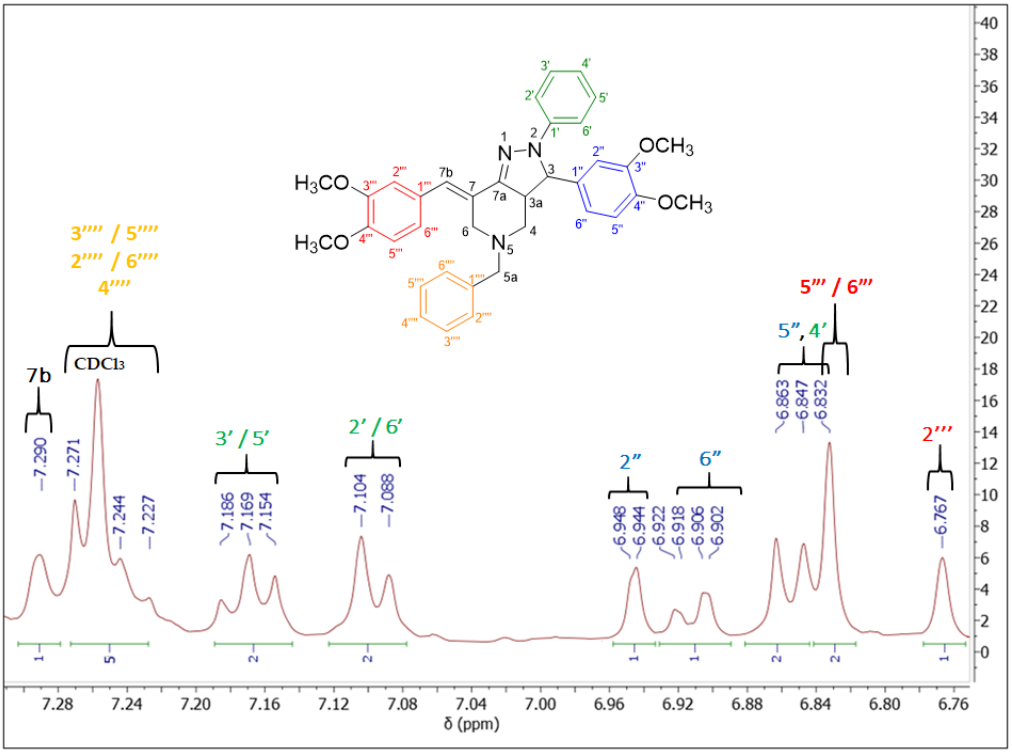


Figure S7. The ^{1}H-NMR spectra of the title compound ($CDCl_3$, 500 MHz), expansion in the aromatic proton region.

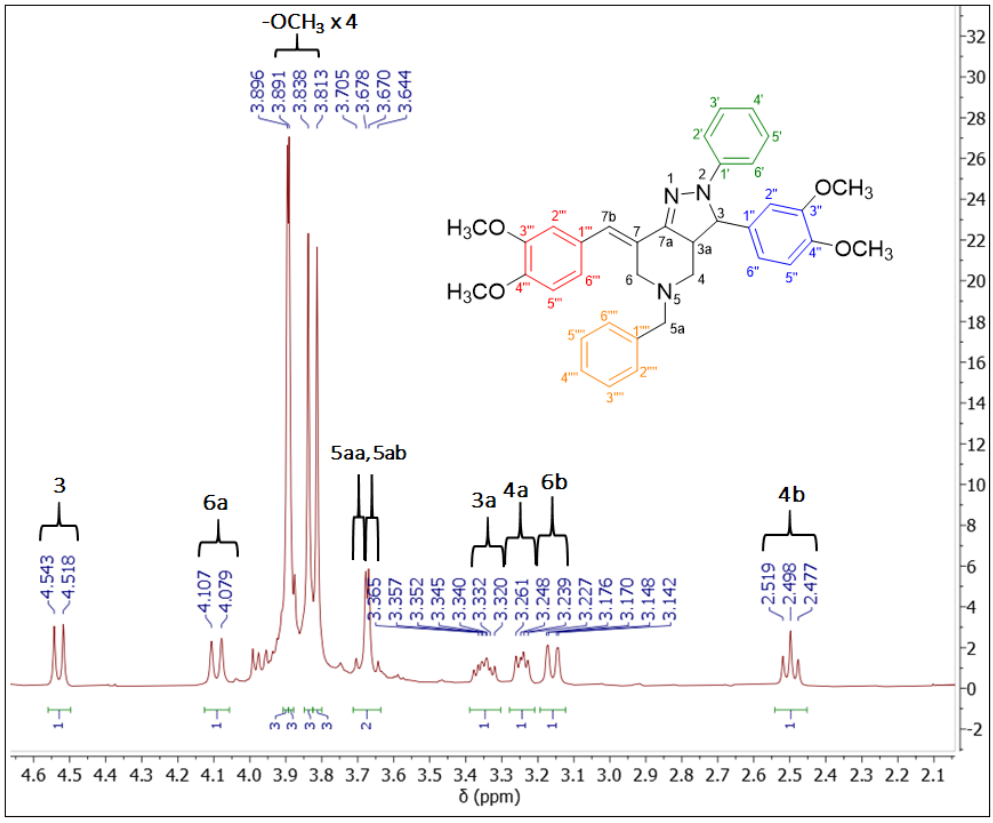


Figure S8. The ^{1}H-NMR spectra of the title compound ($CDCl_3$, 500 MHz), expansion in the aliphatic region.

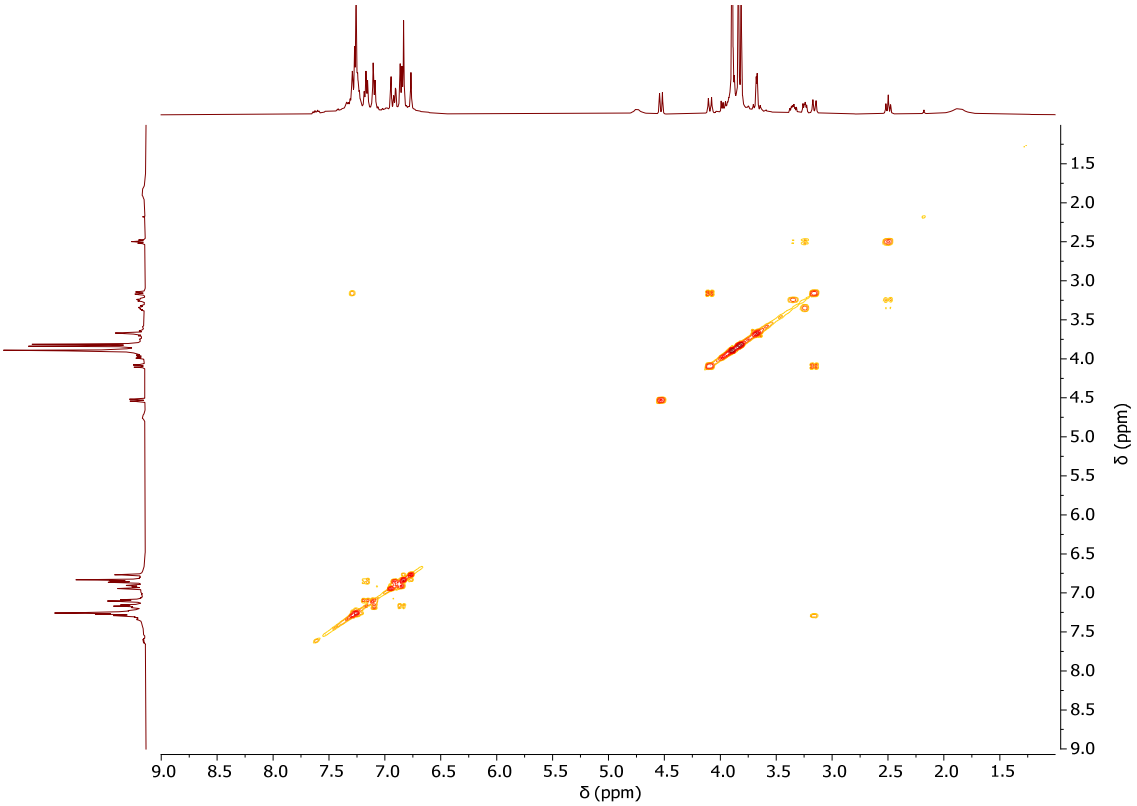


Figure S9. The COSY spectra of the title compound.

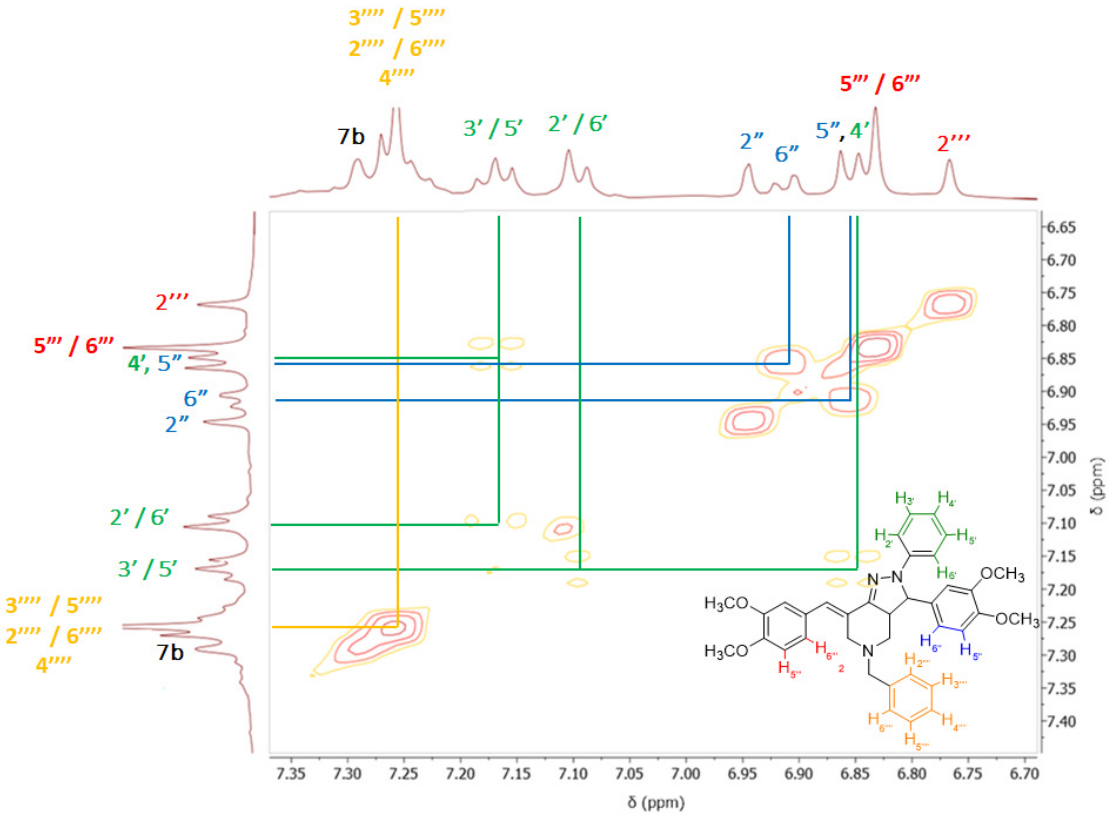


Figure S10. The COSY spectra of the title compound, magnification in the aromatic area.

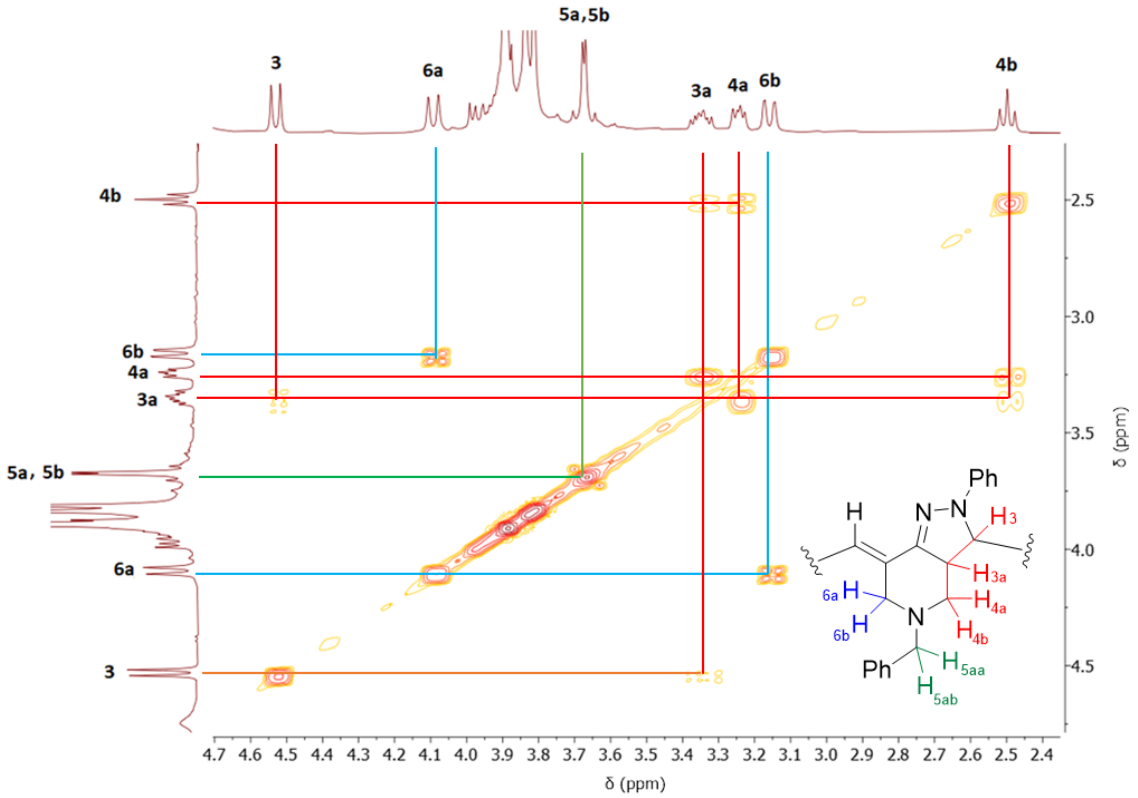


Figure S11. The COSY spectra of the title compound, magnification in the aliphatic area.

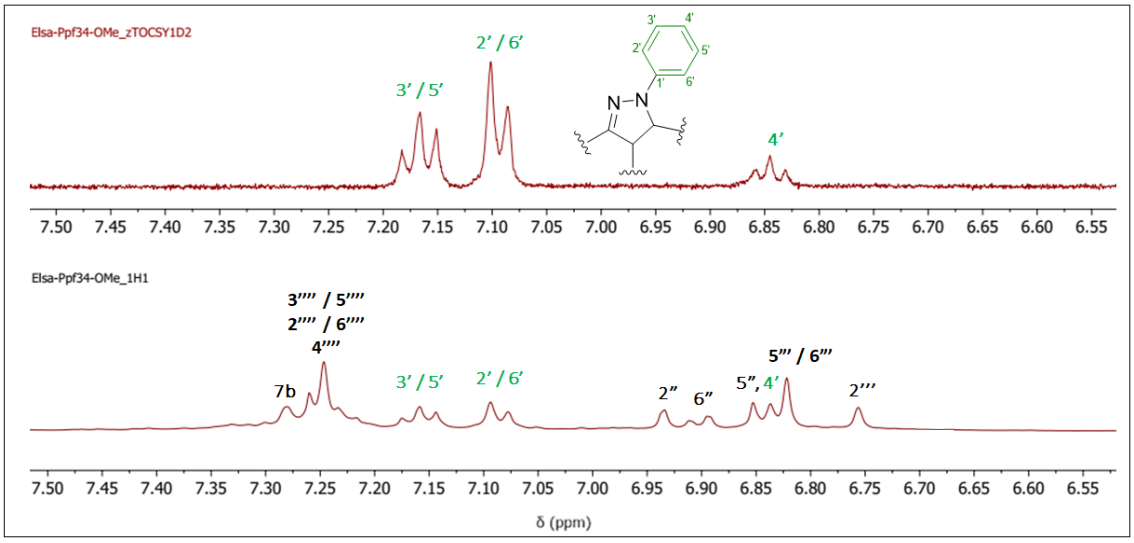


Figure S12. The 1D-TOCSY spectra analysis for protons signals assignments in R′ aromatic ring of the title compound (highlighted in green).

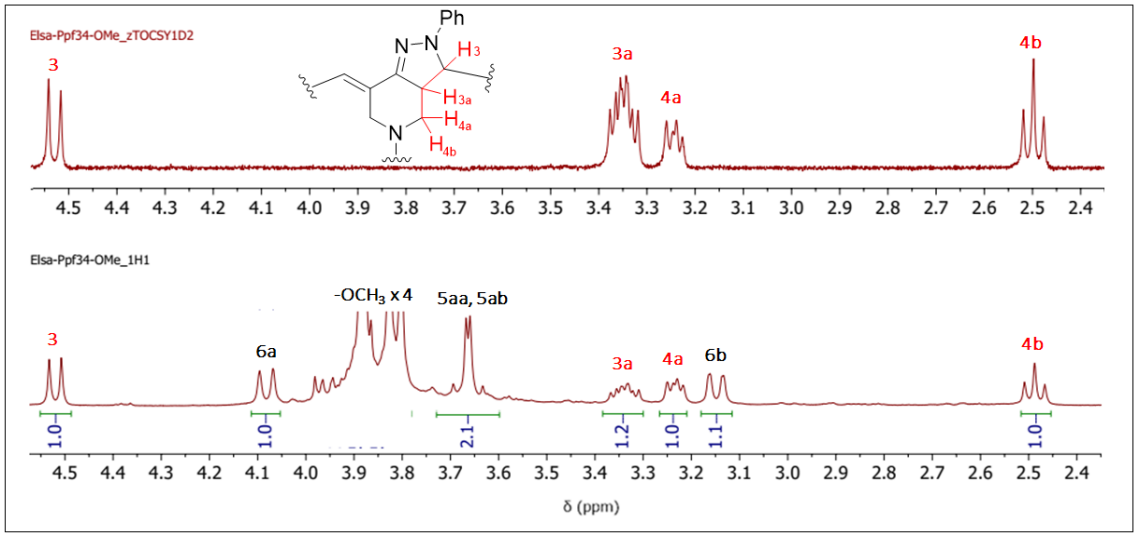


Figure S13. The 1D-TOCSY spectra analysis for protons signals assignments in heterocyclic ring of the title compound (highlighted in red).

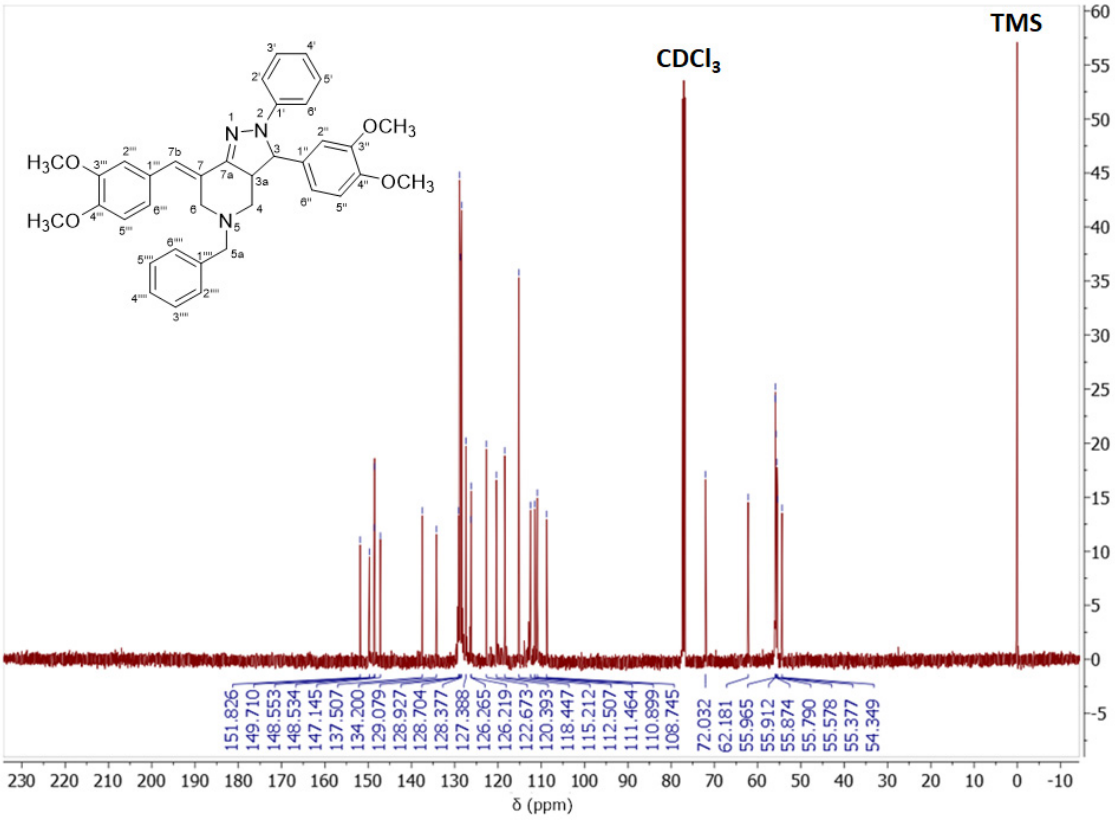


Figure S14. The ^{13}C-NMR spectra of the title compound ($CDCl_3$, 125 MHz).

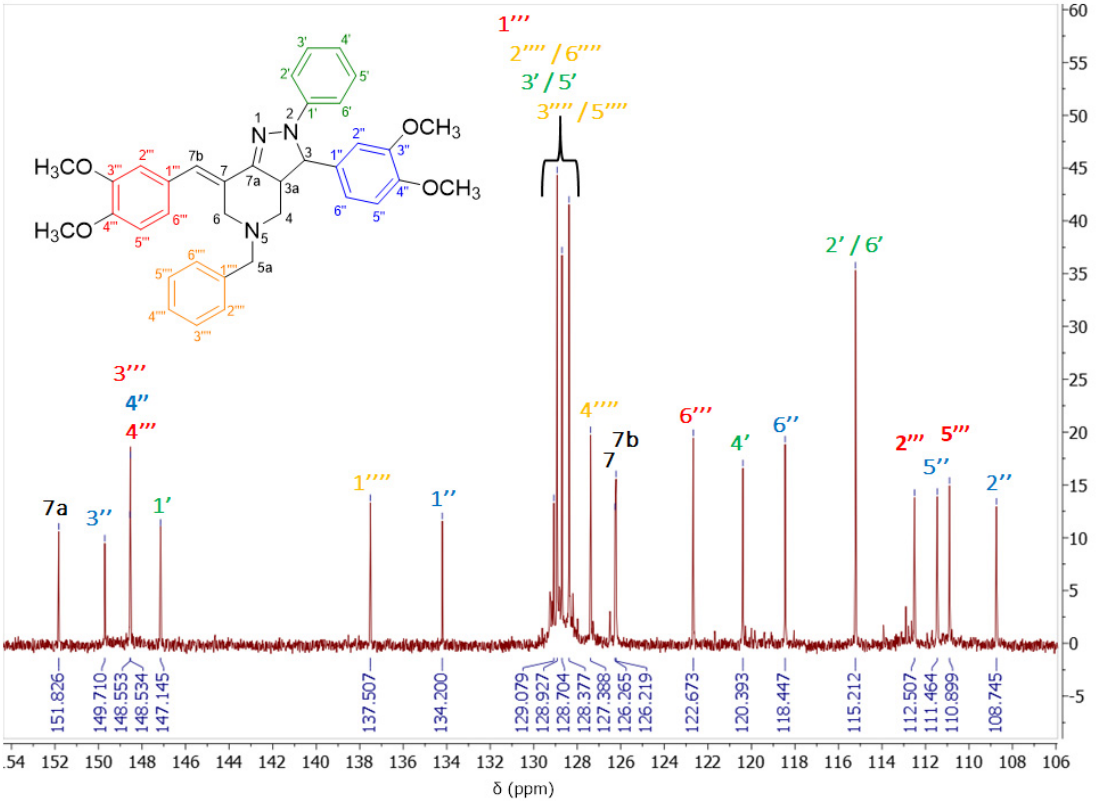


Figure S15. The ^{13}C-NMR spectra of the title compound ($CDCl_3$, 125 MHz), magnification in the aromatic area.

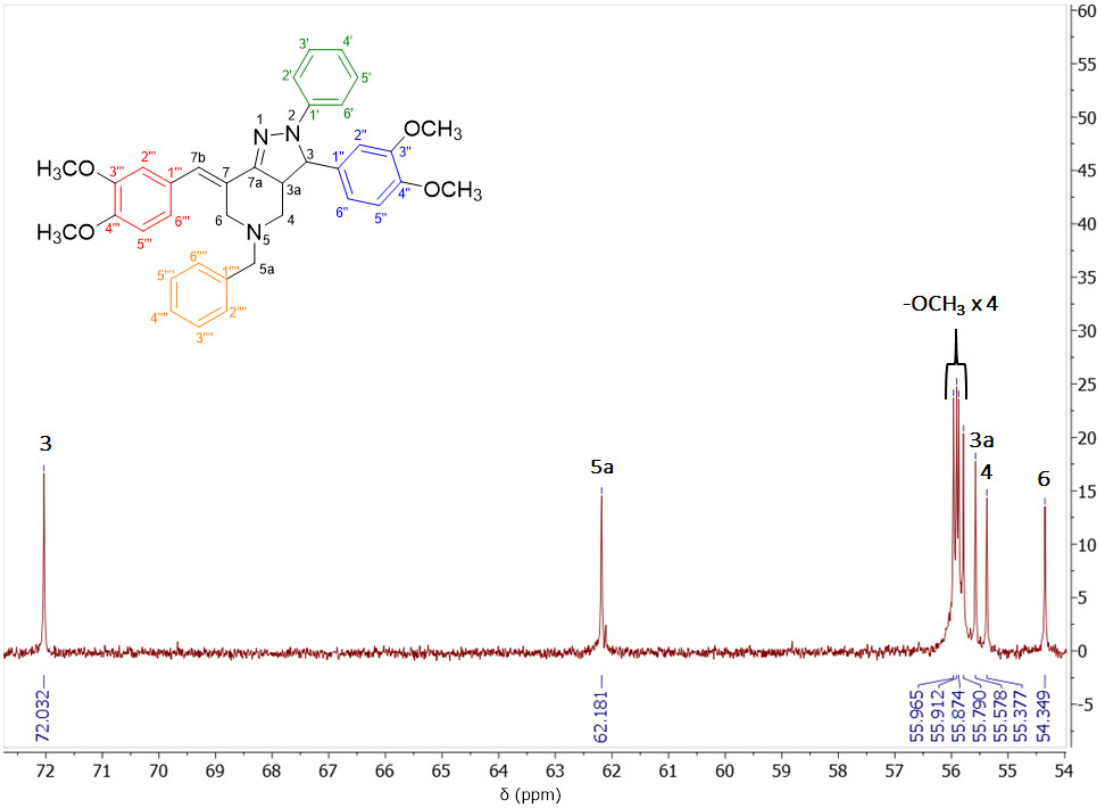


Figure S16. The ^{13}C-NMR spectra of the title compound ($CDCl_3$, 125 MHz), magnification in the aliphatic area.

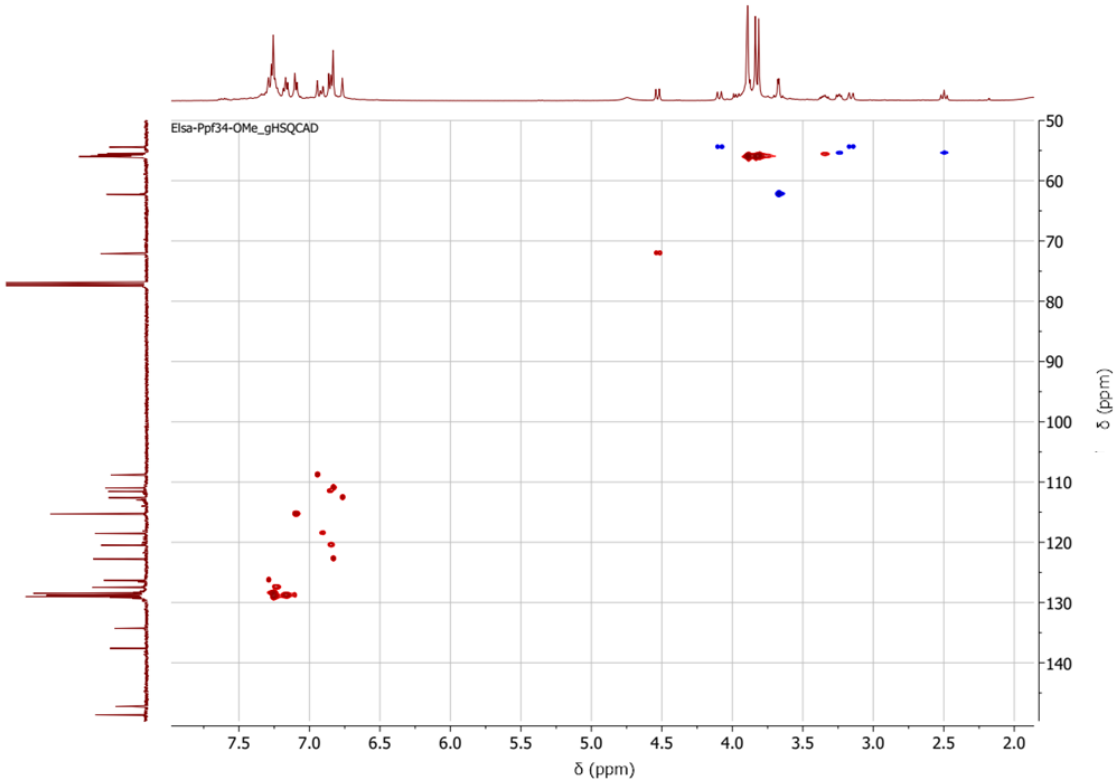


Figure S17. The HSQC spectra of the title compound.

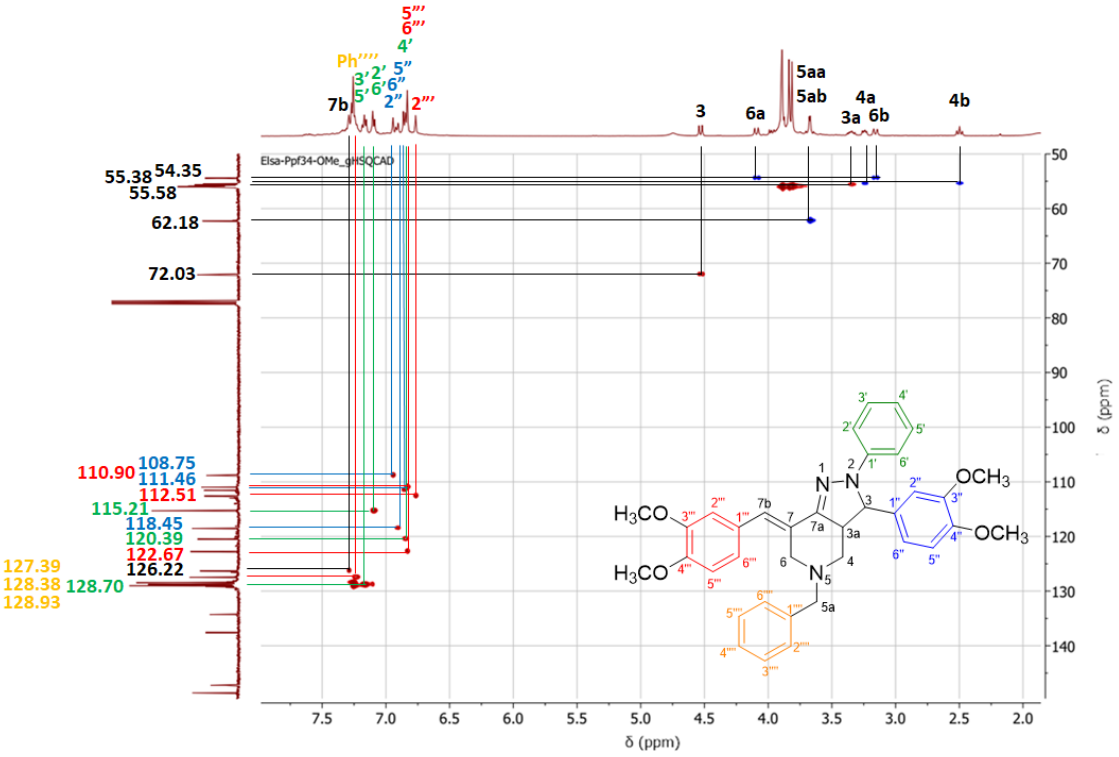


Figure S18. The ^{1}H-^{13}C correlations in HSQC spectra of the title compound.

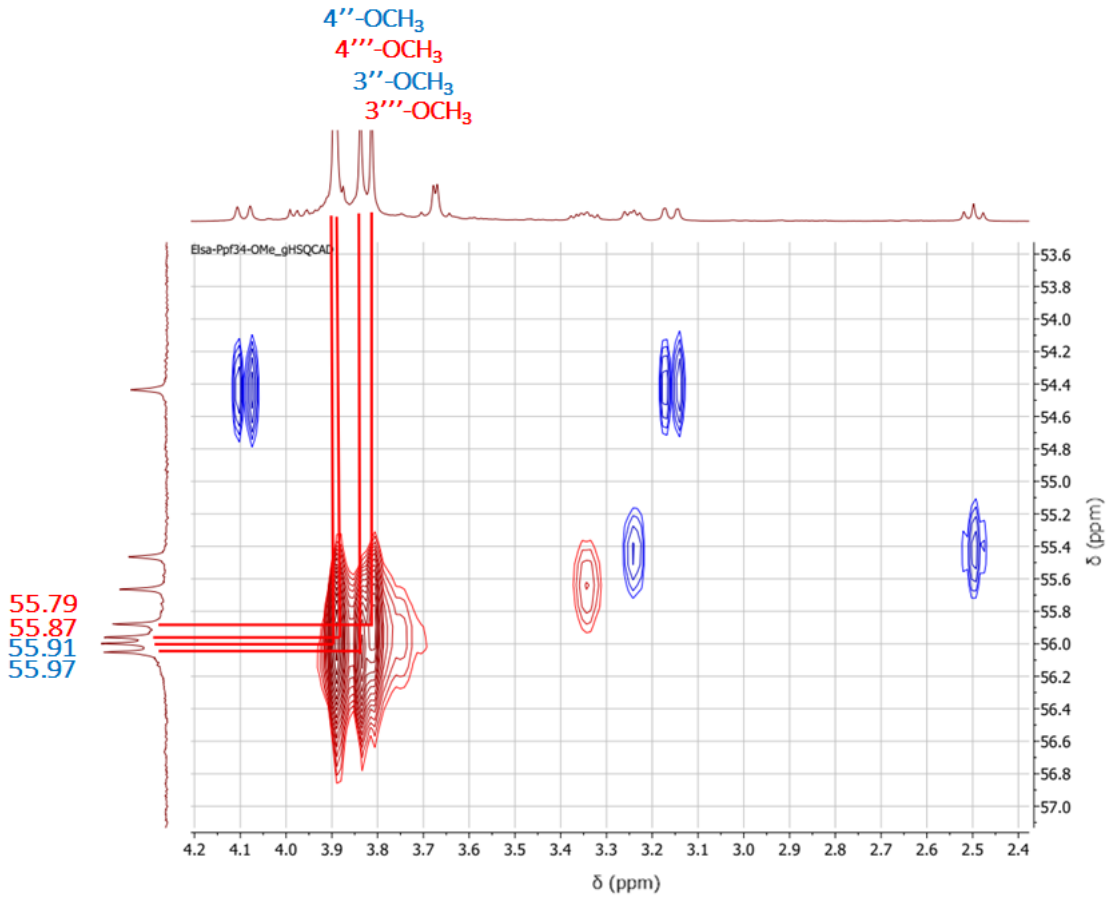


Figure S19. The ^{1}H-^{13}C correlations in HSQC spectra of the title compound.

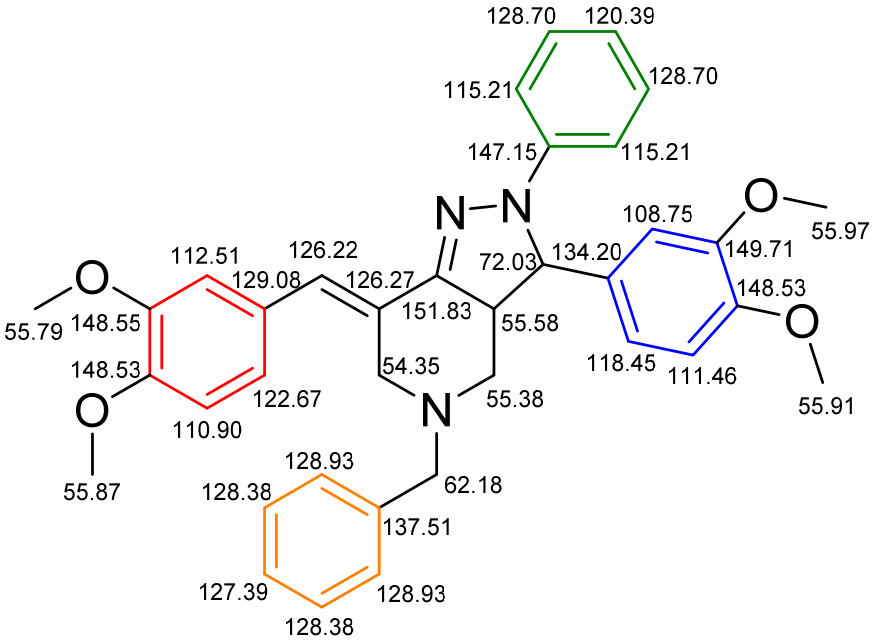


Figure S20. The chemical shift of carbons of the title compound based on the interpretation of ^{13}C NMR and HSQC spectra

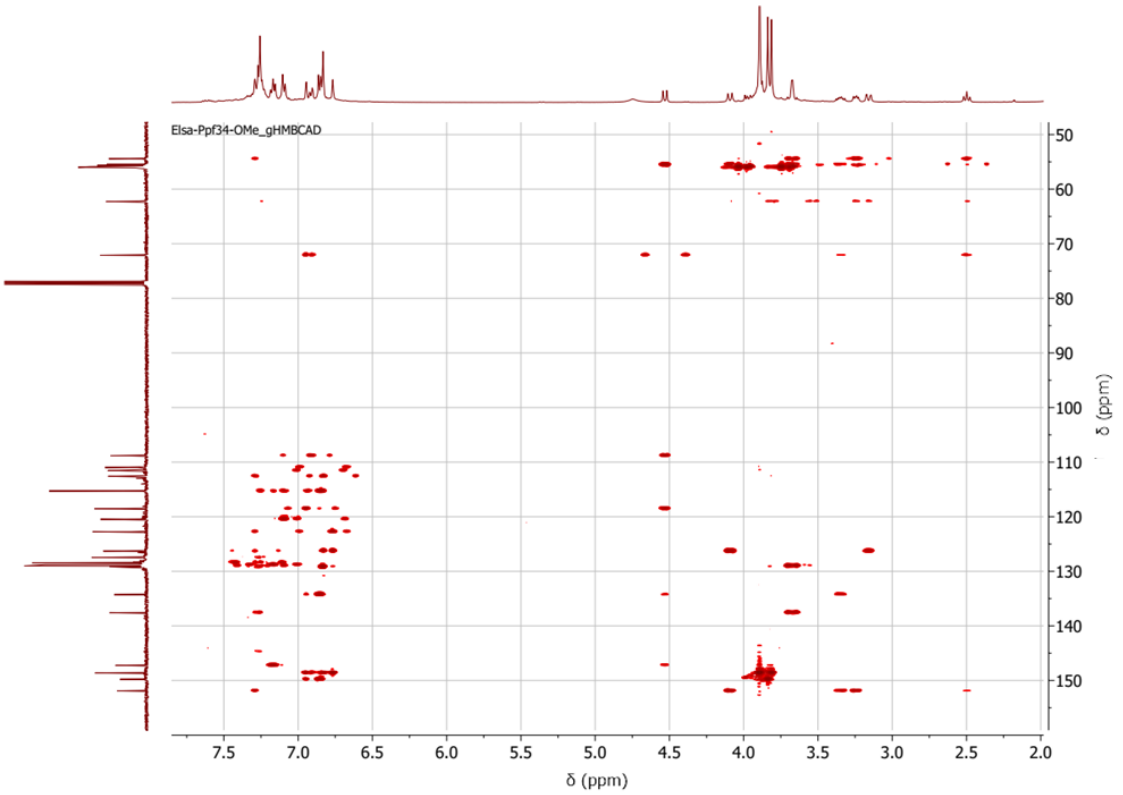


Figure S21. The HMBC spectra of the title compound.

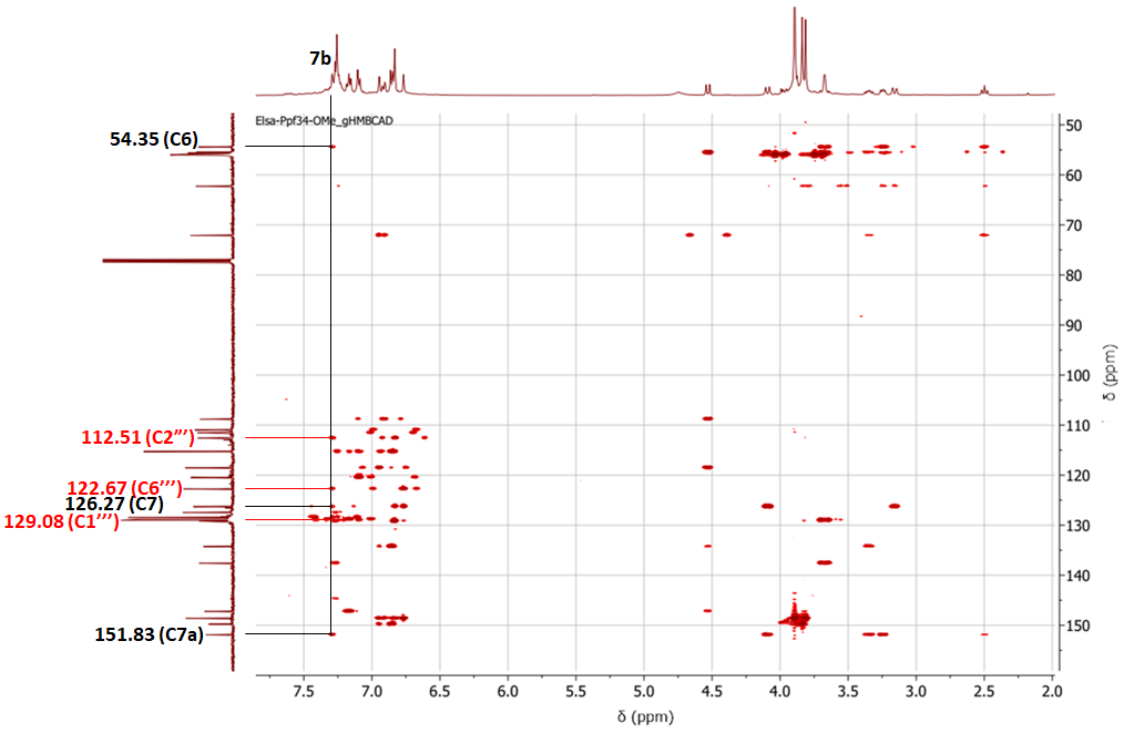


Figure S22. The ^{1}H-^{13}C correlations of proton 7b in HMBC spectra of the title compound.

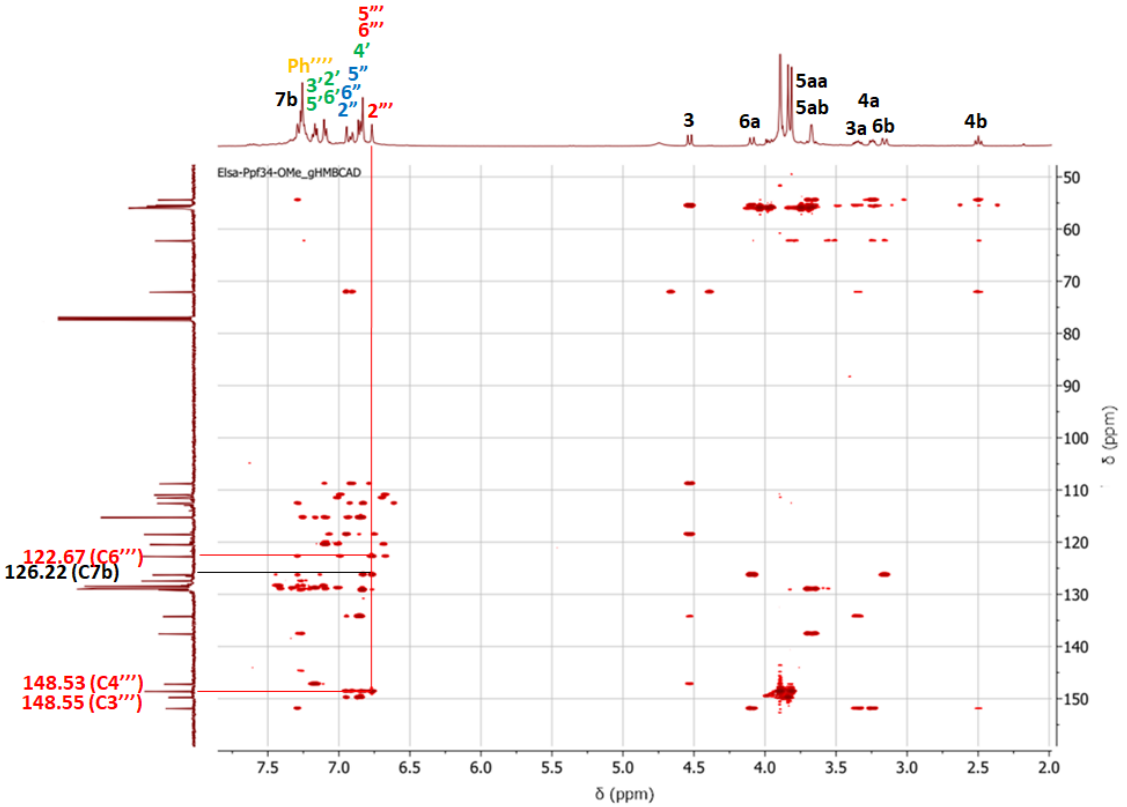


Figure S23. The ^{1}H-^{13}C correlations of proton 2‴ in HMBC spectra of the title compound.

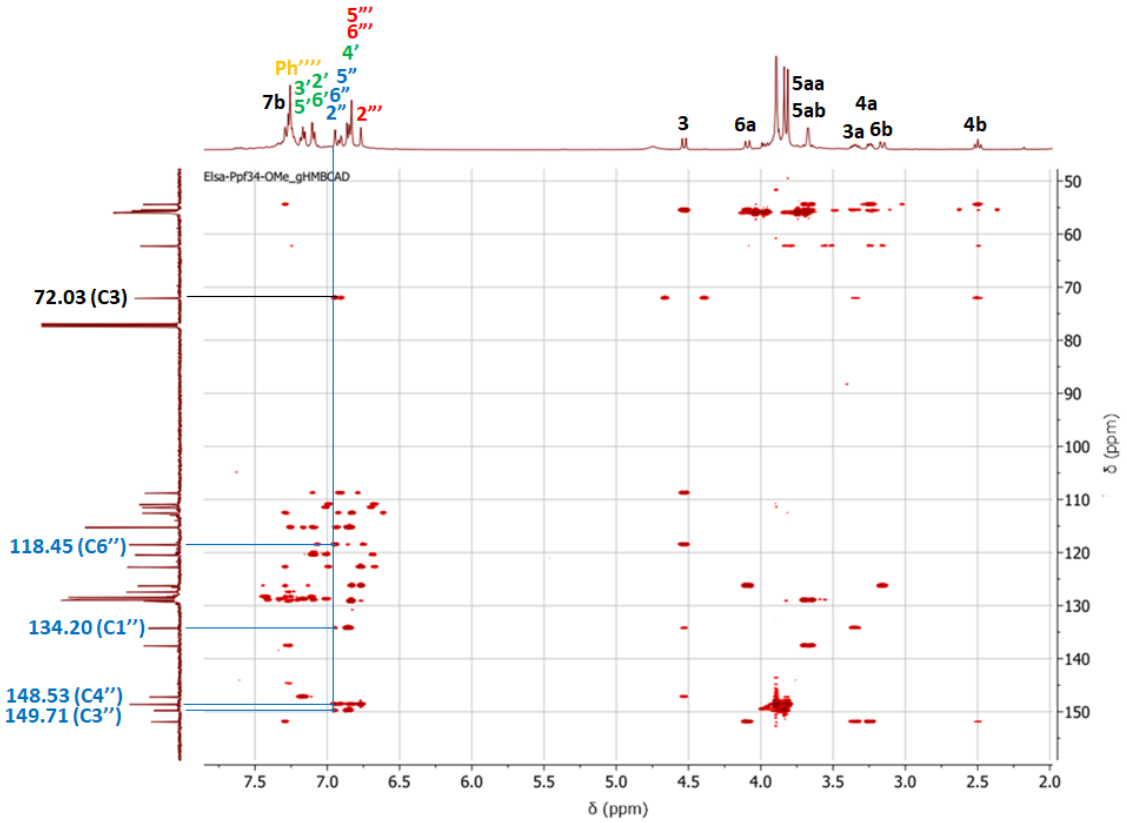


Figure S24. The ^{1}H-^{13}C correlations of proton 2″ in HMBC spectra of the title compound.

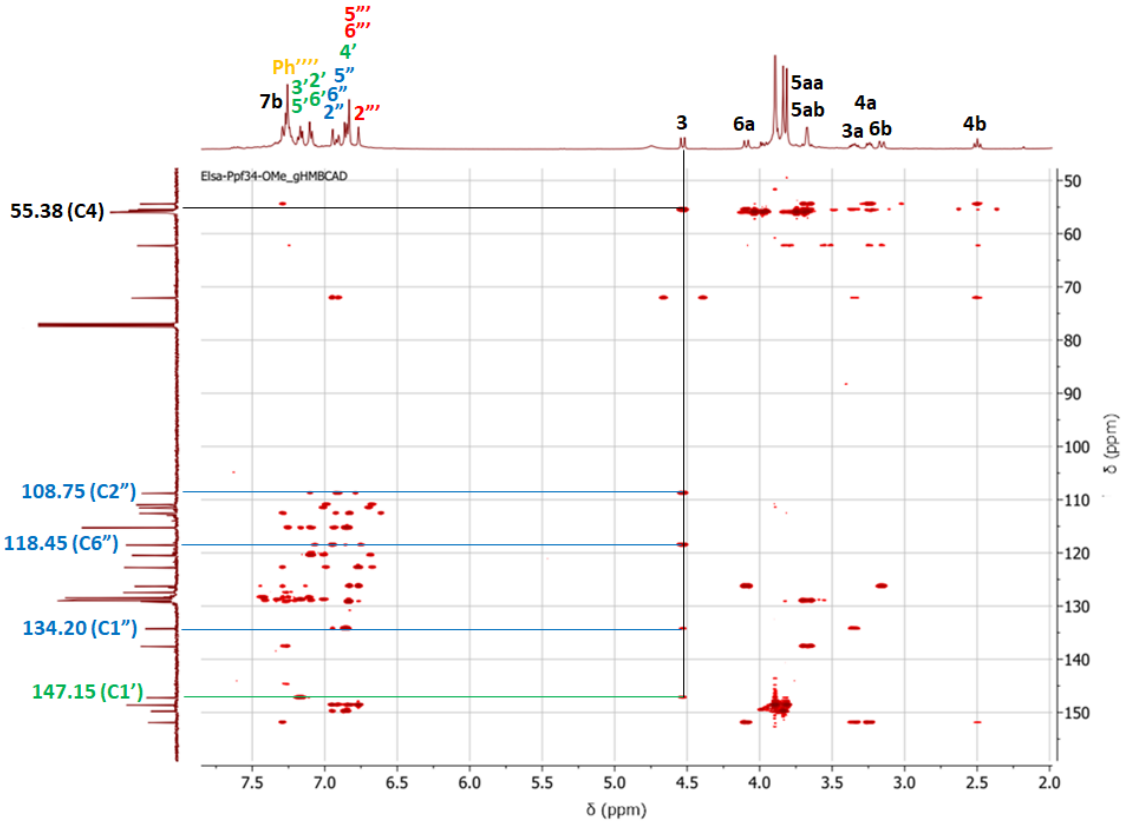


Figure S25. The ^{1}H-^{13}C correlations of proton 3 in HMBC spectra of the title compound.

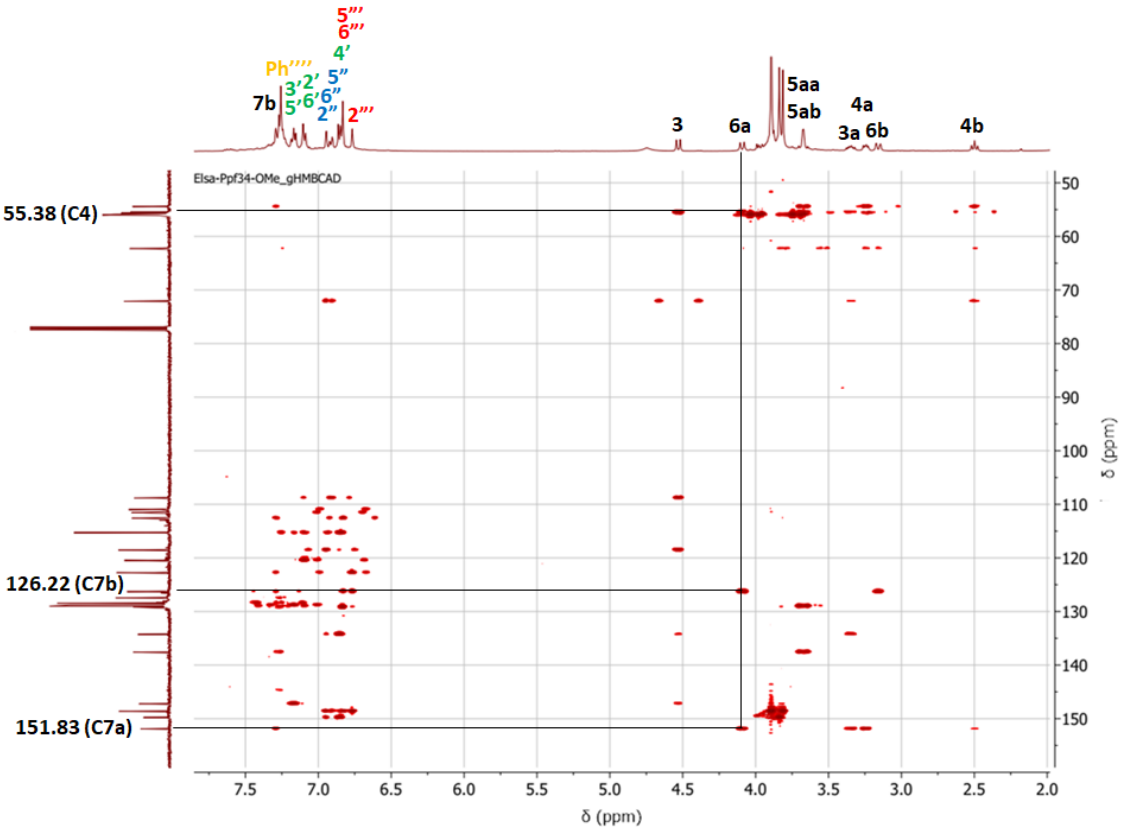


Figure S26. The ^{1}H-^{13}C correlations of proton 6 in HMBC spectra of the title compound.

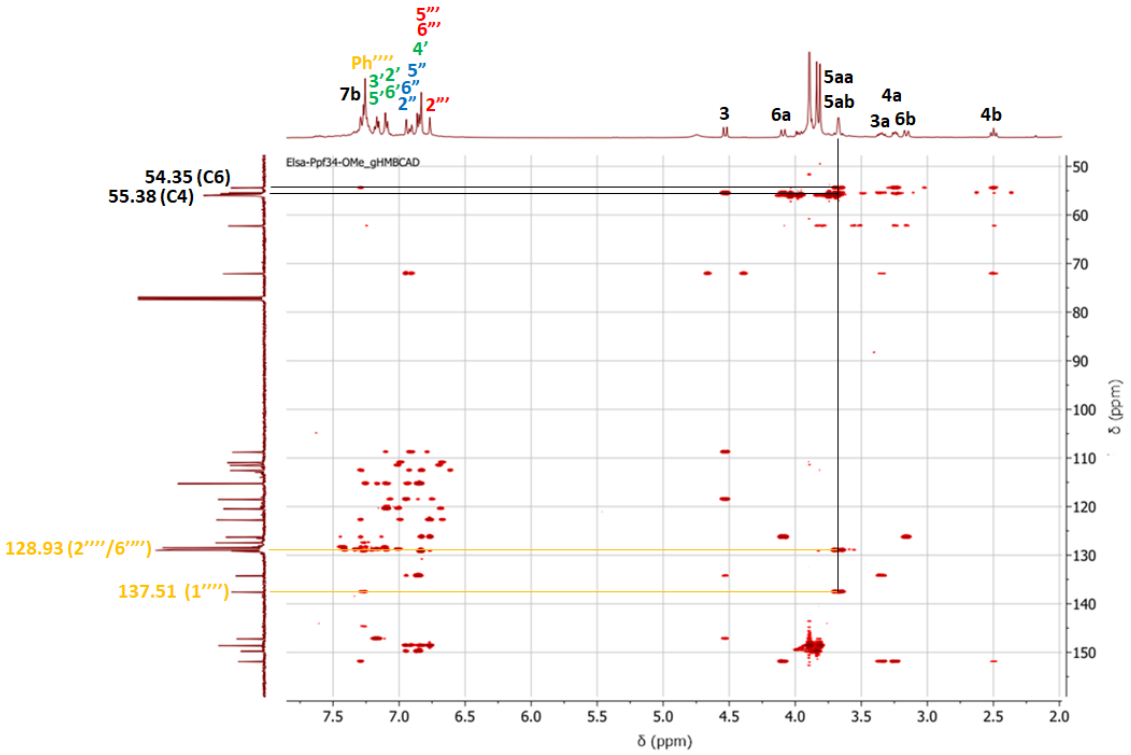


Figure S27. The ^{1}H-^{13}C correlations of proton 5 in HMBC spectra of the title compound.

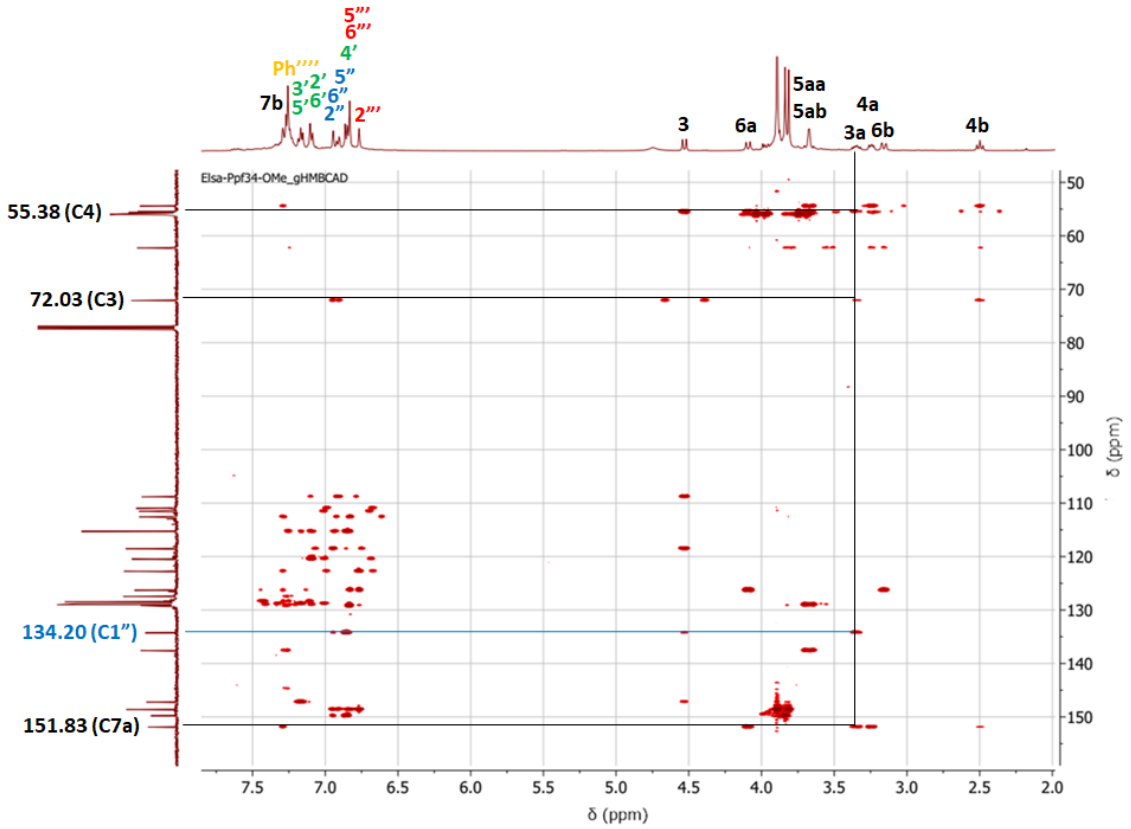


Figure S28. The ^{1}H-^{13}C correlations of proton 3a in HMBC spectra of the title compound.

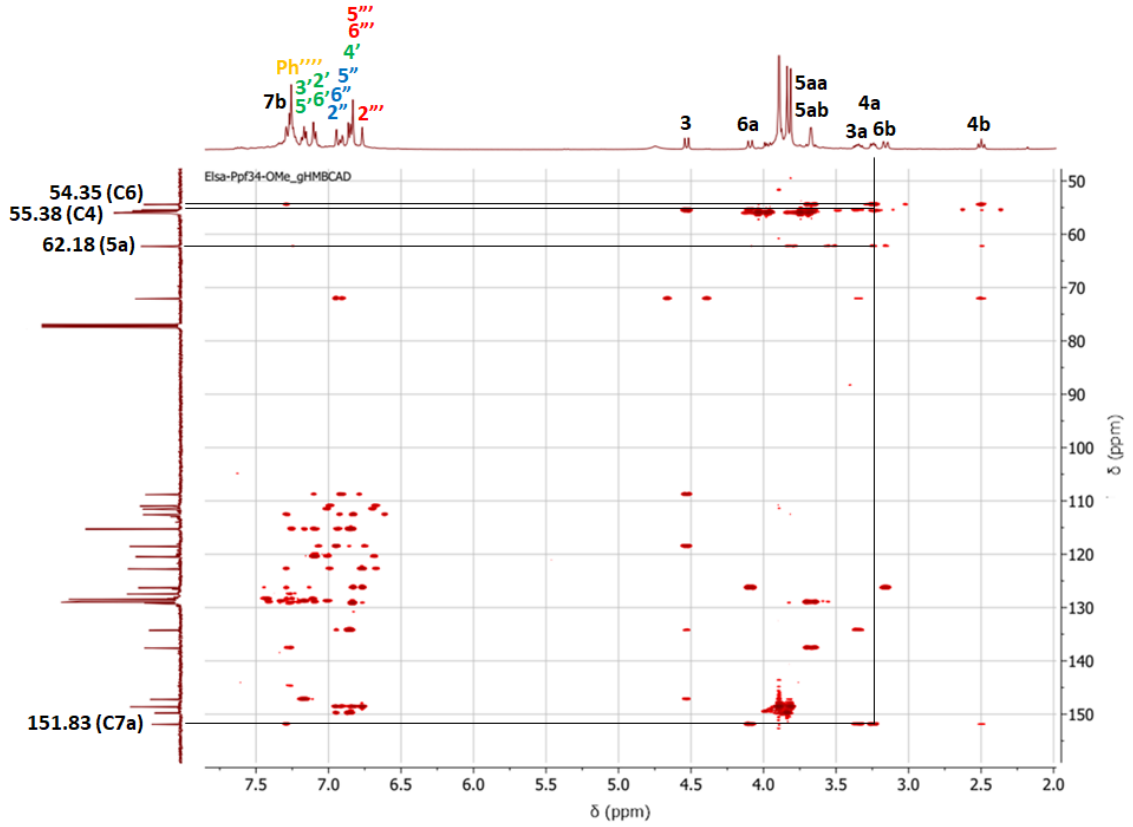


Figure S29. The ^{1}H-^{13}C correlations of proton 4 in HMBC spectra of the title compound.

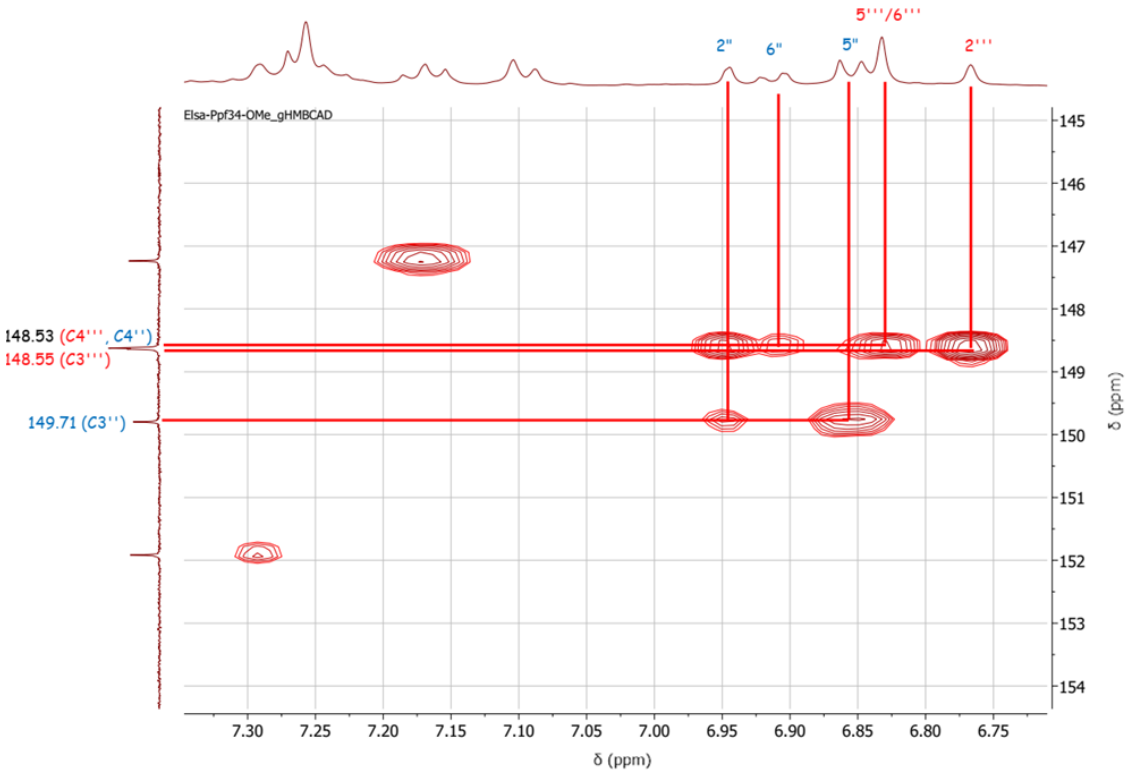


Figure S30. The ^{1}H-^{13}C correlations of protons in R″ and R‴ rings with oxy-aryl carbons of the title compound.

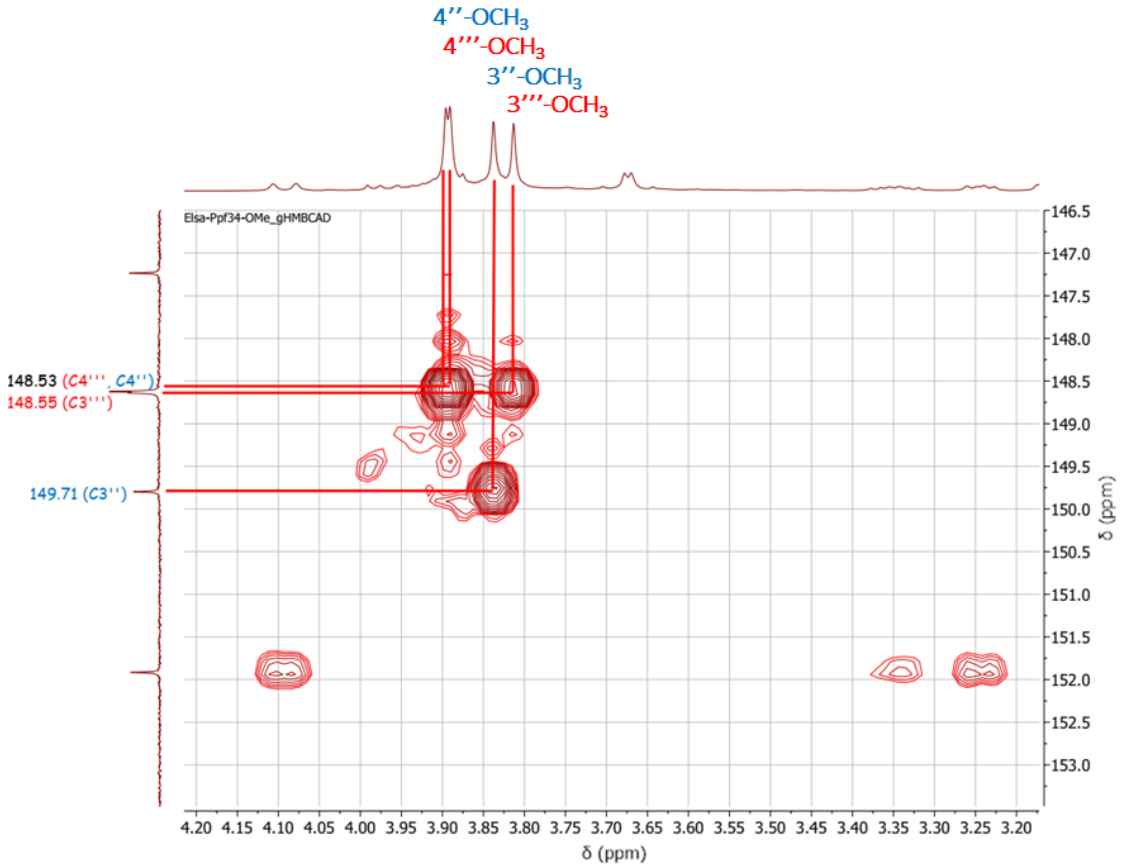


Figure S31. The ^{1}H-^{13}C correlations of methoxy protons with oxy-aryl carbons of the title compound.

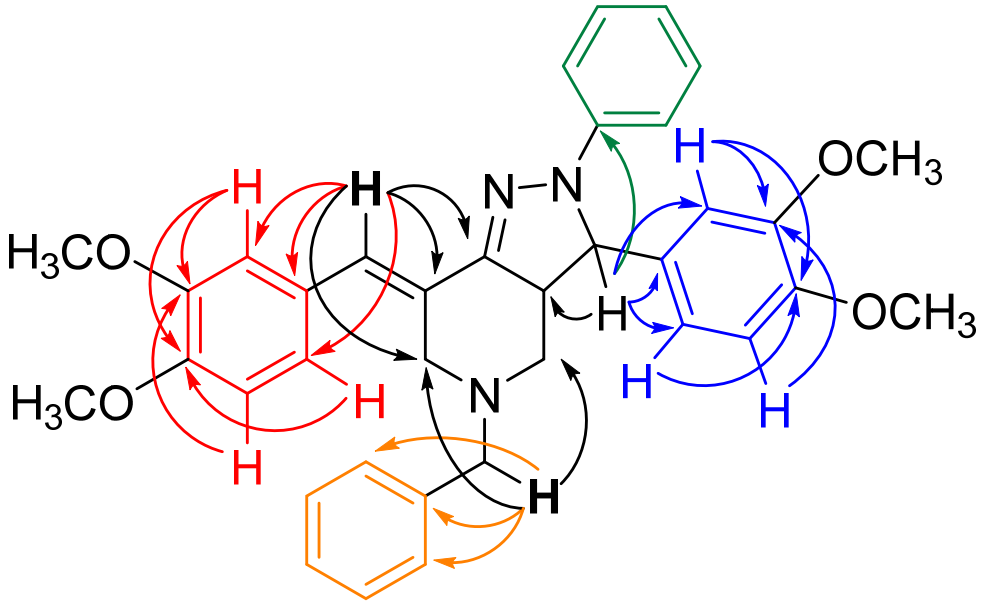


Figure S32. The important correlations in HMBC spectra of the title compound

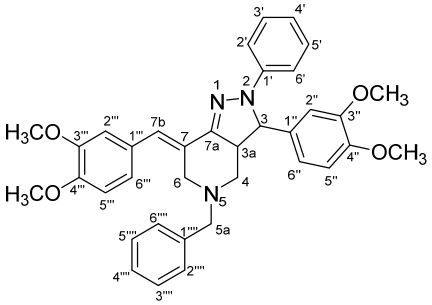
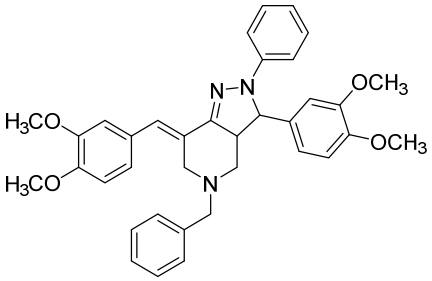


Table S1. Interpretation of 1D and 2D NMR spectra of the title compound

Atomic numbering	^{1}H NMR δ_H (ppm), *J* (Hz)	^{13}C NMR, HSQC	COSY	Important HMBC
1	-	-	-	-
2	-	-	-	-
3	4.53 (d, 1H), *J* = 12.5 Hz	72.03	3a	4, 2″, 6″, 1″, 1′
3a	3.34 (m, 1H)	55.58	3, 4a, 4b	4, 3, 1″, 7a
4	4a = 3.24 (dd, 1H), *J* = 11 Hz, 6 Hz	55.38	4b, 3a	6, 4, 5a, 7a
	4b = 2.50 (t, 1H), *J* = 10.5 Hz		4a, 3a	
5	-	-	-	-
5a	5aa = 3.69 (d, 1H), *J* = 13.5 Hz	62.18	5ab	6, 4, 2′′′′, 6′′′′, 1′′′′
	5ab = 3.66 (d, 1H), *J* = 13 Hz		5ab	
6	6a = 4.09 (d, 1H), *J* = 14 Hz	54.35	6b	4, 7b, 7a
	6b = 3.16 (dd, 1H), *J* = 14 Hz, 3 Hz		6a	
7	-	126.27	-	-
7a	-	151.83	-	-
7b	7.29 (s, 1H)	126.22	-	6, 2′′′, 6′′′, 7, 1′′′, 7a
3′′-OCH_3	3.83 (s, 3H)	55.97		3″
4′′-OCH_3	3.89 (s, 3H)	55.91		4″
3′′′-OCH_3	3.81 (s, 3H)	55.79		3′′′
4′′′-OCH_3	3.88 (s, 3H)	55.87		4′′′
1′	-	147.15	-	-
2′, 6′	7.10 (d, 2H), *J* = 8 Hz	115.21 (2C)	3′, 5′	
3′, 5′	7.17 (t, 2H), *J* = 8.5 Hz	128.70 (2C)	2′, 6′, 4′	
4′	6.85 (t, 1H), *J* = 8 Hz	120.39	3′, 5′	
1″	-	134.20	-	-
2″	6.95 (d, 1H), *J* = 2 Hz	108.75	-	3, 6″, 1″, 4″, 3″
3″	-	149.71	-	-
4″	-	148.53	-	-
5″	6.86 (d, 1H), *J* = 8 Hz	111.46	6″	3″
6″	6.91 (dd, 1H), *J* = 8 Hz, 2 Hz	118.45	5″	4″
1′′′	-	129.08	-	-
2′′′	6.77 (s, 1H)	112.51	-	6′′′, 7b, 4′′′, 3′′′
3′′′	-	148.55	-	-
4′′′	-	148.53	-	-
5′′′	6.83 (s, 2H)	110.90	6′′′	3′′′
6′′′	6.83 (s, 2H)	122.67	5′′′	4′′′
1′′′′	-	137.51	-	-
2′′′′, 6′′′′	7.27- 7.22 (m, 5H)	128.93 (2C)	3′′′′, 5′′′′	
3′′′′, 5′′′′	7.27- 7.22 (m, 5H)	128.38 (2C)	2′′′′, 6′′′′, 4′′′′	
4′′′′	7.27- 7.22 (m, 5H)	127.39 (2C)	3′′′′, 5′′′′	



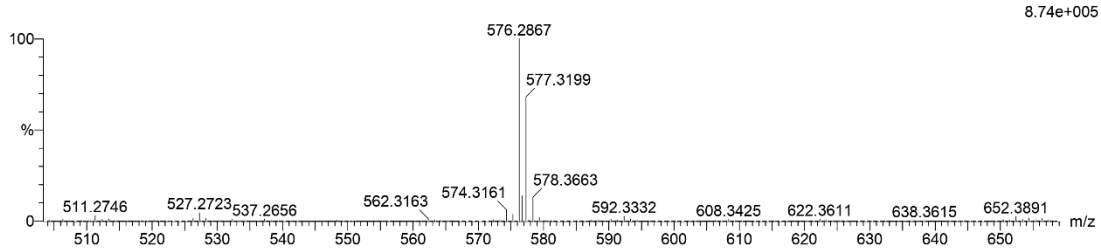
Chemical Formula M^+: $C_{36}H_{37}N_3O_4$
Exact Mass: 575.2784

Chemical Formula $[M+H]^+$: $C_{36}H_{38}N_3O_4$
Exact Mass: 576.2862

Elemental Composition Report

Single Mass Analysis
Tolerance = 10.0 mDa / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3262 formula(e) evaluated with 50 results within limits (up to 50 closest results for each mass)
Elements Used:
C: 0-500 H: 0-1000 N: 0-200 O: 0-200
NBZP 3 4 OME PH 2 (0.051) Cm (1:14)
TOF MS ES+



Minimum:				-1.5			
Maximum:		10.0	10.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
576.2867	576.2862	0.5	0.9	19.5	204.2	2.5	C36 H38 N3 O4

Figure S33. The HRMS spectra of the title compound. The molecular mass was calculated as $[M+H]^+$ = 576.2862 and was found at m/z = 576.2867

Table S2. The result of DPPH assay of the title compound

Compound	C (µg/mL)	Ln C	Repetition			A. Sample			% Inhibition			Mean	±SD	IC50 (µg/mL)			Mean	±SD
			1	2	3	1	2	3	1	2	3			1	2	3		
Title compound	1000	6.908	0.105	0.109	0.104	0.060	0.064	0.059	82.35	81.18	82.65	82.06	0.78	198.67	198.54	184.96	194.06	7.88
	500	6.215	0.118	0.116	0.118	0.073	0.071	0.073	78.53	79.12	78.53	78.73	0.34					
	250	5.521	0.192	0.198	0.197	0.147	0.153	0.152	56.76	55.00	55.29	55.68	0.94					
	125	4.828	0.281	0.258	0.261	0.236	0.213	0.216	30.59	37.35	36.47	34.80	3.68					
	62.5	4.135	0.304	0.310	0.300	0.259	0.265	0.255	23.82	22.06	25.00	23.63	1.48					
	31.25	3.442	0.343	0.352	0.329	0.298	0.307	0.284	12.35	9.71	16.47	12.84	3.41					

	Absorbance
A. DPPH Solution (in methanol)	0.385
A. Blank (methanol)	0.045
A. Control	0.340

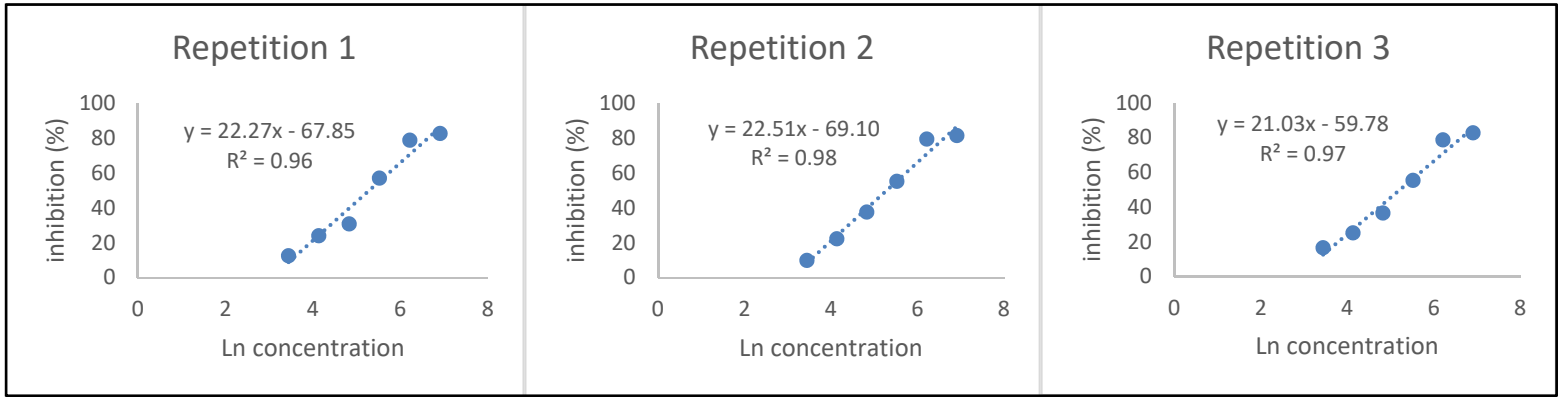


Figure S34. The plot of Ln concentration and percentage of inhibition of the title compound