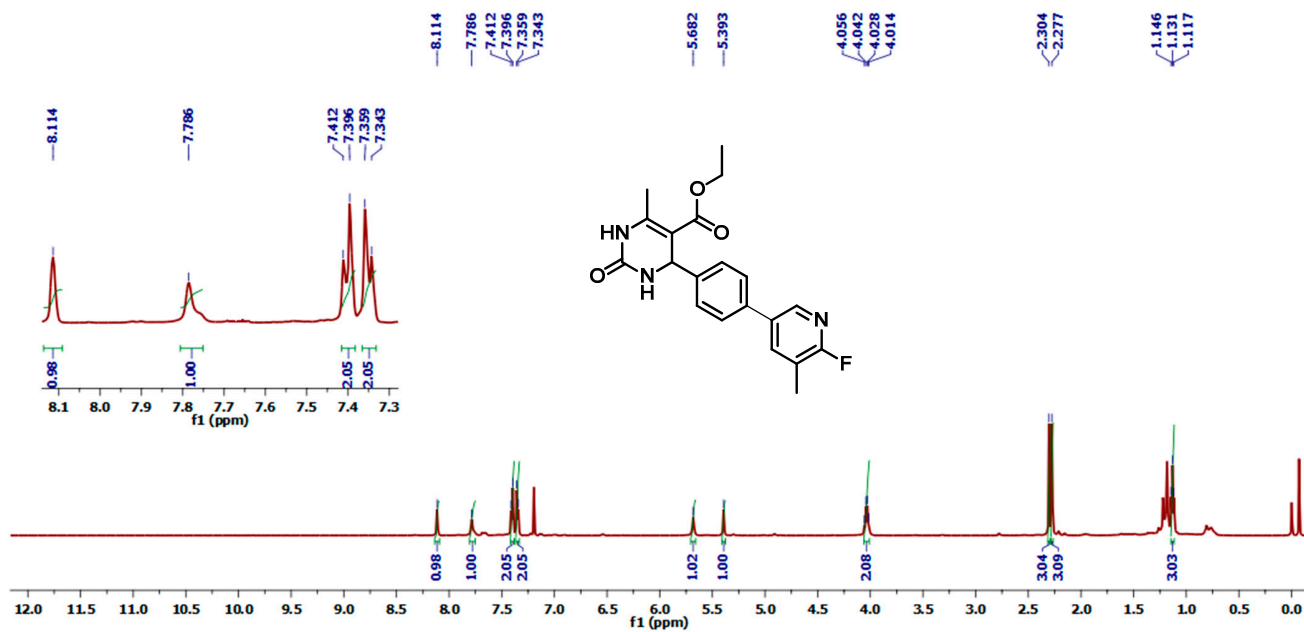


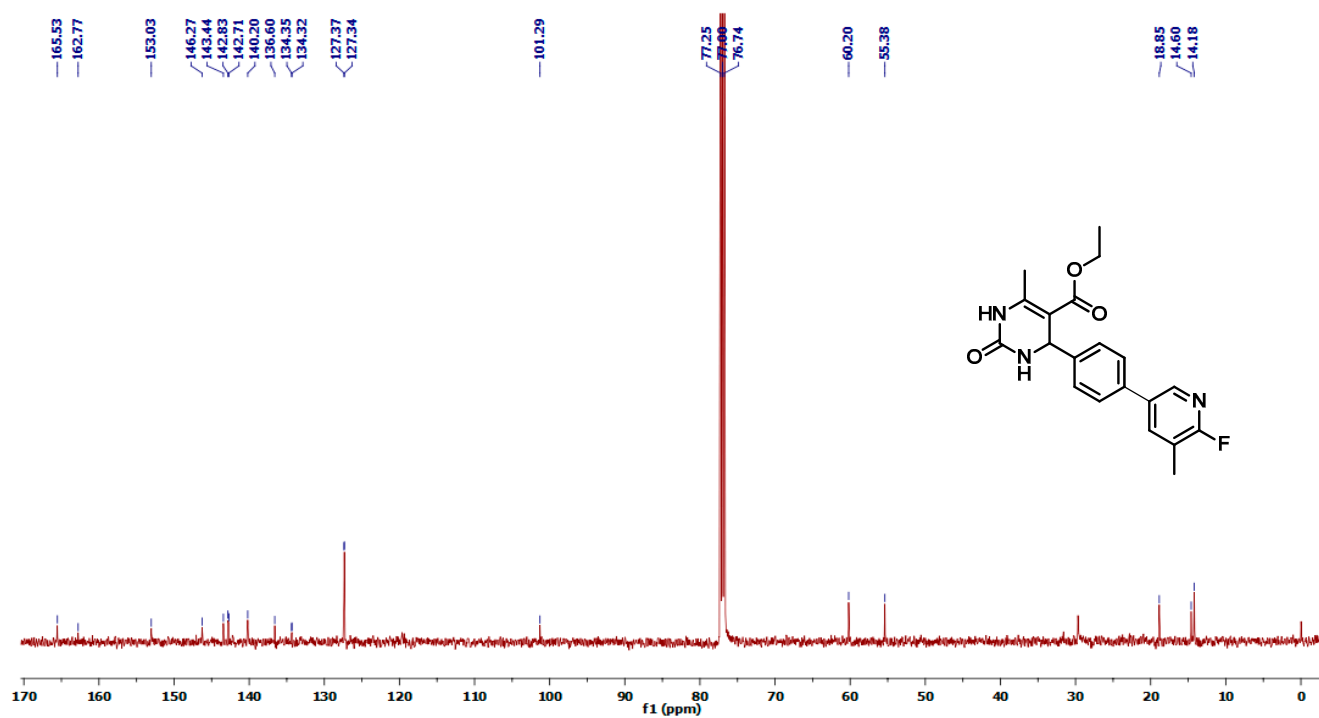
Nano-ZrO₂-Catalyzed Biginelli Reaction and the Synthesis of Bioactive Dihydropyrimidinones That Targets PPAR- γ in Human Breast Cancer Cells

Suresha N. Deveshegowda, Ji-Rui Yang, Zhang Xi, Omantheswara Nagaraja, Kashifa Fazl-Ur-Rahman, Bhanuprakash C. Narasimhachar, Gautam Sethi, Ganga Periyasamy, Mahendra Madegowda, Shobith Rangappa, Vijay Pandey, Peter E. Lobie and Basappa Basappa

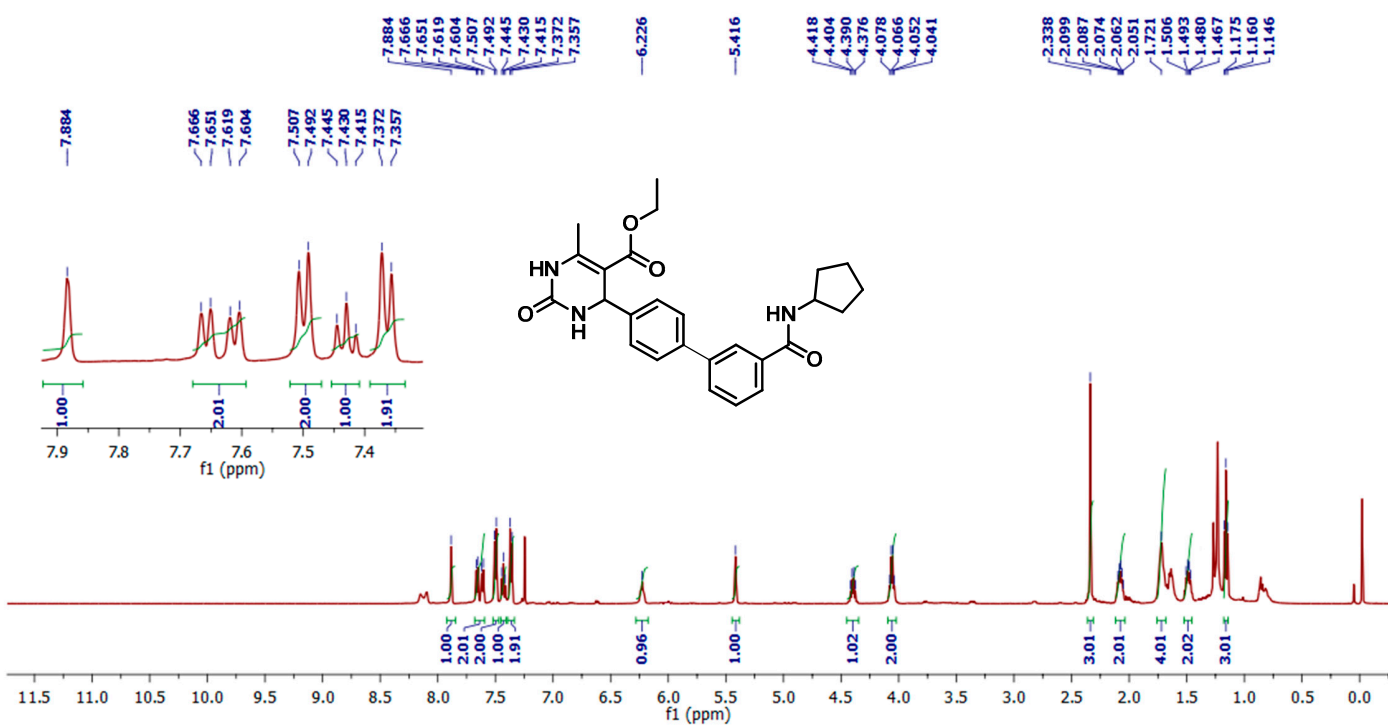
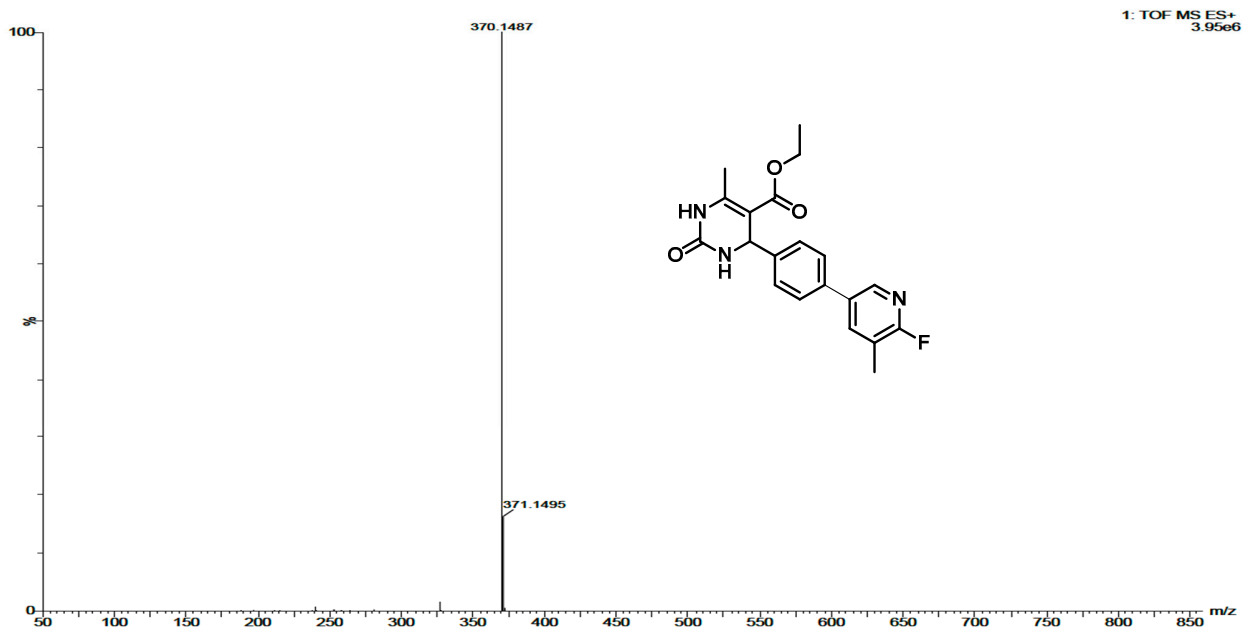
Supplementary Data

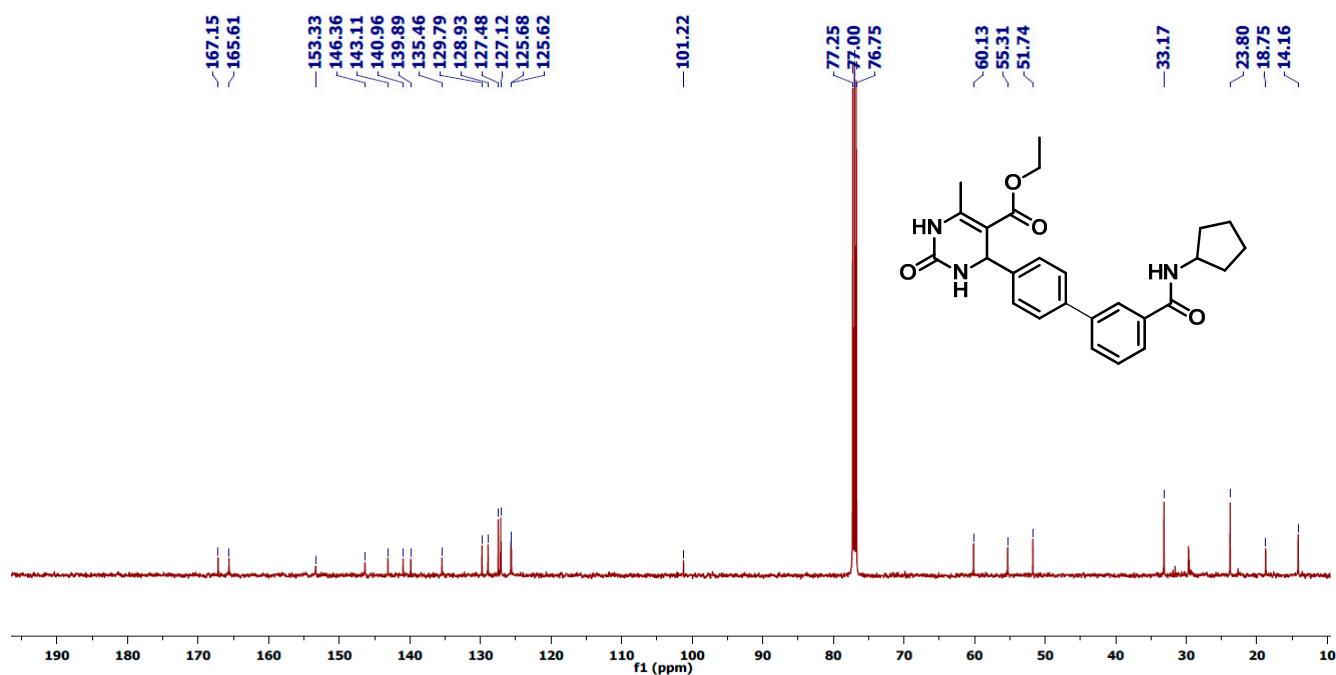


¹H NMR of 4a

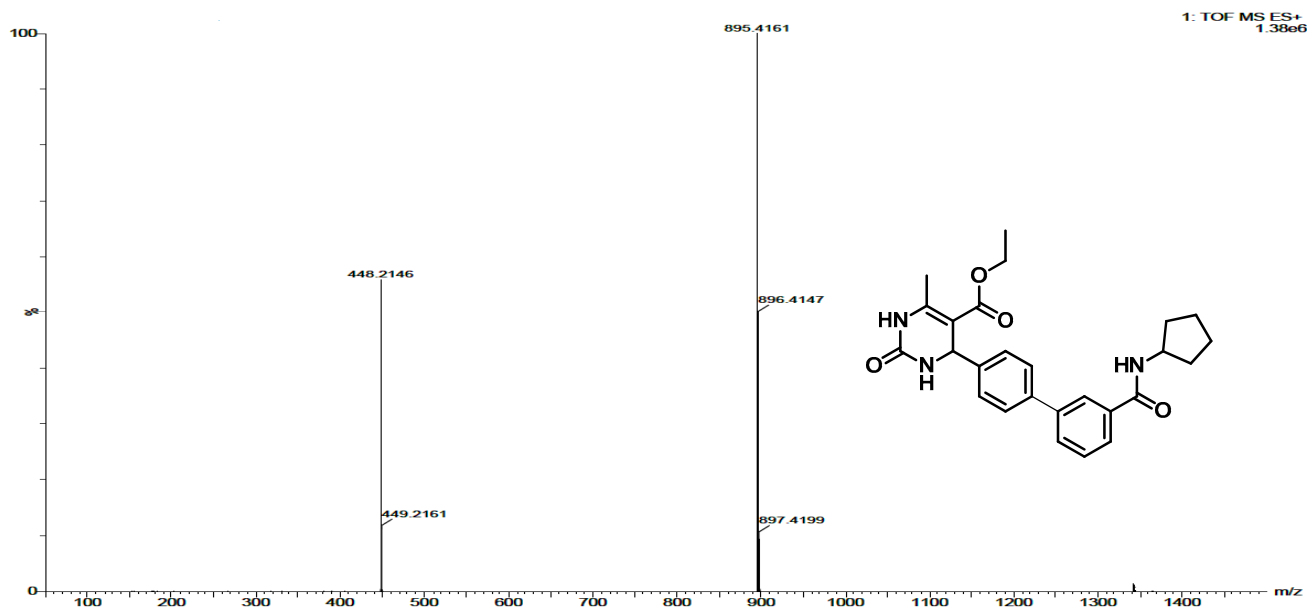


¹³C NMR of 4a

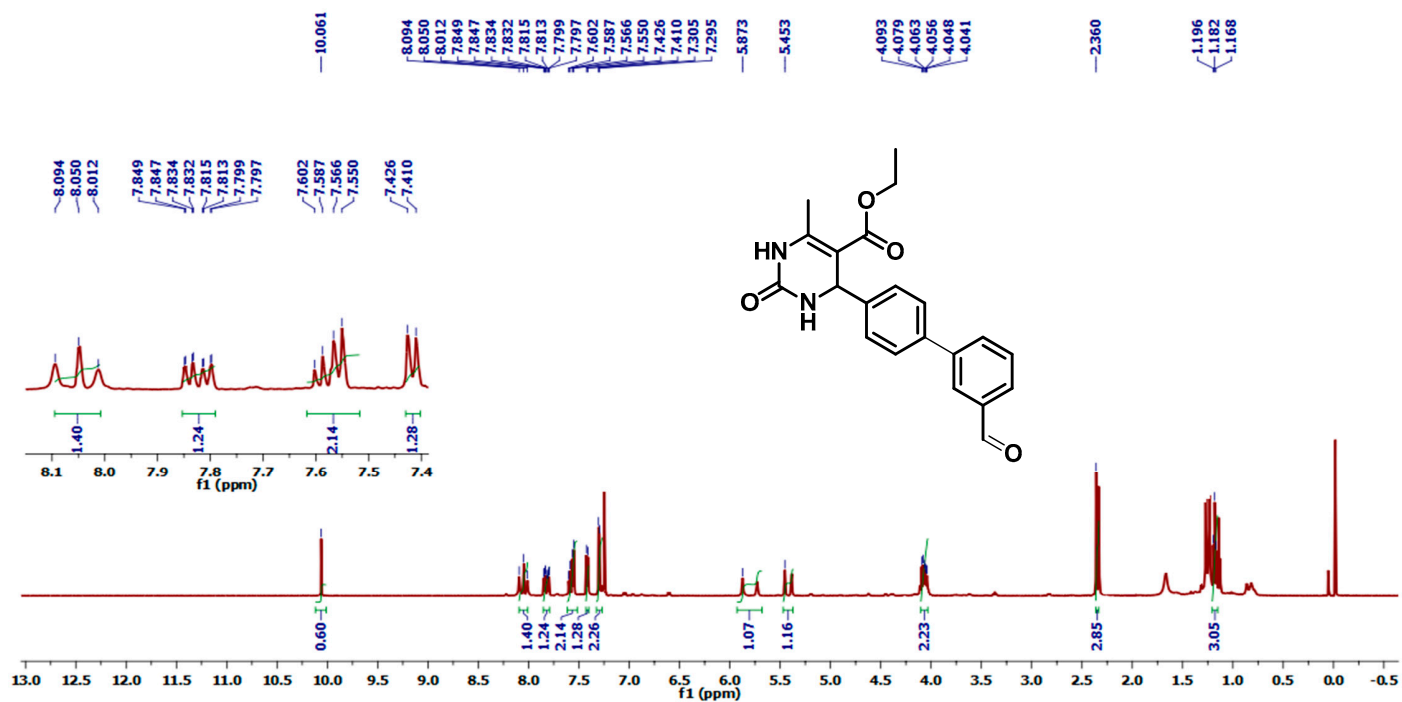




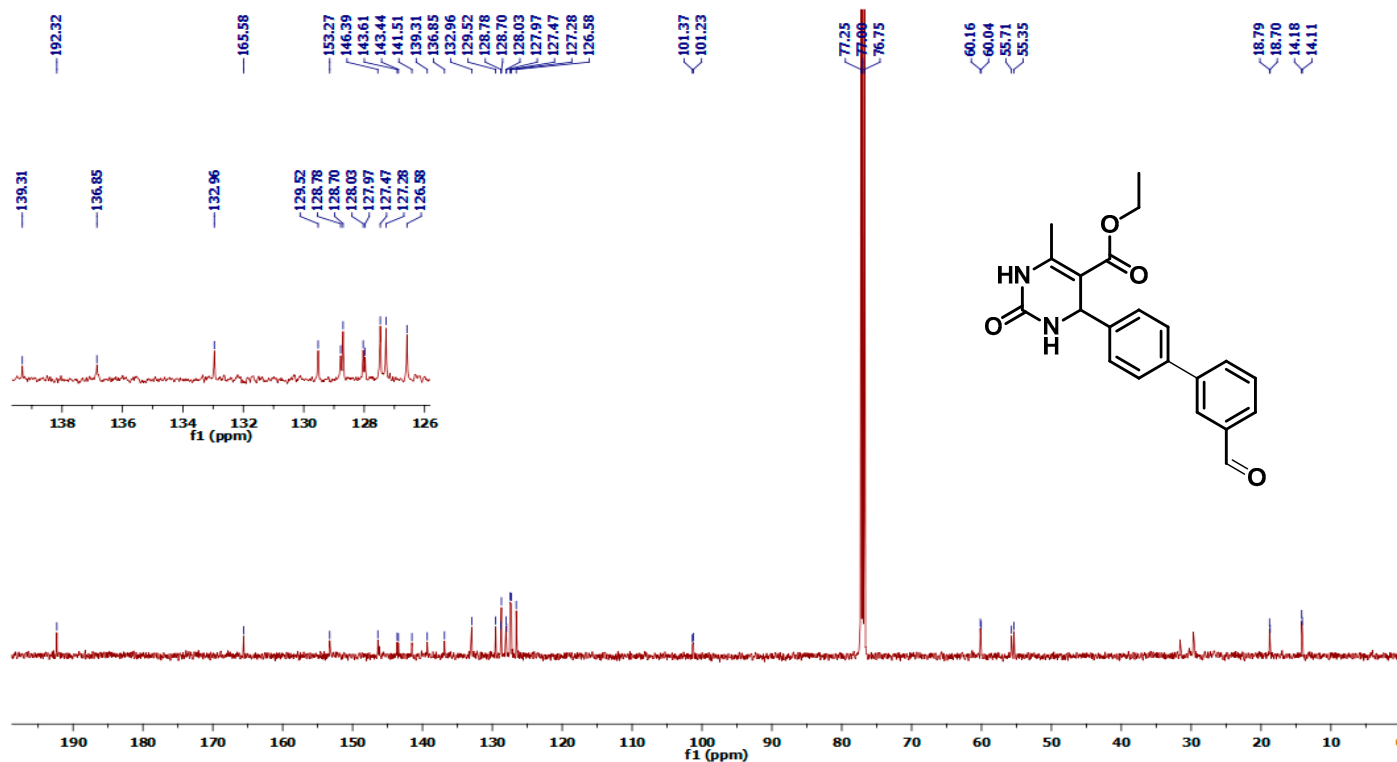
¹³C NMR of 4b



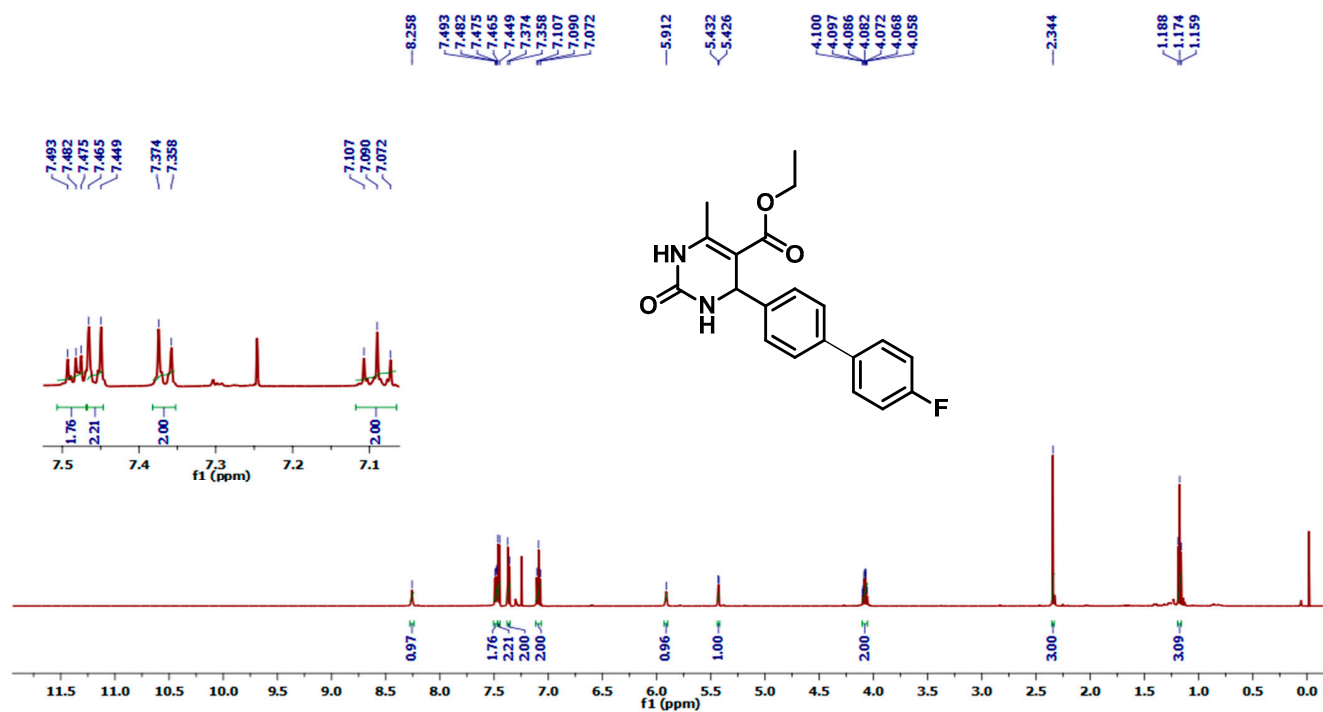
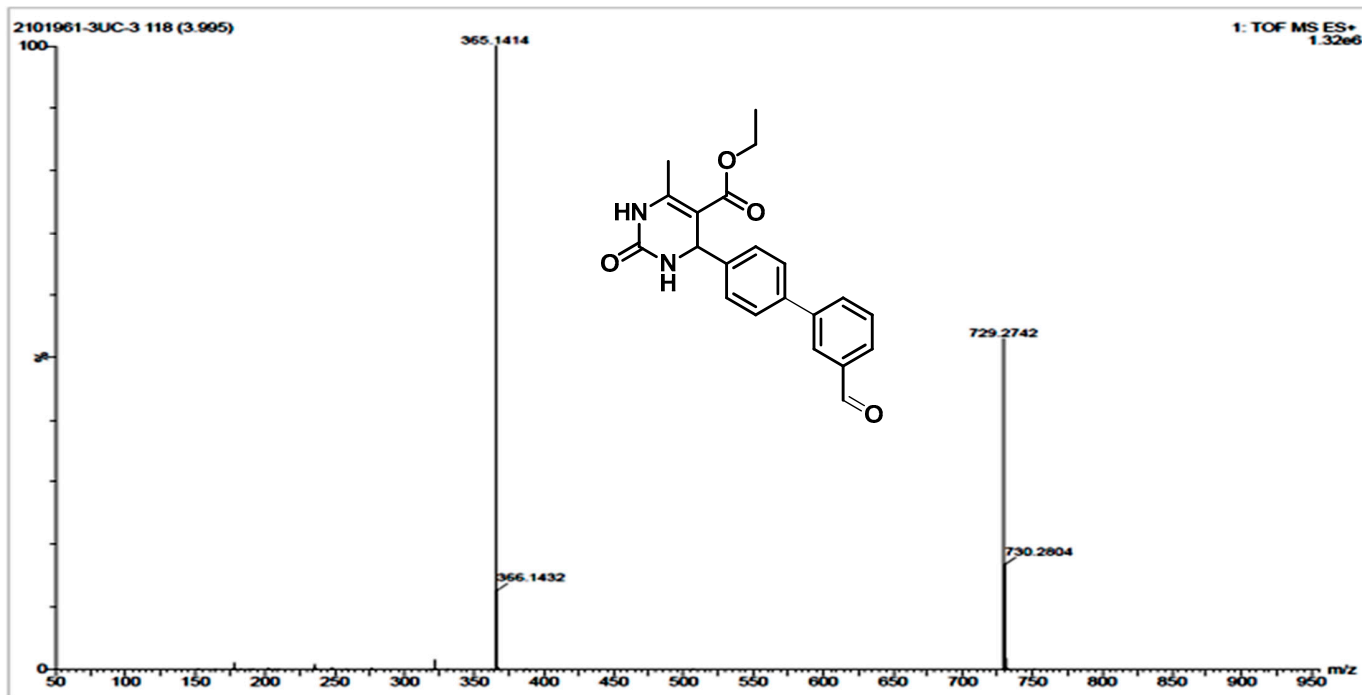
Mass spectrum of 4b

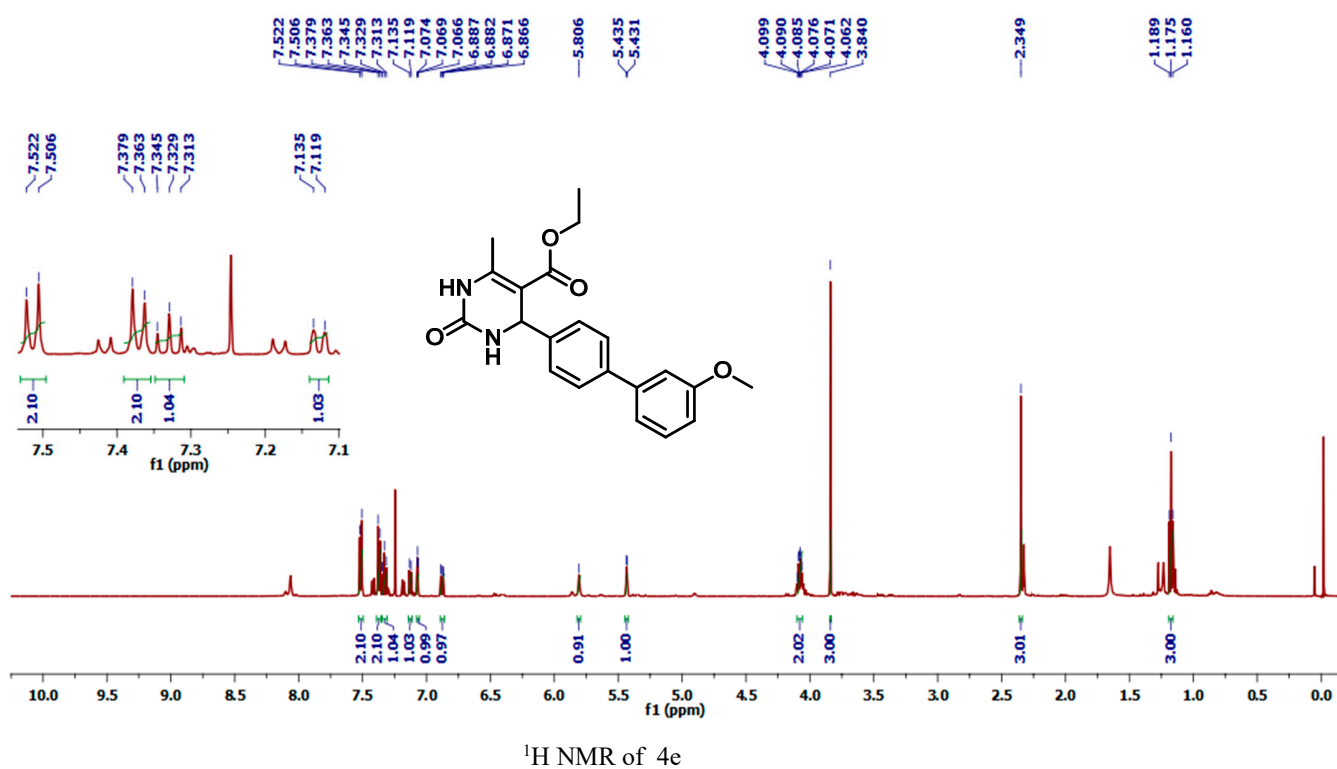
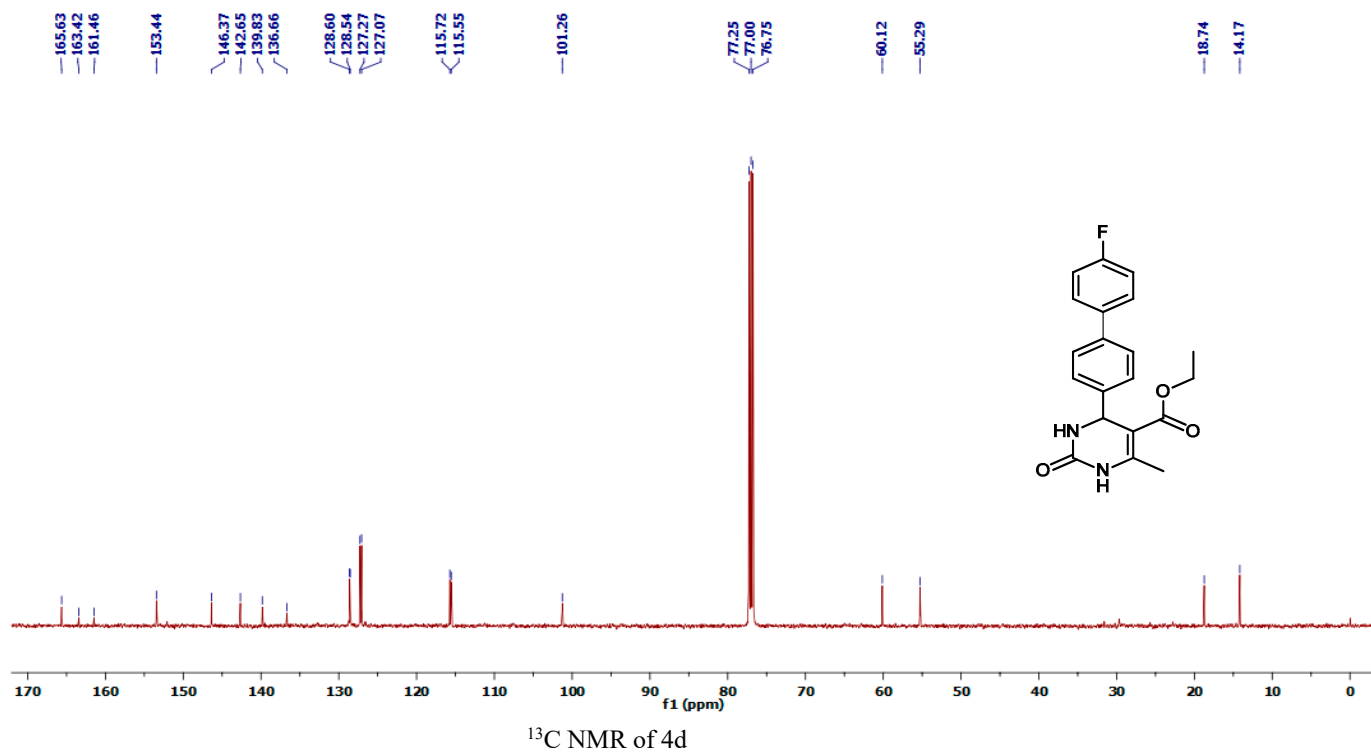


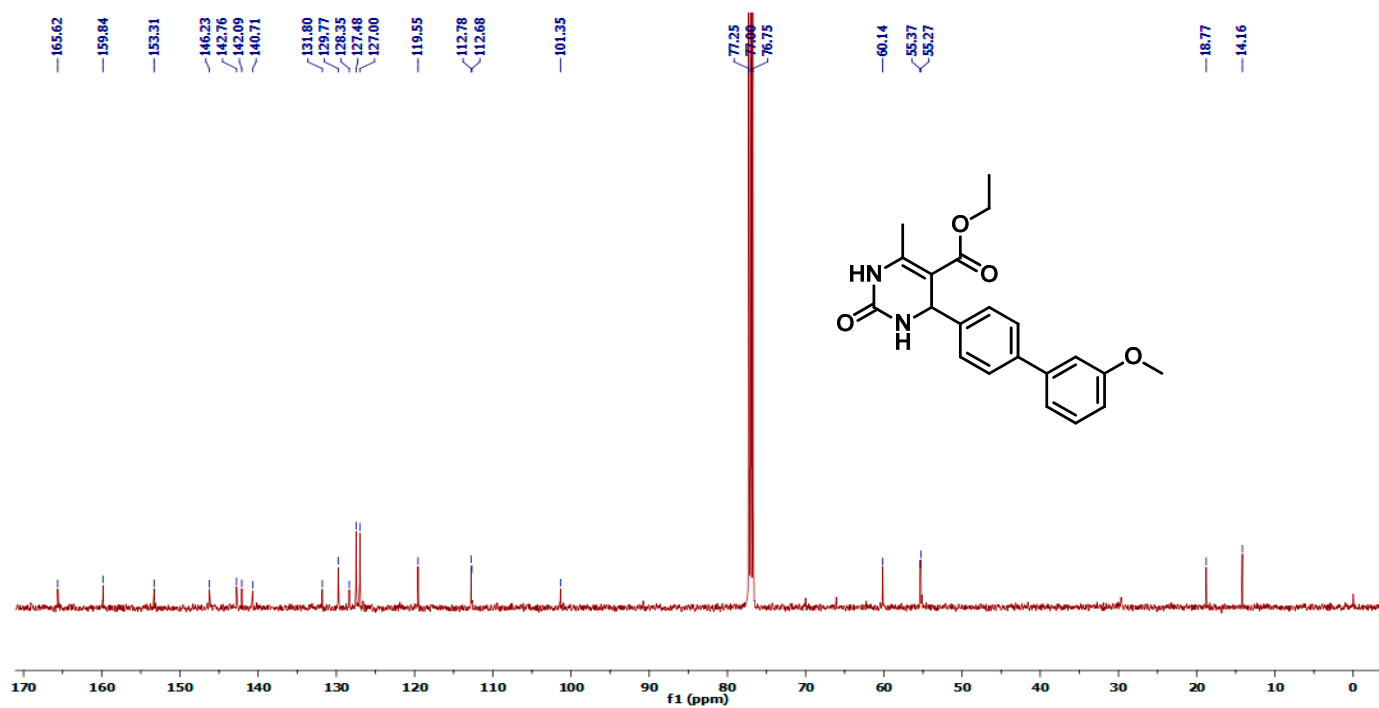
¹H NMR of 4c



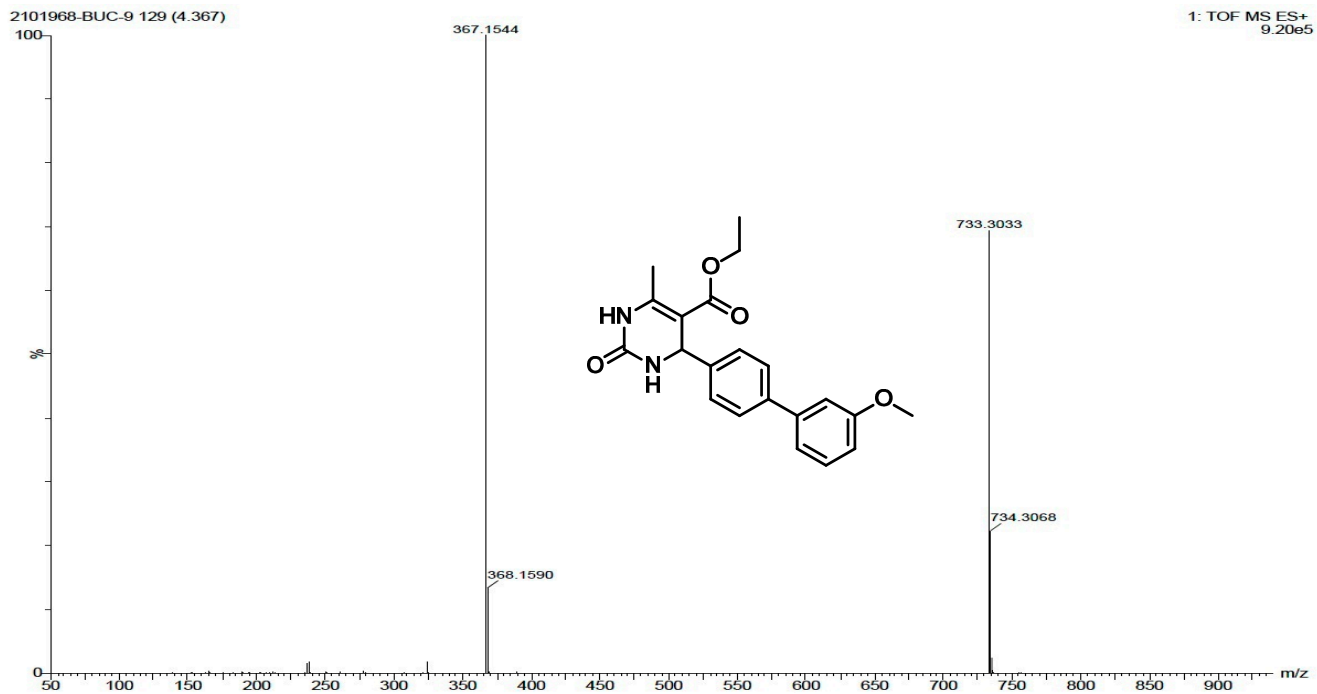
¹³C NMR of 4c



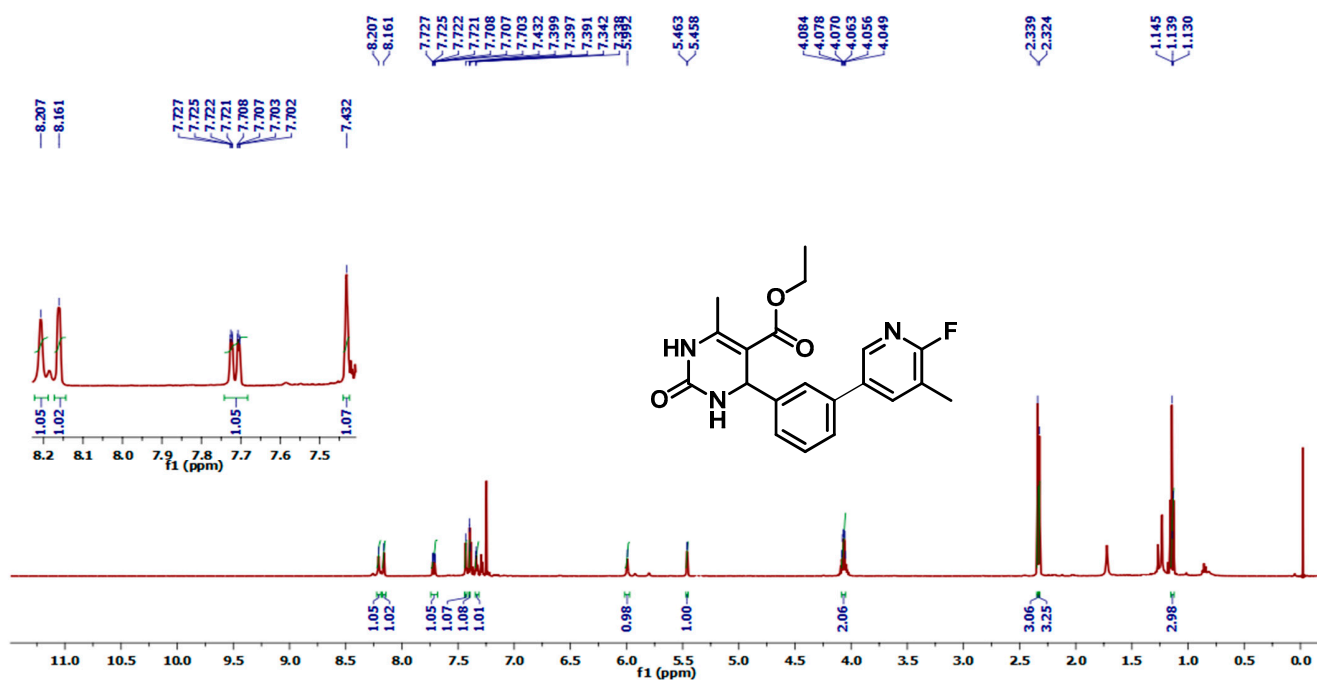




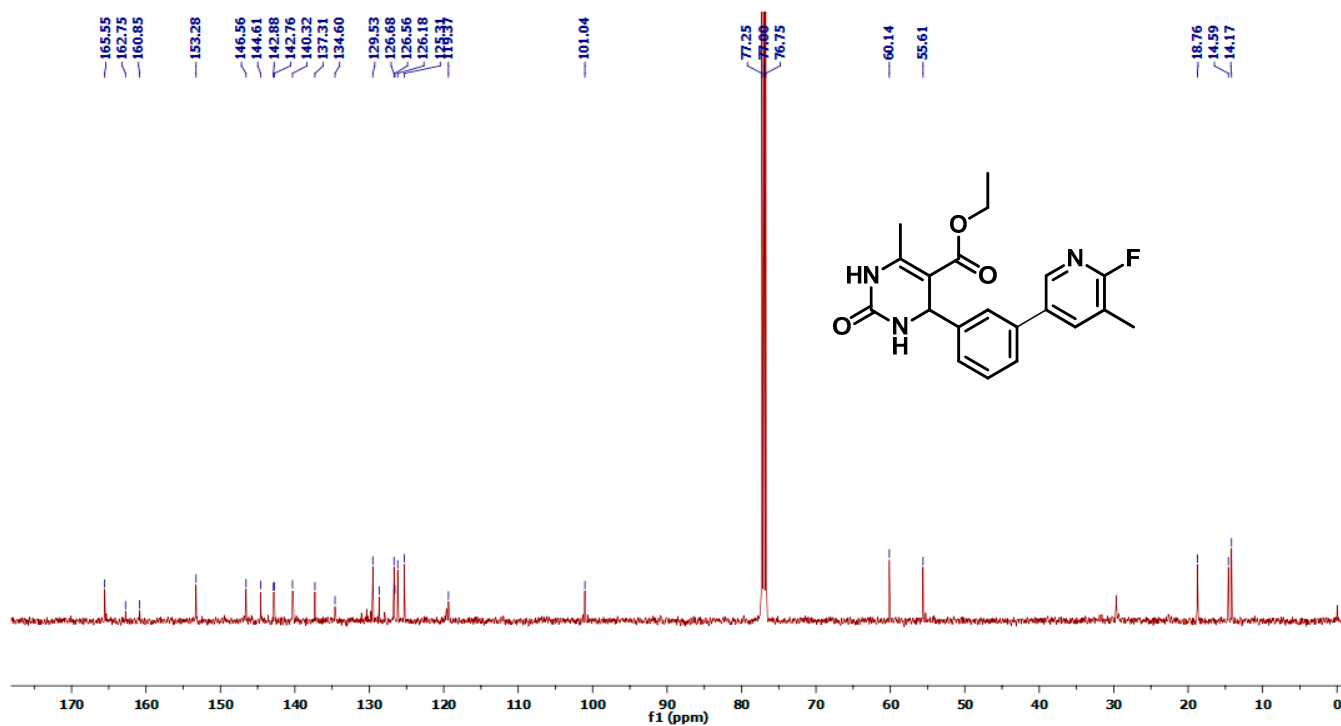
^{13}C NMR of 4e



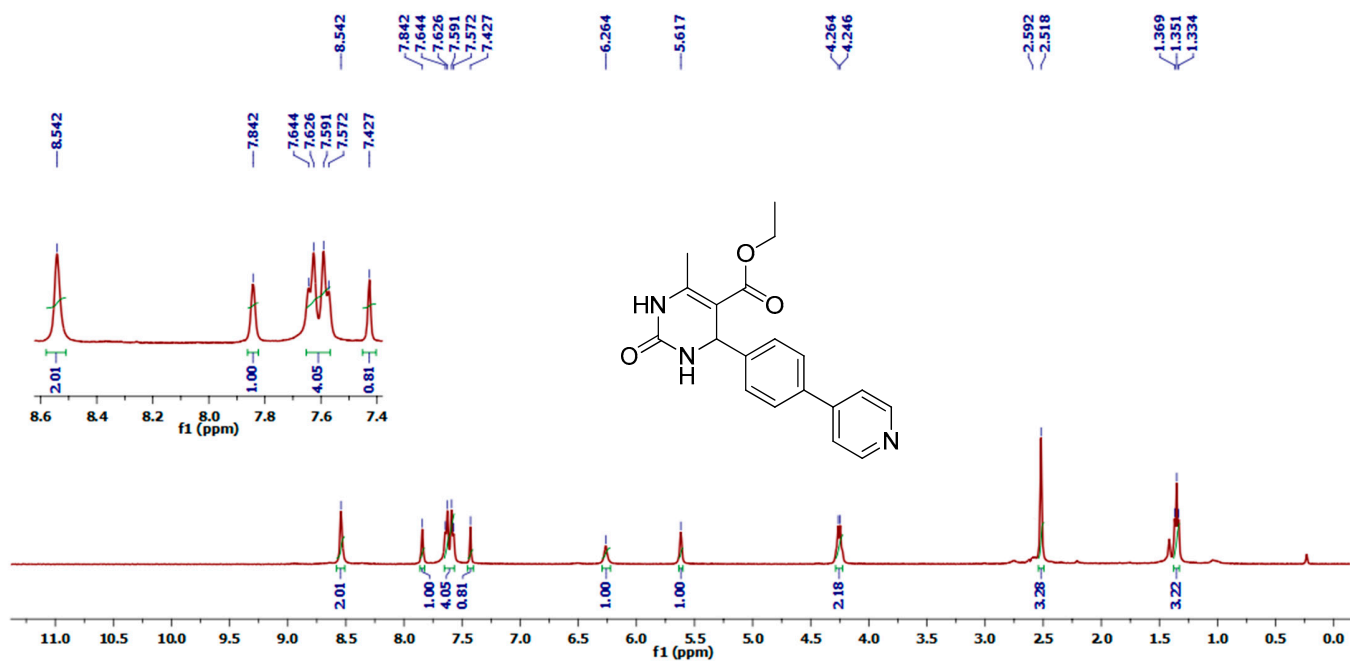
Mass spectrum of 4e



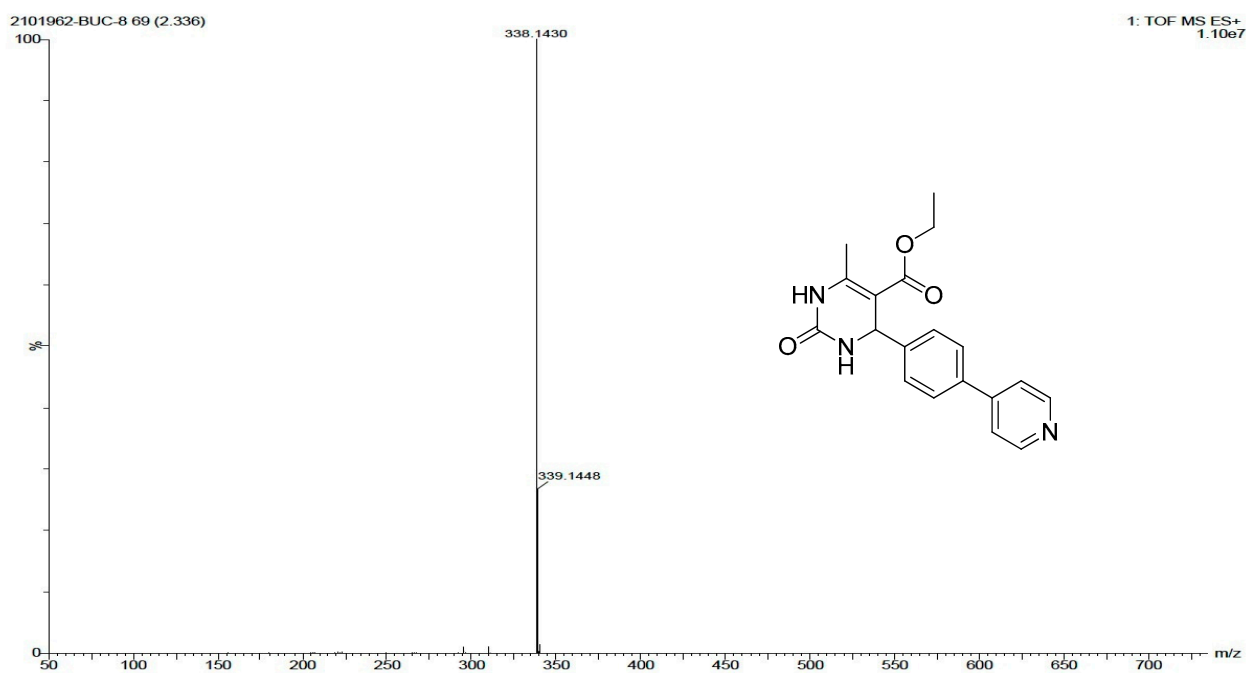
¹H NMR of 4f



¹³C NMR of 4f

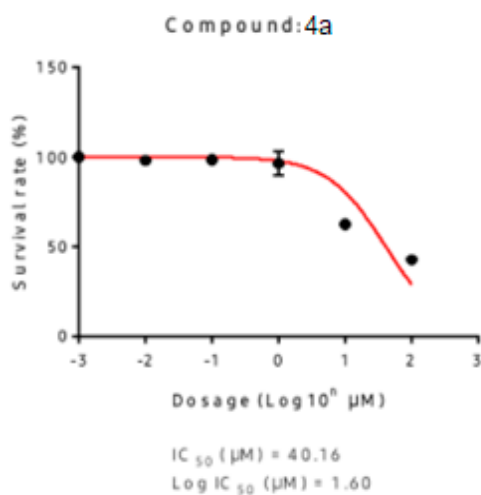


¹H NMR of 4g



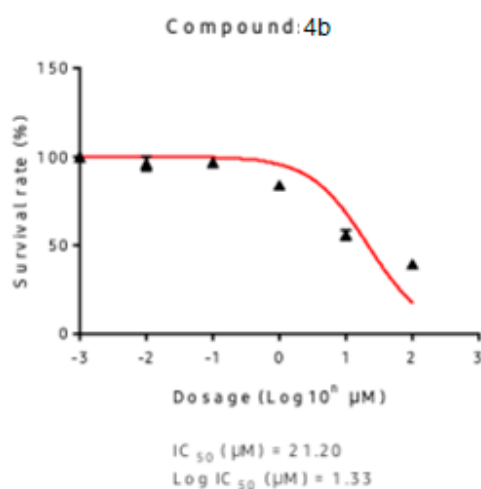
Mass spectrum of 4g

Log curves of synthesized compounds on MCF-7 cancer cells



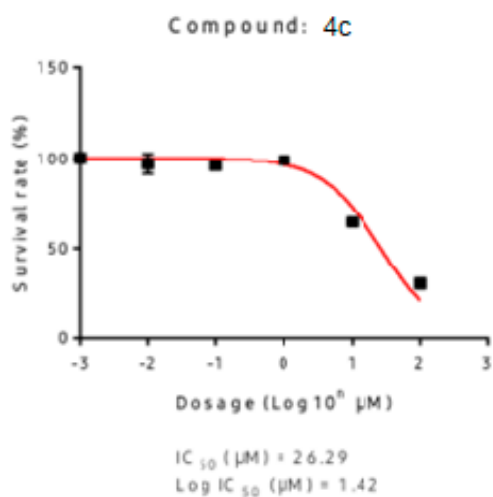
- Cell line: MCF-7 (2000 cells/per well)(96-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: **4a**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	1.37
0.01	97.90	0.84
0.1	98.04	2.17
1	96.34	6.35
10	62.47	0.75
100	42.56	2.76



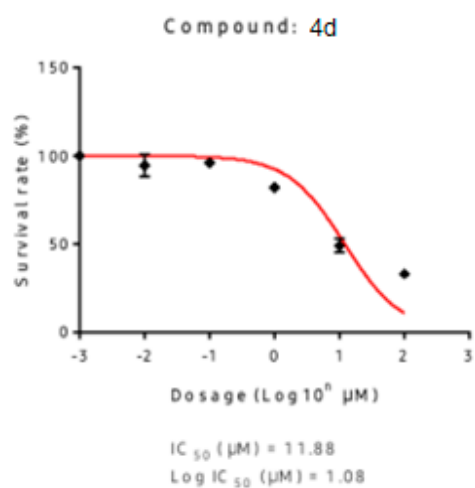
- Cell line: MCF-7 (2000 cells/per well)(96-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: **4b**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	1.37
0.01	95.93	3.96
0.1	96.95	2.24
1	83.95	2.55
10	55.86	3.11
100	39.26	1.96



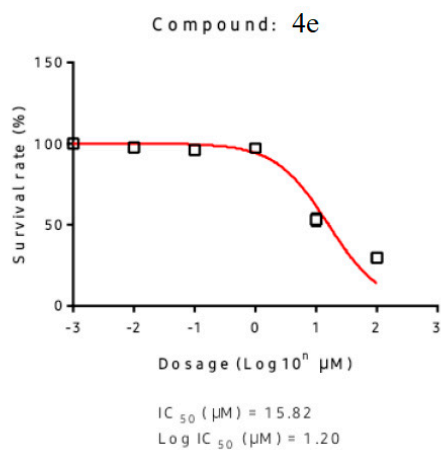
- Cell line: MCF-7 (2000 cells/per well)^(96-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: **4c**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	1.37
0.01	96.82	5.77
0.1	95.83	0.88
1	98.71	1.99
10	64.39	1.99
100	30.17	0.29



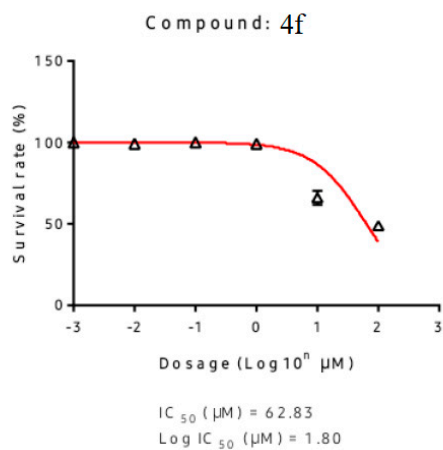
- Cell line: MCF-7 (2000 cells/per well)^(96-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: **4d**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	2.67
0.01	94.40	6.18
0.1	95.84	0.41
1	81.90	2.18
10	48.82	4.06
100	33.05	1.34



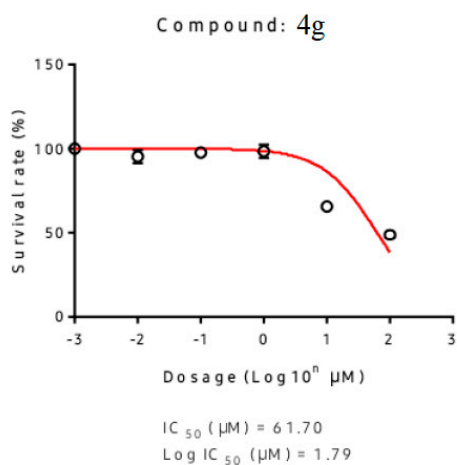
- Cell line: MCF-7 (2000 cells/per well⁹⁶-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: **4e**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	2.67
0.01	97.27	1.95
0.1	95.85	0.79
1	97.20	0.95
10	52.82	3.80
100	29.38	0.33



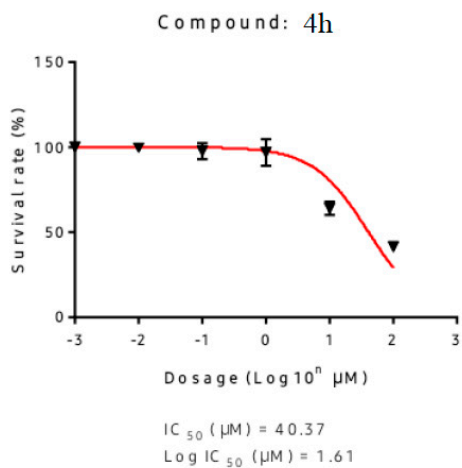
- Cell line: MCF-7 (2000 cells/per well⁹⁶-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: **4f**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	2.67
0.01	99.32	2.76
0.1	99.75	1.59
1	98.99	2.07
10	65.97	4.16
100	48.70	1.18



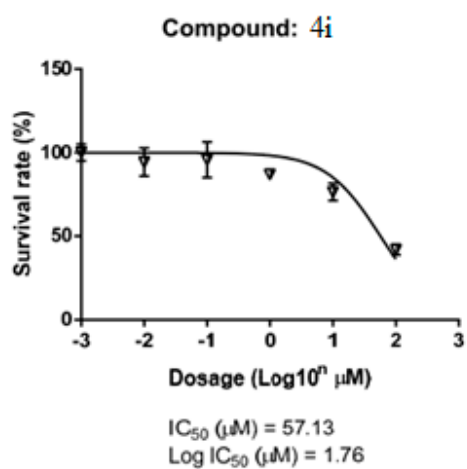
- Cell line: MCF-7 (2000 cells/per well⁹⁶-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: 4g

Conc. (μM)	Viability	
	AVE.	± SD.
0	100.00	2.67
0.01	95.15	3.83
0.1	97.29	2.90
1	98.11	4.00
10	65.52	1.49
100	48.64	1.34



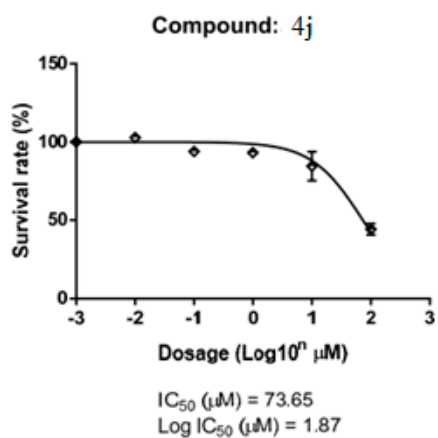
- Cell line: MCF-7 (2000 cells/per well⁹⁶-well plate)
- Treated time: 72hrs
- Assay: alamarBlue (4hrs incubated)
- Data: 4h

Conc. (μM)	Viability	
	AVE.	± SD.
0	100.00	1.37
0.01	99.59	1.65
0.1	97.56	5.02
1	96.84	7.48
10	63.92	3.71
100	41.48	1.91



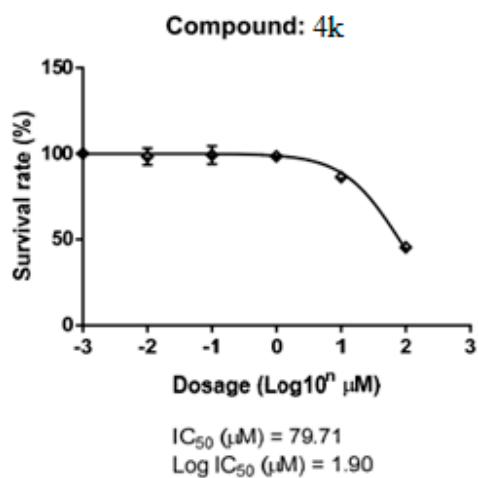
- Cell line: MCF7 (2000 cells/per well⁹⁶)
- Treated time: 72hrs
- Assay: MTT (90mins incubated)
- Data: **4i**

Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	3.60
0.01	94.29	8.45
0.1	95.68	10.61
1	86.88	0.23
10	76.47	5.18
100	41.95	3.09



- Cell line: MCF7 (2000 cells/per well⁹⁶)
- Treated time: 72hrs
- Assay: MTT (90mins incubated)
- Data: **4j**

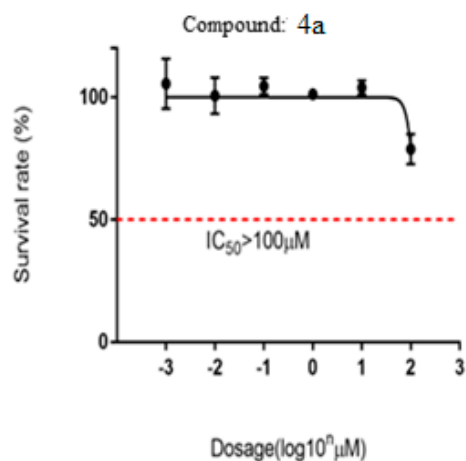
Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	1.62
0.01	102.77	2.87
0.1	93.87	2.58
1	93.21	1.22
10	84.52	9.35
100	44.26	3.62



- Cell line: MCF7 (2000 cells/per well⁹⁶)
- Treated time: 72hrs
- Assay: MTT (90mins incubated)
- Data: **4k**

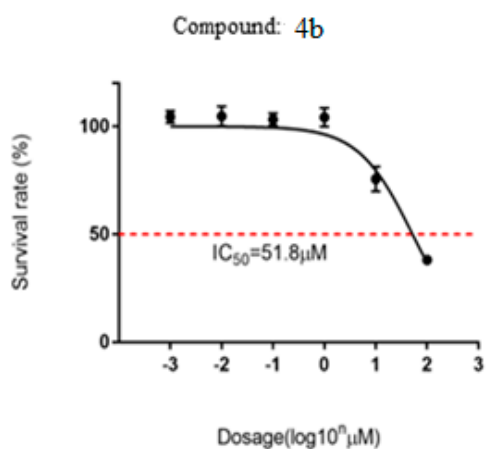
Conc. (μM)	Viability	
	AVE.	\pm SD.
0	100.00	1.62
0.01	98.37	4.92
0.1	99.22	5.29
1	98.42	1.61
10	86.25	2.58
100	45.42	2.66

Log curves of synthesized compounds on MCF-10A non-cancerous cells



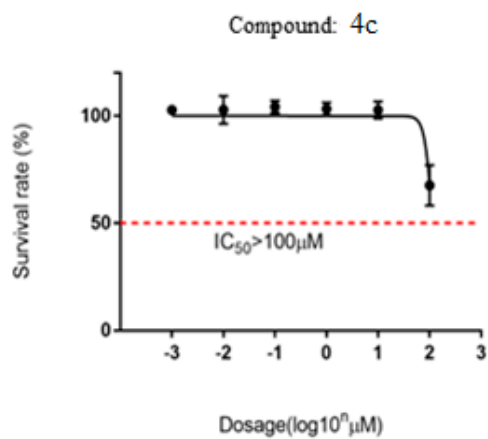
- Cell line: MCF10A(2000cells/per well⁹⁶-well plate)
- Treated time: 72hrs
- Assay: alamarBlue(4hrs incubated)
- Data: **4a**

Conc. (μM)	Viability	
	AVE.	\pm SD
0	100	10.16
0.01	100.66	7.37
0.1	104.58	3.49
1	101.29	0.89
10	103.92	2.89
100	78.89	6.17



- Cell line: MCF10A(2000cells/per well^{96-well plate})
- Treated time: 72hrs
- Assay: alamarBlue(4hrs incubated)
- Data: **4b**

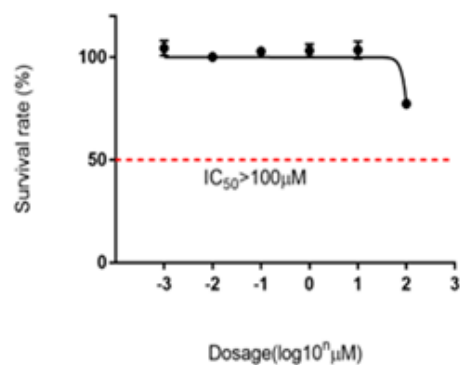
Conc.(μM)	Viability	
	AVE.	$\pm\text{SD}$
0	100	4.59
0.01	104.72	4.59
0.1	103.27	2.95
1	104.27	4.32
10	75.6	5.78
100	38.18	2.14



- Cell line: MCF10A(2000cells/per well^{96-well plate})
- Treated time: 72hrs
- Assay: alamarBlue(4hrs incubated)
- Data: **4c**

Conc.(μM)	Viability	
	AVE.	$\pm\text{SD}$
0	100	1.45
0.01	102.84	6.47
0.1	104.29	2.9
1	103.26	2.98
10	102.75	3.99
100	67.61	9.47

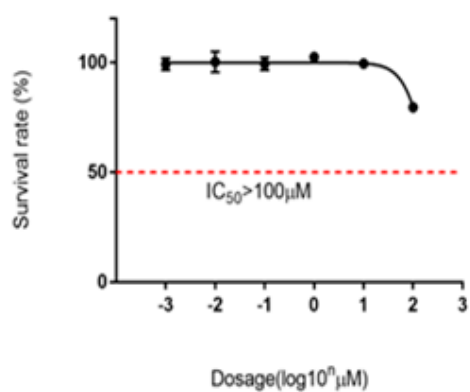
Compound: **4d**



- Cell line: MCF10A(2000cells/per well^{96-well plate})
- Treated time: 72hrs
- Assay: alamarBlue(4hrs incubated)
- Data: **4d**

Conc.(μM)	Viability	
	AVE.	$\pm\text{SD}$
0	100	3.65
0.01	100.19	1.69
0.1	102.82	1.85
1	103.27	3.16
10	103.58	4.22
100	77.33	2.32

Compound: **4e**



- Cell line: MCF10A(2000cells/per well^{96-well plate})
- Treated time: 72hrs
- Assay: alamarBlue(4hrs incubated)
- Data: **4e**

Conc.(μM)	Viability	
	AVE.	$\pm\text{SD}$
0	100	2.77
0.01	10.36	4.66
0.1	99.50	2.98
1	102.57	0.46
10	99.57	1.52
100	79.67	1.93