

Supplementary Information

Manglicolous lichen *Parmotrema tinctorum* (Despr. ex Nyl.) Hale: Isolation, characterization and biological evaluation

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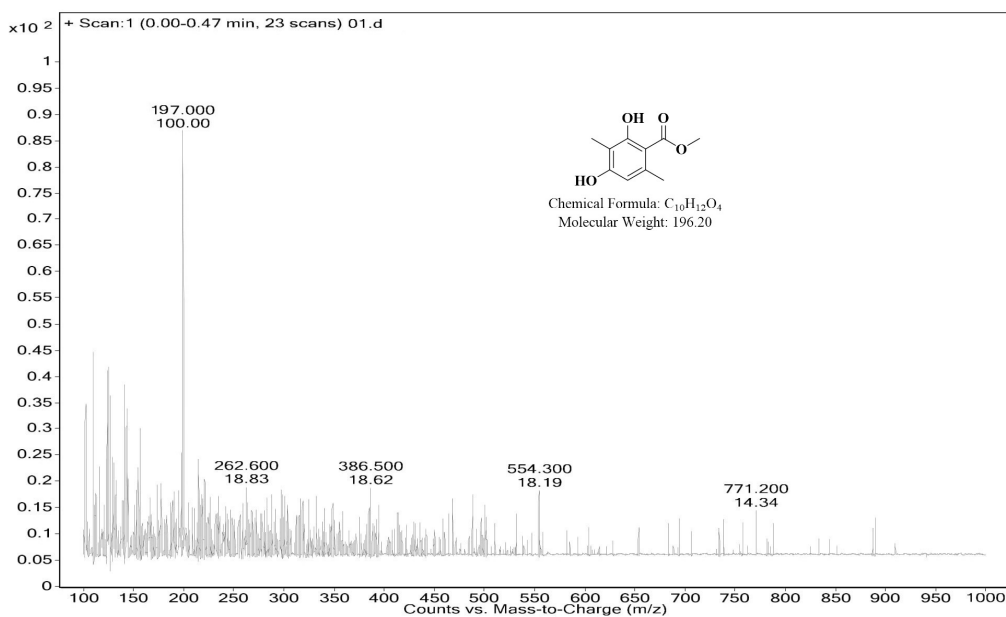


Figure 1 – ESI-MS (positive mode) of **1**

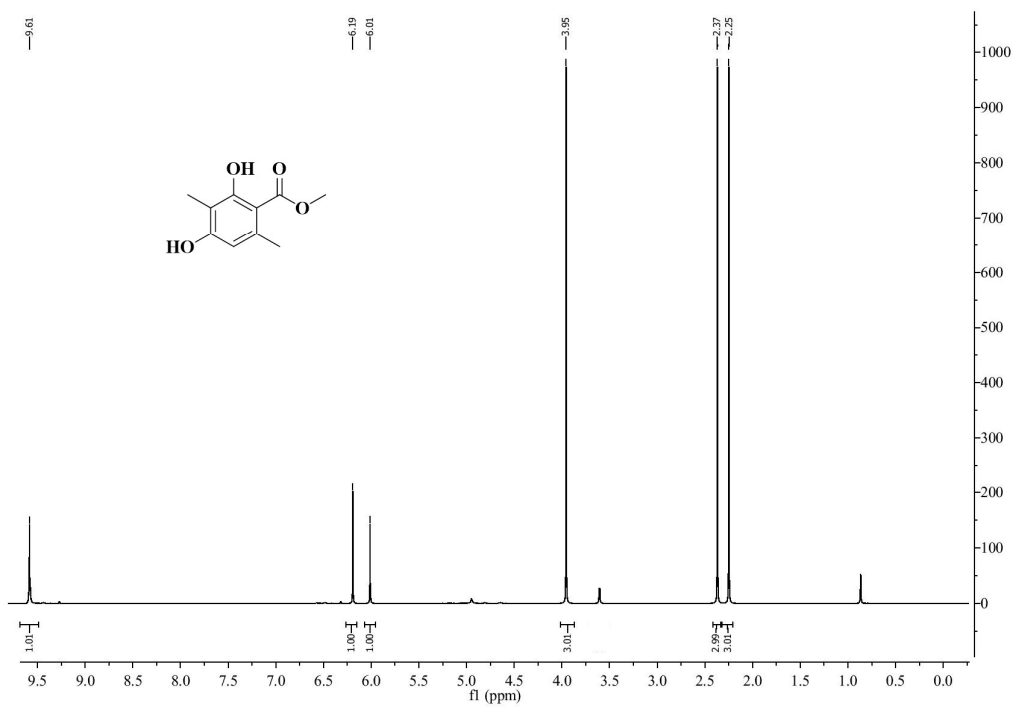


Figure S2 – Proton NMR of **1** (DMSO-*d*₆, 400 MHz)

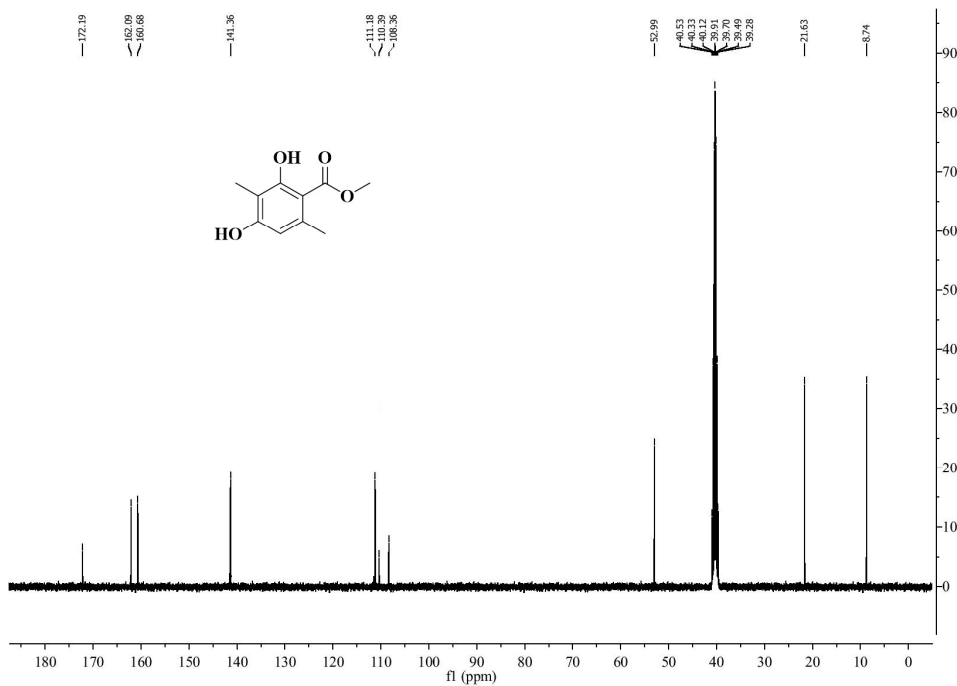


Figure S3 – ^{13}C NMR of **1** (DMSO- d_6 , 400 MHz)

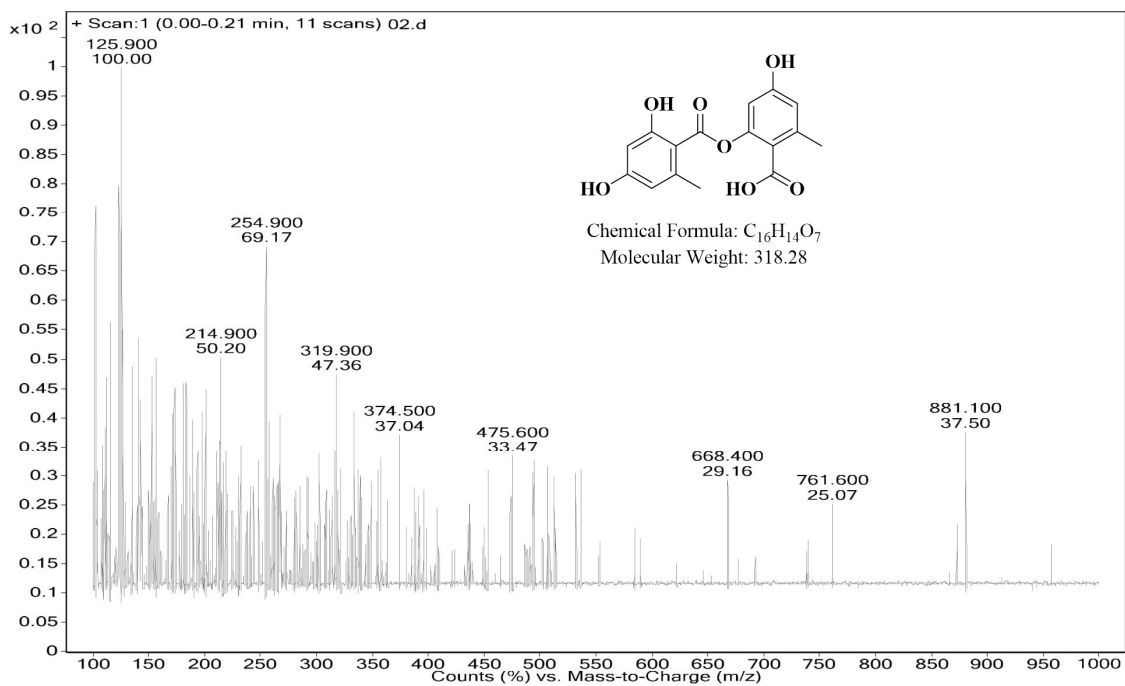


Figure S4 – ESI-MS (positive mode) of 2

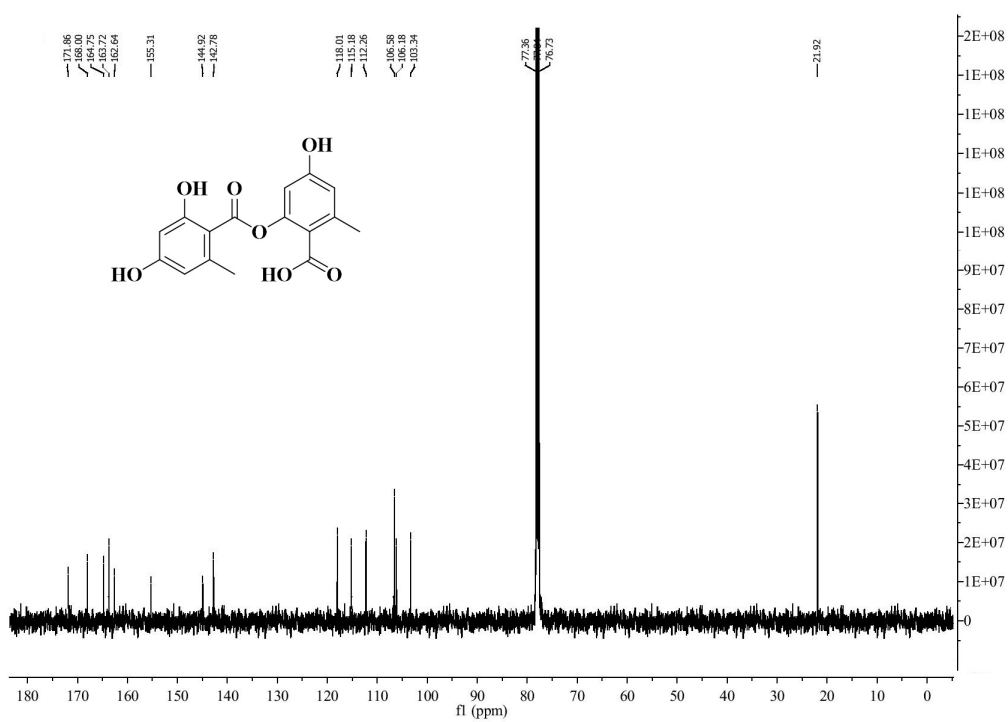


Figure S6 – ^{13}C NMR of **2** (CDCl_3 , 400 MHz)

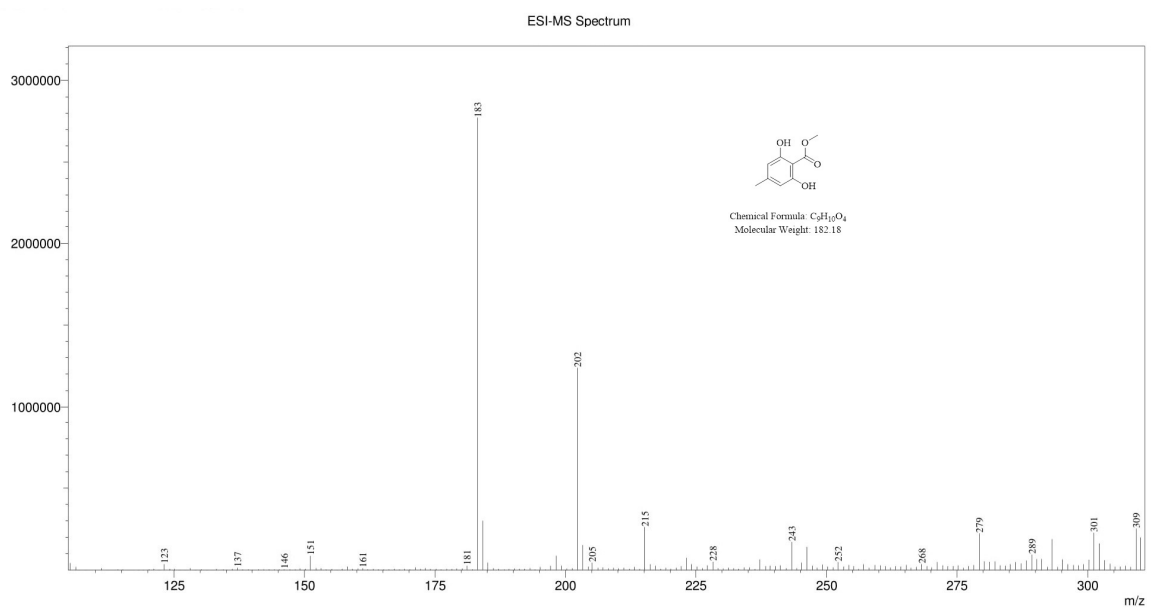


Figure S7 – ESI- MS (negative mode) of **3**

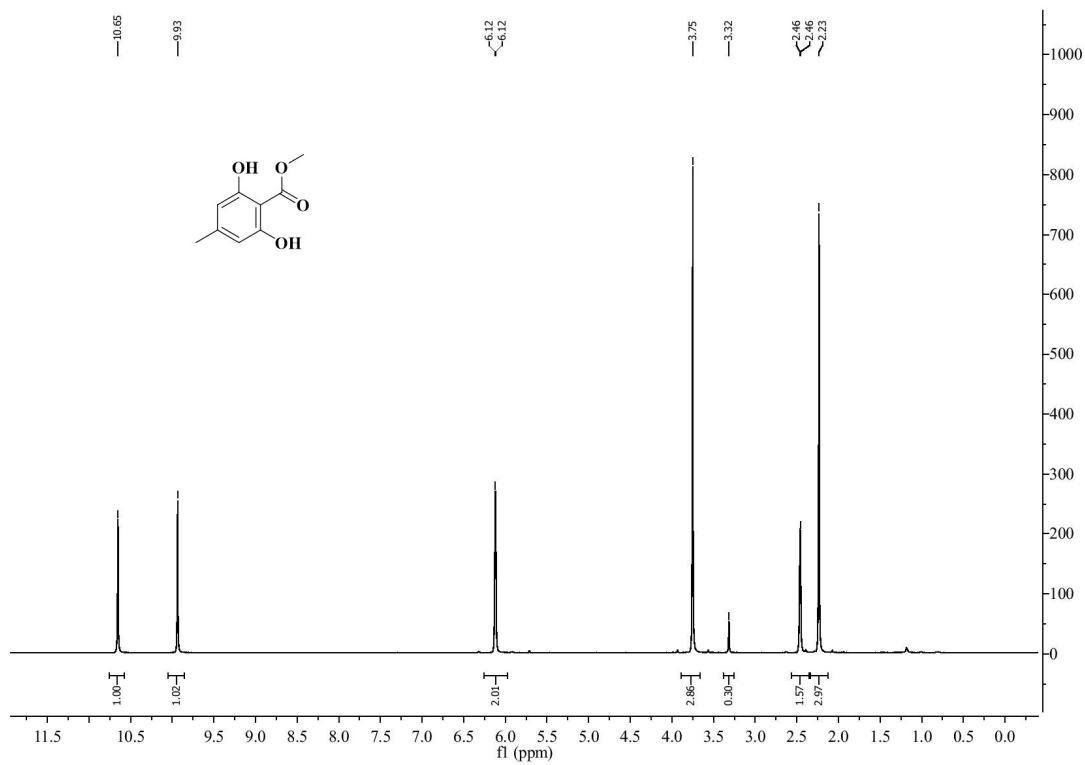


Figure S8 – Proton NMR of **3** (DMSO- d_6 , 400 MHz)

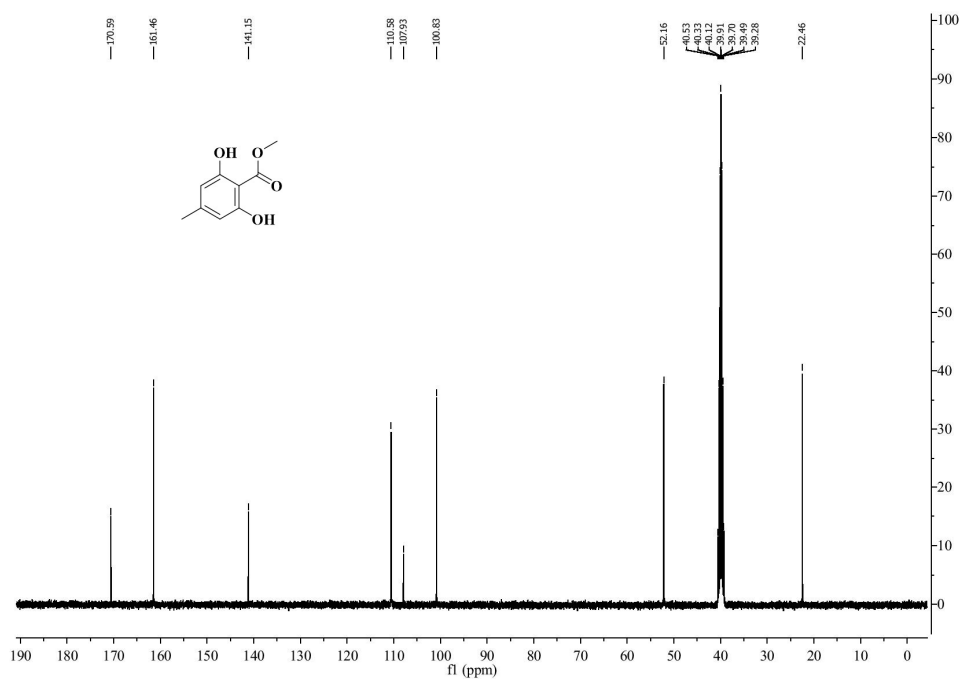


Figure 9 – ^{13}C NMR of **3** ($\text{DMSO-}d_6$, 400 MHz)

User Spectra

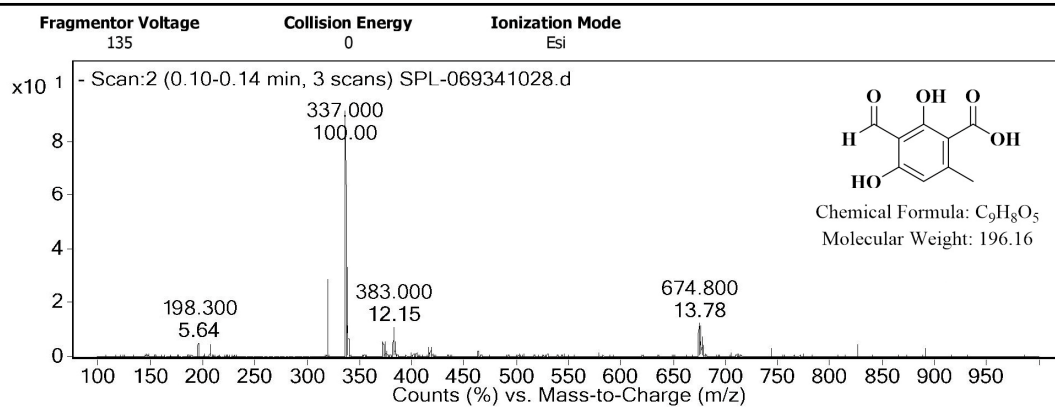


Figure S10 – ESI-MS (negative mode) of **4**

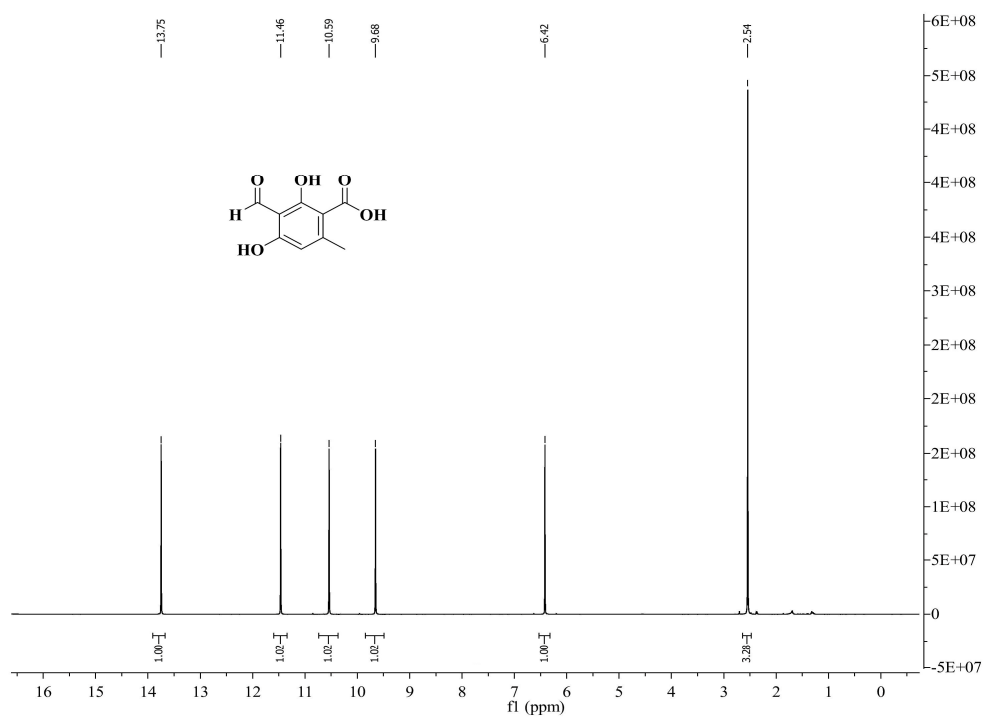


Figure S11 – Proton NMR of **4** (CDCl_3 , 400 MHz)

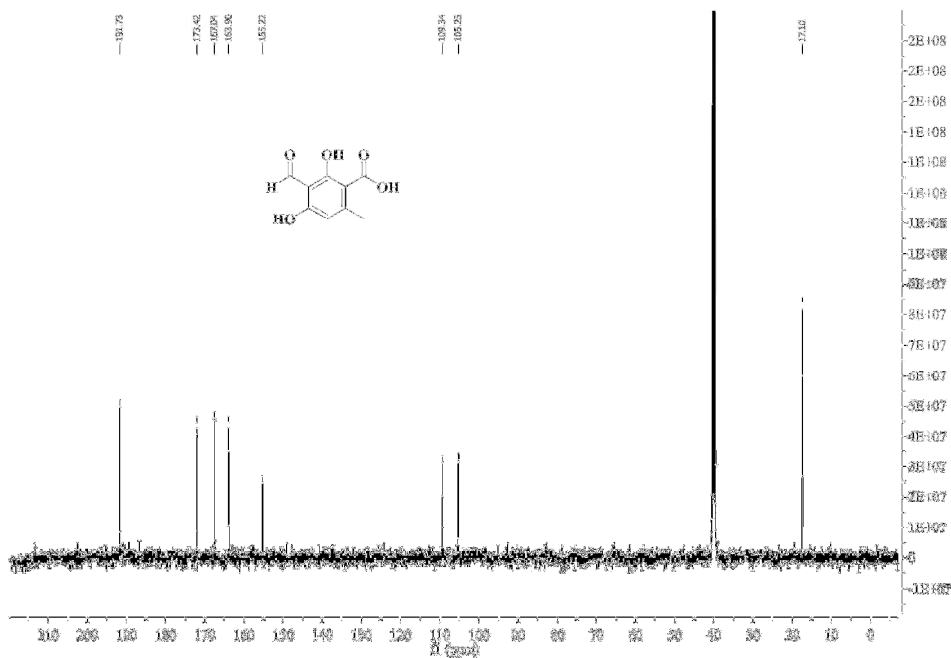


Figure S12 – ^{13}C NMR of **4** (CDCl_3 , 400 MHz)

User Spectra

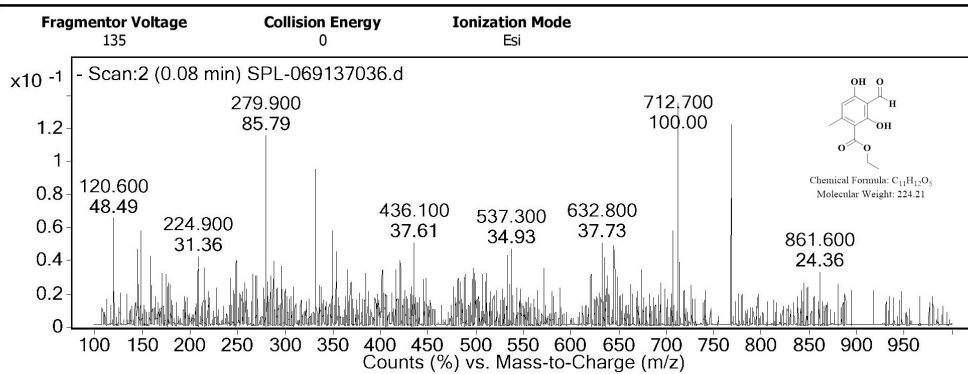


Figure S13 – ESI-MS (negative mode) of **5**

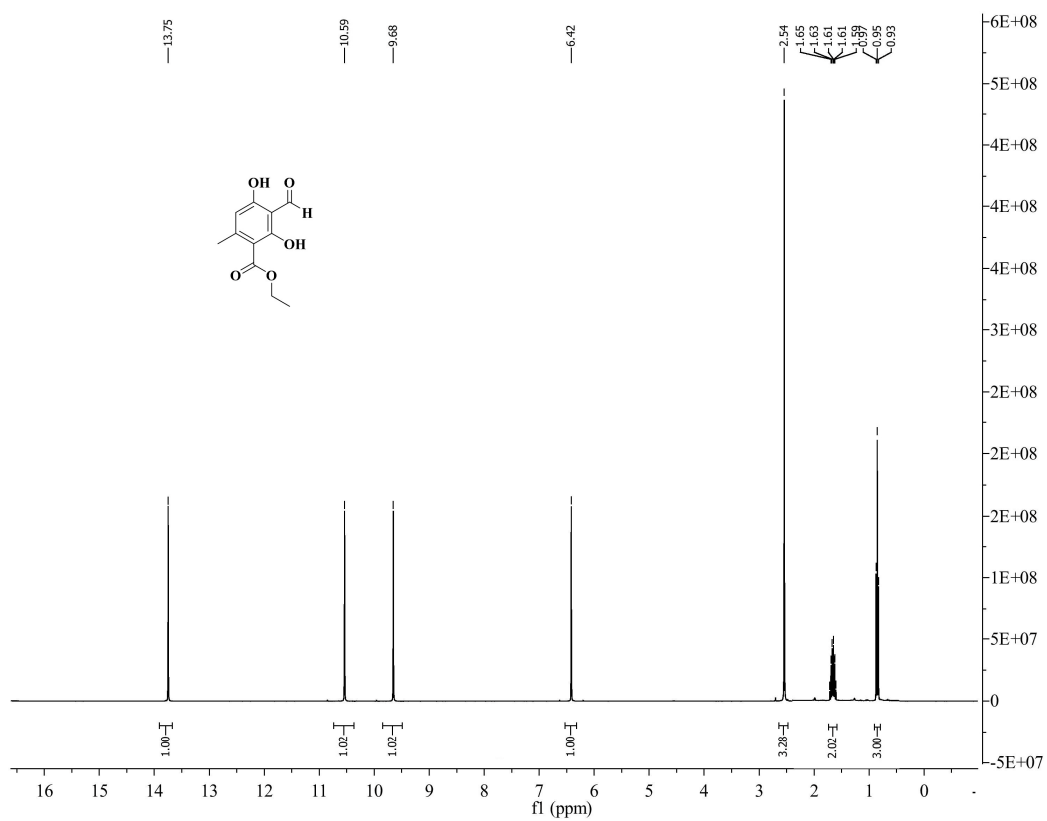


Figure S14 – Proton NMR of **5** (DMSO- d_6 , 400 MHz)

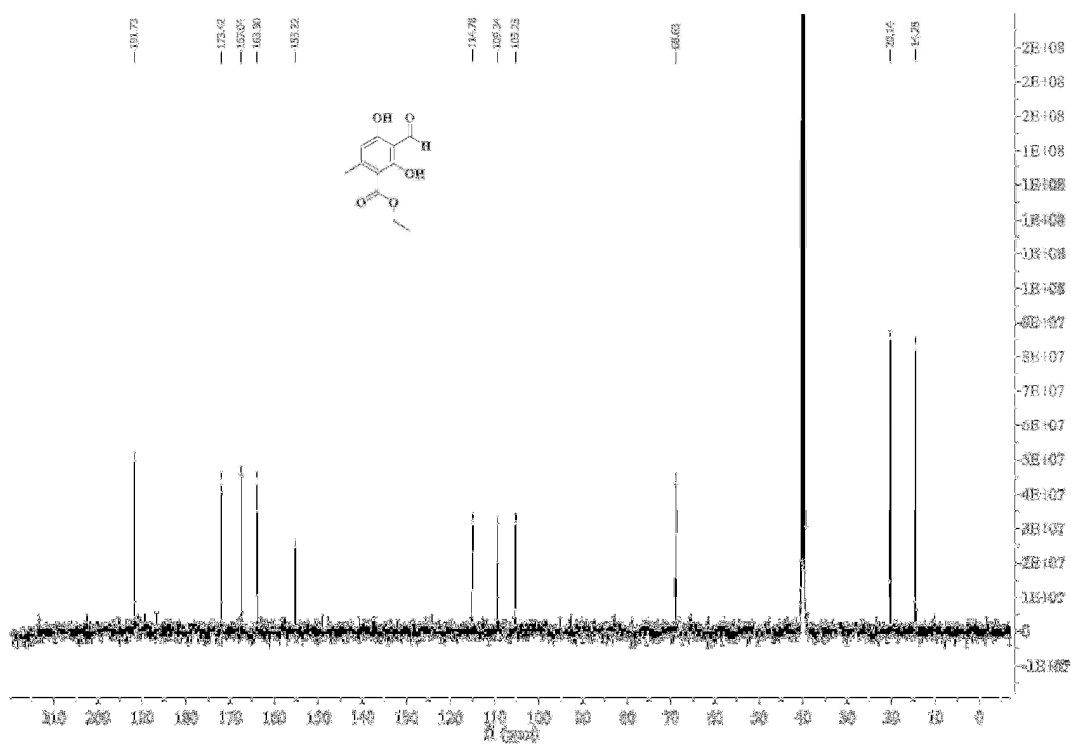


Figure S15 – ^{13}C NMR of **5** (DMSO- d_6 , 400 MHz)

Table SI – Effects of **1-6** and **Pt-Et** on DPPH free radicals

COMPOUND	Percentage inhibition at different concentrations (%)*				IC ₅₀ values (µg/mL)
	25 µg/mL	50 µg/mL	75 µg/mL	100 µg/mL	
1	39.15±0.19	47.15±1.56	58.89±0.88	69.27±1.97	56.25
2	34.25±0.36	46.88±0.52	62.90±0.09	76.53±0.11	60.0
3	45.76±0.53	53.09±0.24	72.83±0.21	92.10±0.36	40.0
4	30.89±0.89	48.79±0.92	55.98±0.99	69.97±0.96	53.0
5	35.19±2.14	49.67±0.97	61.19±2.97	71.19±2.59	50.5
6	43.61±0.30	48.05±0.38	59.61±0.32	70.11±0.30	53.5
Pt-Et[#]	34.51±1.19	52.19±1.95	62.15±1.67	72.56±1.98	95.0
Ascorbic acid	48.83±1.15	61.65±1.63	83.47±0.37	95.02±0.31	27.0

*Mean±SD values (n=3); [#]50, 100, 150, 200 µg/mL

Table SII – Effects of **1-3** and **Pt-Et** on Superoxide free radicals

COMPOUND	Percentage inhibition at different concentrations (%)*				IC ₅₀ values (µg/mL)
	25 µg/mL	50 µg/mL	75 µg/mL	100 µg/mL	
1	30.18±3.11	42.18±2.96	57.87±2.68	66.17±2.17	62.5
2	39.54±0.22	41.75±0.76	49.38±0.28	52.30±0.12	80.0
3	49.58±0.21	55.25±0.54	68.56±0.11	78.99±0.09	26.0
4	34.84±0.87	66.75±0.42	75.18±0.97	80.17±0.66	37.25
5	39.18±2.54	62.67±2.87	71.14±2.17	82.17±2.24	36.0
6	28.14±0.39	52.11±0.31	64.52±0.25	75.80±0.25	48.0
Pt-Et[#]	32.11±1.13	50.15±1.15	69.18±1.87	82.16±2.18	99.75
Ascorbic acid	45.74±0.68	56.17±0.71	76.00±0.74	93.10±0.64	35.5

*Mean±SD values (n=3); [#]50, 100, 150, 200 µg/mL

Table SIII – Cytotoxicity studies of **1-6** and **Pt-Et** on six different cancer cell lines and normal human cell line.

Sample	Percentage growth inhibition at 30 µg/mL concentration						
	MDA-MB-231	SW620	HeLa	FADU	A549	SKOV3	NHME ^c
1	46.52±1.8 9	52.57±3. 80	48.75±1. 25	44.14±1. 67	30.46±1. 87	35.21±0. 78	0.52±0.0 1
2	33.84±0.2 3	24.91±0. 70	19.17±1. 78	42.33±2. 82	42.10±4. 58	46.76±5. 16	4.03±0.7 3
3	26.40±1.1 1	14.00±1. 12	27.90±1. 16	36.12±2. 00	26.80±0. 36	9.40±0.3 3	1.80±0.7 2
4	40.60±1.4 7	45.40±1. 54	56.80±2. 17	60.80±2. 45	61.20±1. 78	46.59±3. 36	5.48±0.9 5
5	41.77±1.7 5	35.64±0. 98	57.46±1.1 1	56.75±1. 67	53.94±0. 48	40.63±4. 78	3.49±0.9 9
6	10.91±1.2 4	7.80±1.1 5	2.55±0.7 9	7.01±0.9 3	8.68±1.5 3	3.03±0.2 1	1.82±0.4 6
Pt-Et*	44.95±1.1 9	72.23±3. 58	70.17±4. 61	74.83±2. 47	74.01±2. 15	48.24±4. 44	2.91±0.3 1
Doxorubici	84.40±0.8 0	52.57±7. 97	85.55±6. 24	98.50±5. 77	65.40±0. 60	77.05±0. 22	10.08±0. 95

Mean±SEM values (n=3); [#]10 µg/mL; *100 µg/mL; ^cNormal Human Mammary Epithelial

Table SIV – Percentage growth inhibition and IC₅₀ values of **1** and **Pt-Et** against **SW620**

Sample	Percentage growth inhibition (%) against SW620				IC ₅₀ values (µg/mL)
	5 µg/mL	10 µg/mL	20 µg/mL	30 µg/mL	
1	19.75±1.91	31.58±5.80	44.75±2.37	52.57±3.80	26.5
Pt-Et**	29.75±1.77	42.57±2.49	59.22±1.77	72.23±3.58	61.0
Doxorubicin*	19.75±4.61	31.58±6.85	44.75±2.84	52.57±7.97	5.40

*n=3; *2.5, 5.0, 7.5 and 10 µg/mL concentrations; **25, 50, 75 and 100 µg/mL concentrations*

Table SV – Percentage growth inhibition and IC₅₀ values of **4**, **5** and **Pt-Et** against **HeLa**

Sample	Percentage growth inhibition (%) against HeLa				IC ₅₀ values (µg/mL)
	5 µg/mL	10 µg/mL	20 µg/mL	30 µg/mL	
4	12.74±2.28	19.57±5.66	32.18±5.62	56.80±2.17	27.0
5	11.69±0.27	23.17±0.75	36.91±1.38	57.46±1.11	26.5
Pt-Et**	26.47±2.97	37.18±2.52	50.17±3.58	70.17±4.61	74.5
Doxorubicin*	41.01±3.85	52.14±2.84	68.88±1.77	85.55±6.24	4.5

*n=3; *2.5, 5.0, 7.5 and 10 µg/mL concentrations; **25, 50, 75 and 100 µg/mL concentrations*

Table SVI – Percentage growth inhibition and IC₅₀ values of **4**, **5** and **Pt-Et** against **FADU**

Sample	Percentage growth inhibition (%) against FADU				IC ₅₀ values (µg/mL)
	5 µg/mL	10 µg/mL	20 µg/mL	30 µg/mL	
4	23.74±3.77	38.17±3.25	50.17±4.89	60.80±2.45	20.0
5	19.78±2.76	32.59±6.42	41.68±5.00	56.75±1.67	25.5
Pt-Et**	28.79±3.37	40.18±3.75	59.47±5.48	74.01±2.15	62.5
Doxorubicin*	42.79±1.78	56.25±2.83	75.98±4.59	65.40±0.60	3.8

*n=3; *2.5, 5.0, 7.5 and 10 µg/mL concentrations; **25, 50, 75 and 100 µg/mL concentrations*

Table SVII – Percentage growth inhibition and IC₅₀ values of **4**, **5** and **Pt-Et** against **A549**

Sample	Percentage growth inhibition (%) against A549				IC ₅₀ values (µg/mL)
	5 µg/mL	10 µg/mL	20 µg/mL	30 µg/mL	
4	14.15±5.64	33.18±4.76	45.89±1.67	61.20±1.78	22.5
5	10.15±0.34	19.57±4.94	36.17±4.59	53.94±0.48	27.5
Pt-Et**	28.47±2.20	40.17±0.42	57.18±0.29	74.01±2.15	64.9
Doxorubicin*	26.12±4.54	42.63±5.48	56.10±4.03	65.40±0.60	6.3

*n=3; *2.5, 5.0, 7.5 and 10 µg/mL concentrations; **25, 50, 75 and 100 µg/mL concentrations*

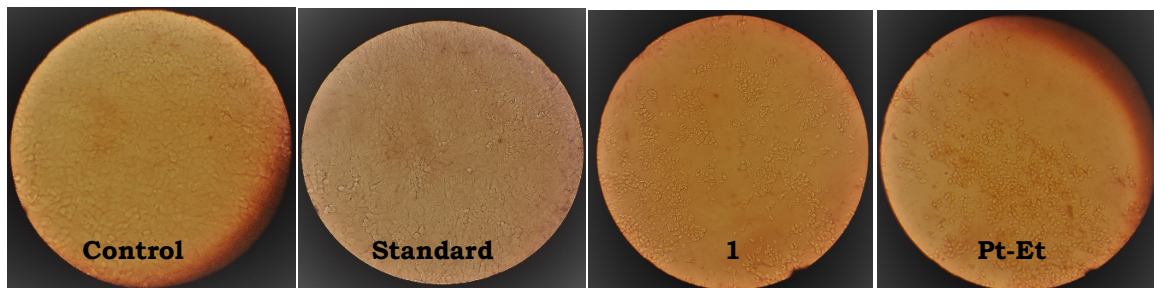


Figure S16 – SRB assay images of active samples at maximum tested concentration against
SW620

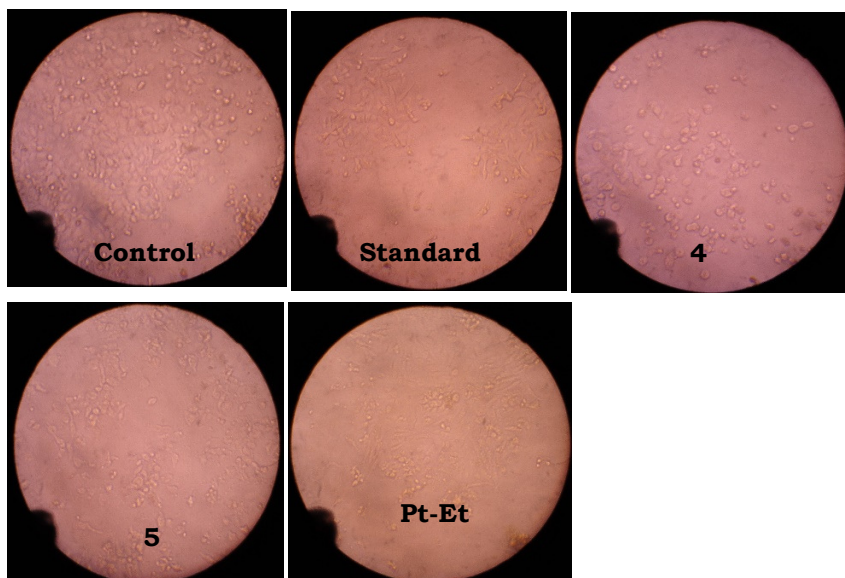


Figure S17 – SRB assay images of active samples at maximum tested concentration against
HeLa

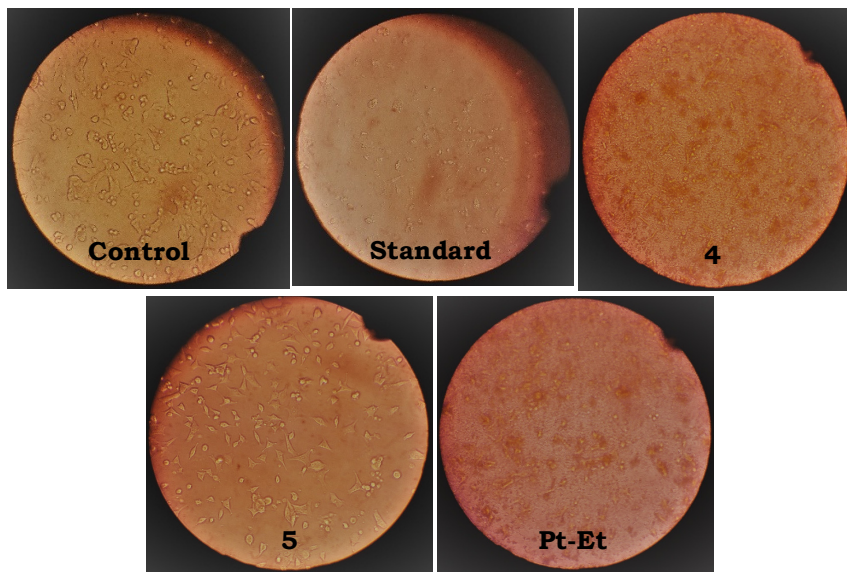


Figure S18 – SRB assay images of active samples at maximum tested concentration against
FADU

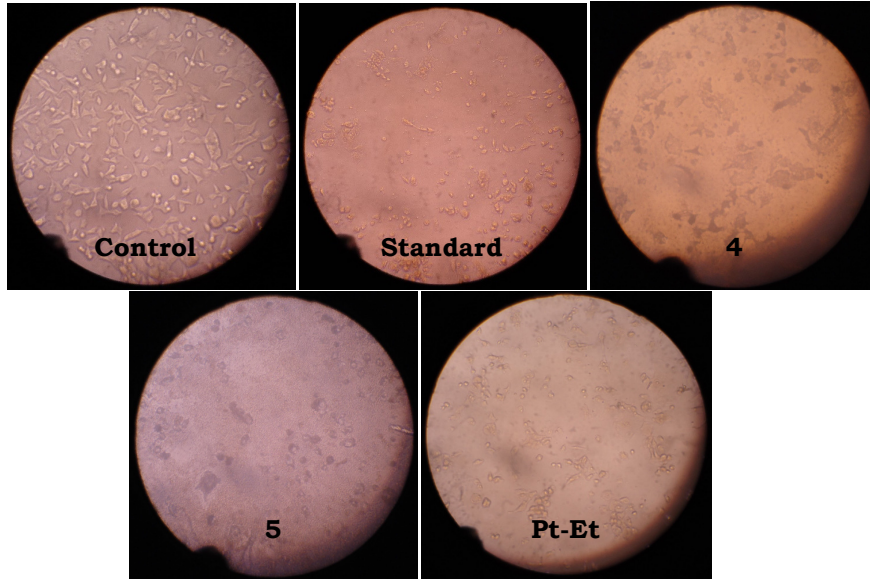


Figure S19 – SRB assay images of active samples at maximum tested concentration against

A549