

## Supplementary Information for

# Spin Trapping and Cytoprotective Properties of Fluorinated Amphiphilic Carrier Conjugates of Cyclic versus Linear Nitrones

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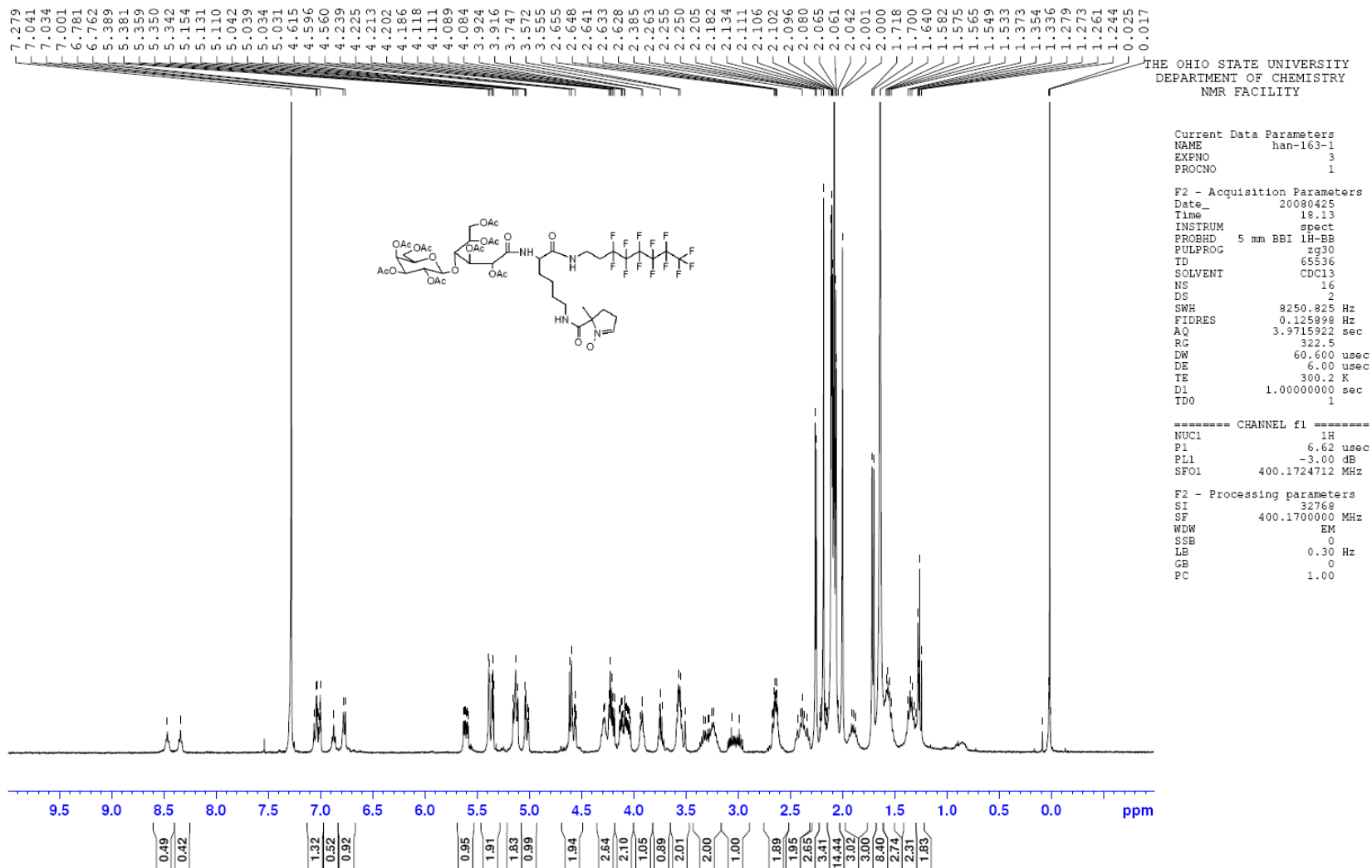
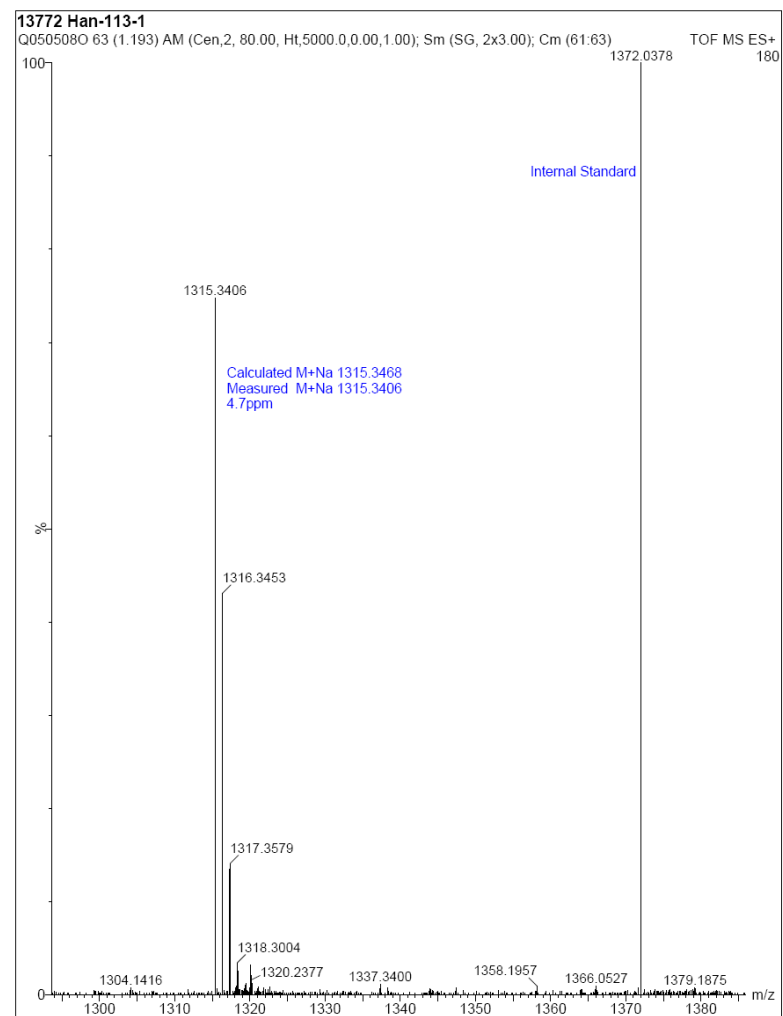
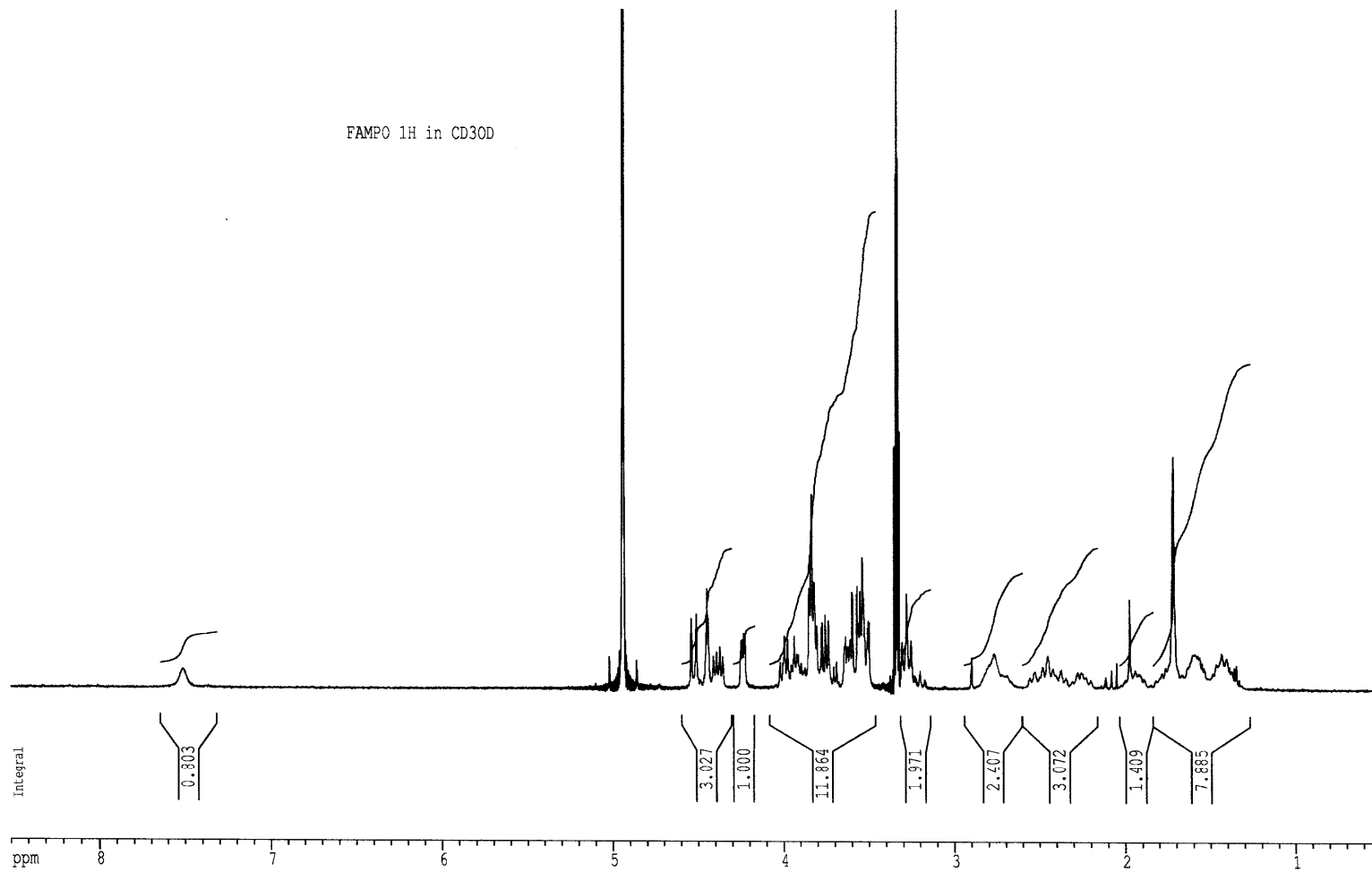


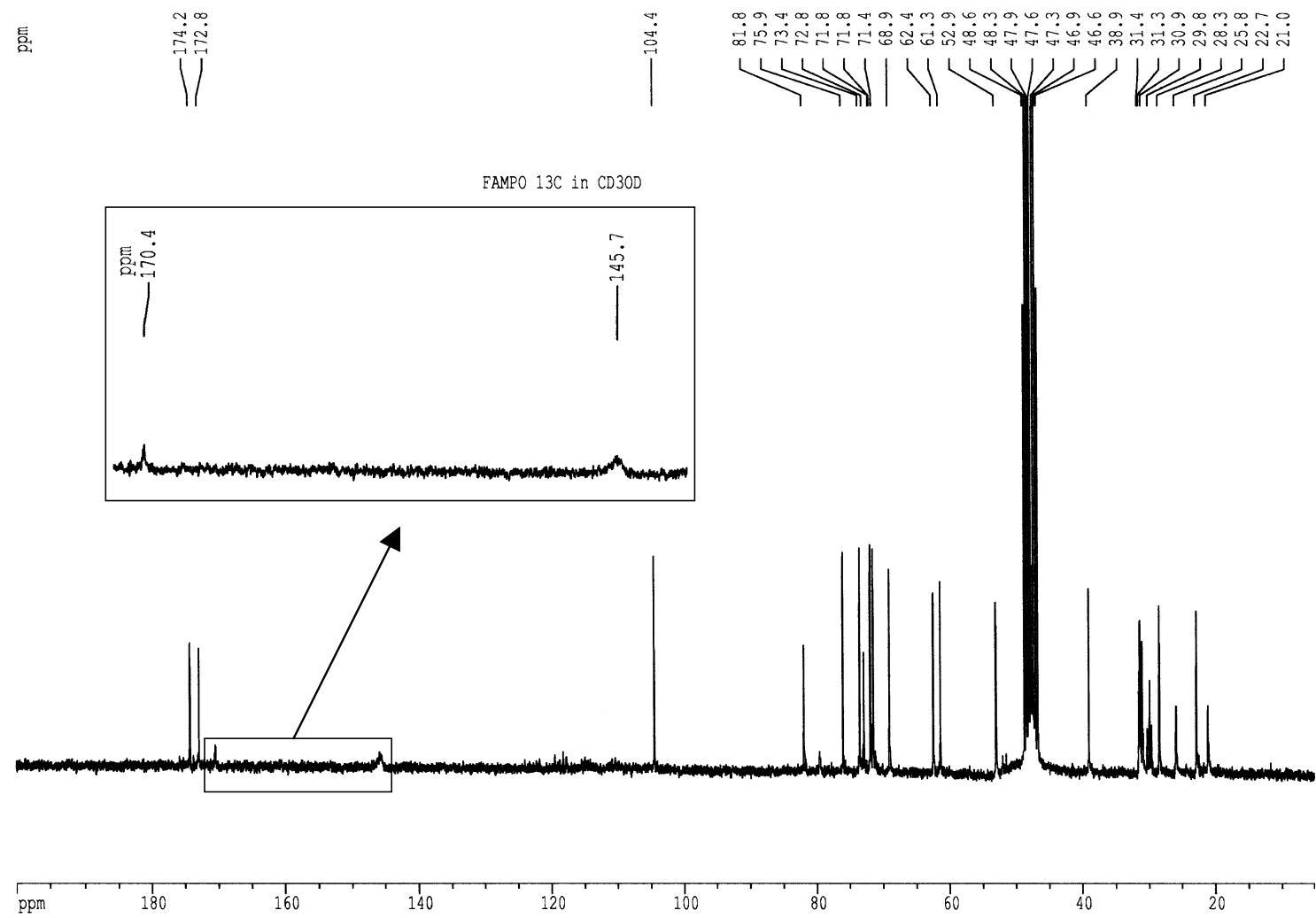
Figure S1.  $^1\text{H}$  NMR Spectrum of AcO-FAMPO in  $\text{CDCl}_3$



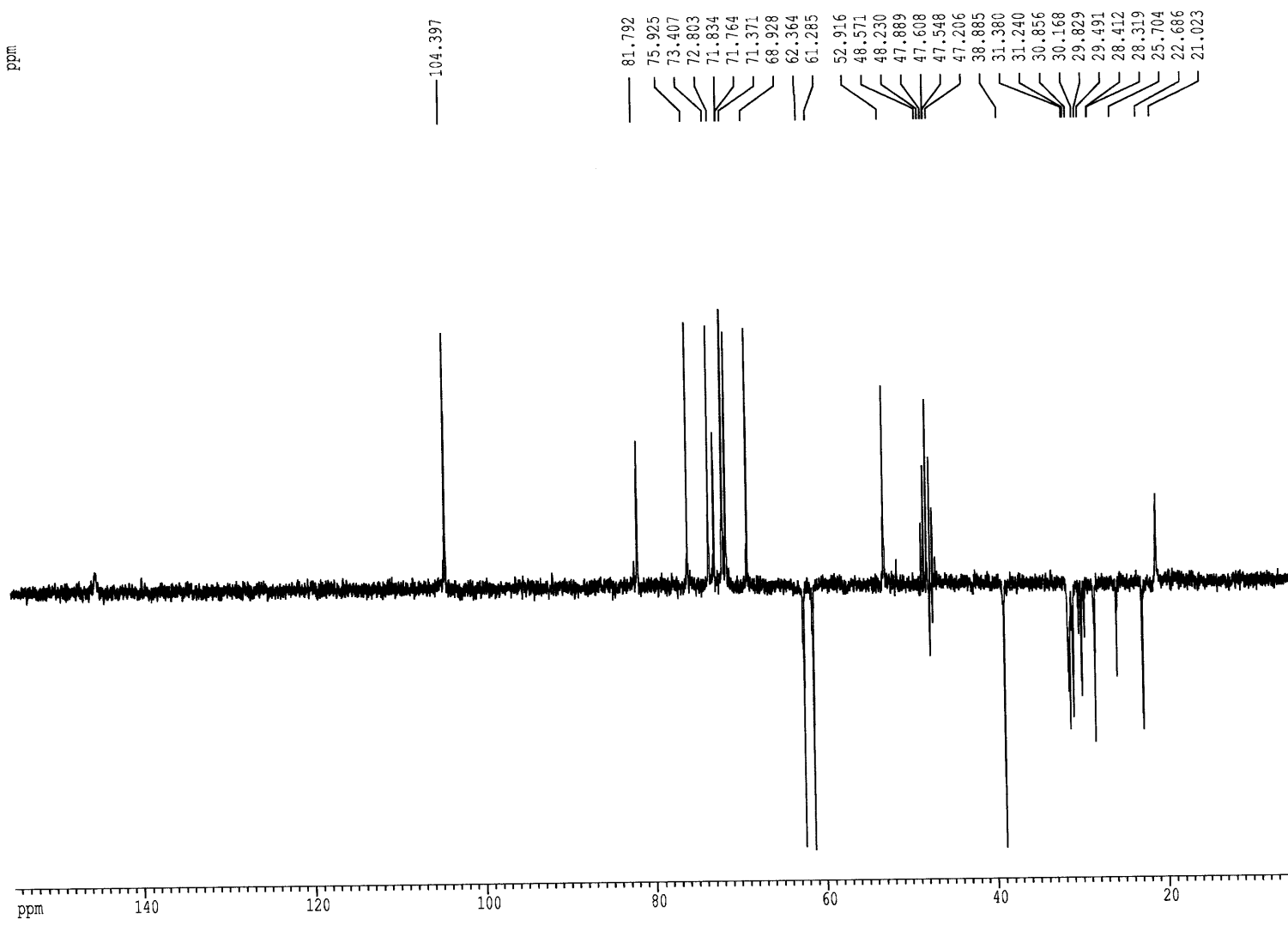
**Figure S2.** HRMS Spectrum of AcO-FAMPO



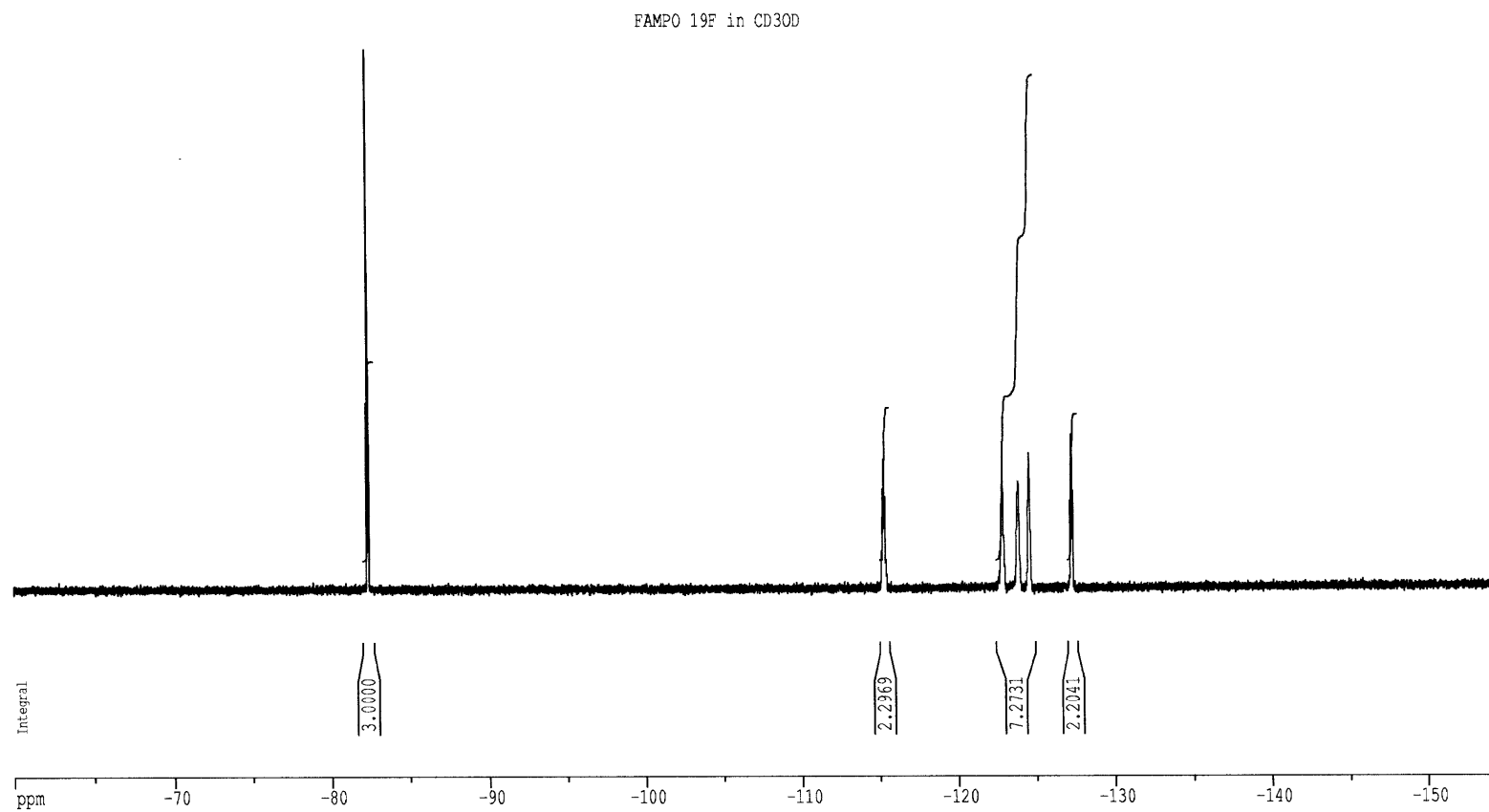
**Figure S3.**  $^1\text{H}$  NMR Spectrum of FAMPO in  $\text{CD}_3\text{OD}$



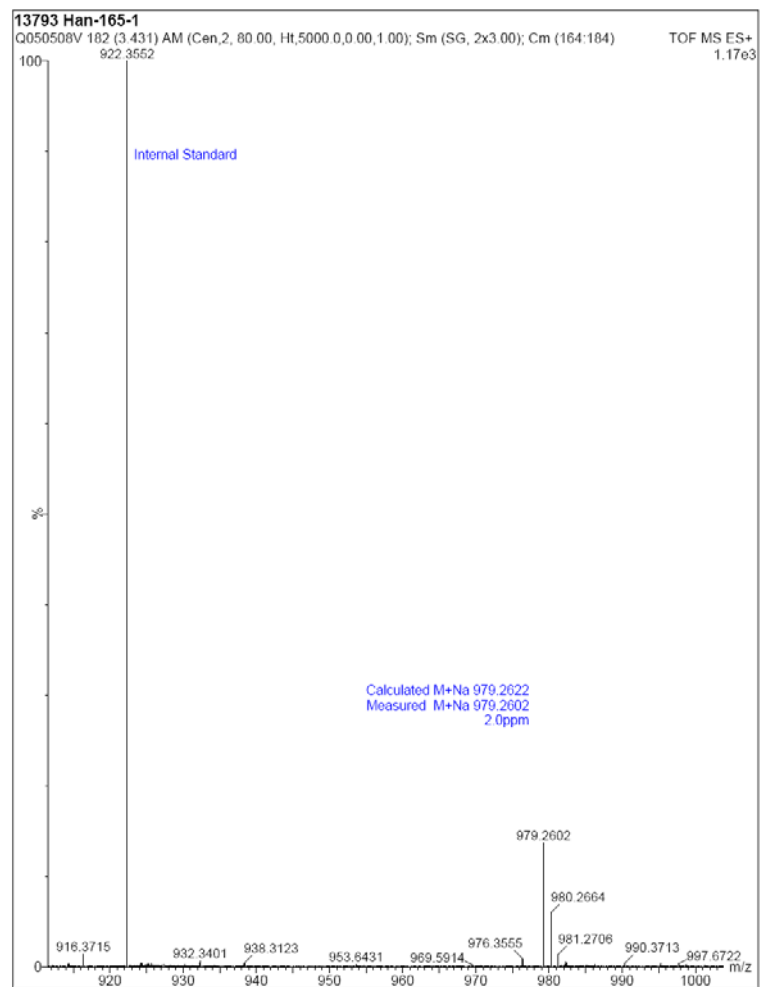
**Figure S4.**  $^{13}\text{C}$  NMR Spectrum of FAMPO in  $\text{CD}_3\text{OD}$



**Figure S5.** DEPT 135 NMR Spectrum of FAMPO in CD<sub>3</sub>OD

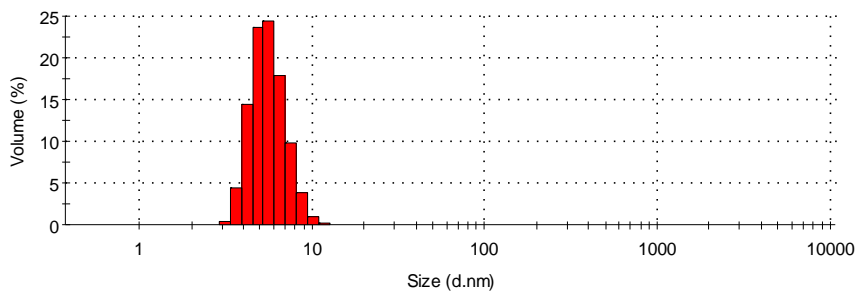
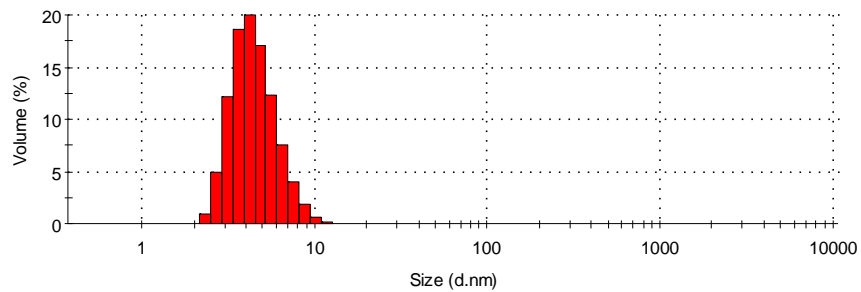


**Figure S6.**  $^{19}\text{F}$  NMR Spectrum of FAMPO in  $\text{CD}_3\text{OD}$

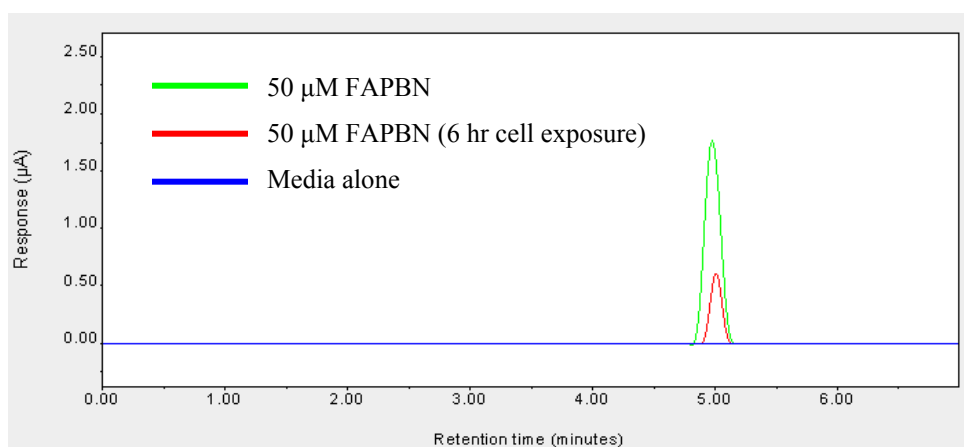
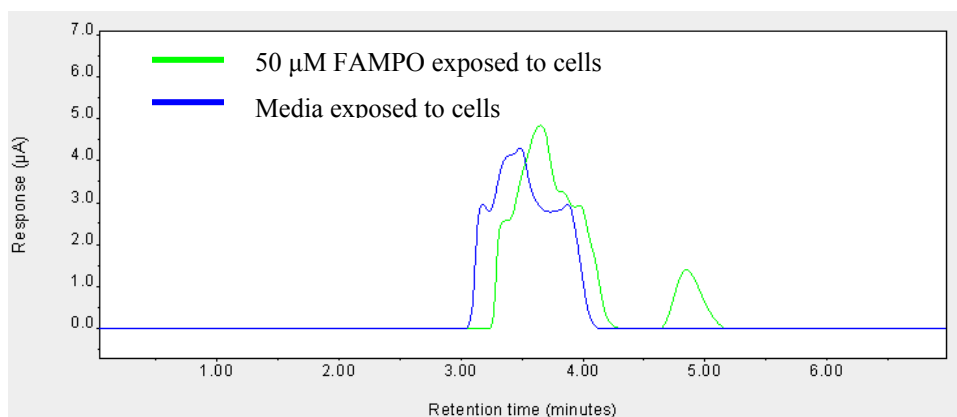


**Figure S7.** HRMS of FAMPO

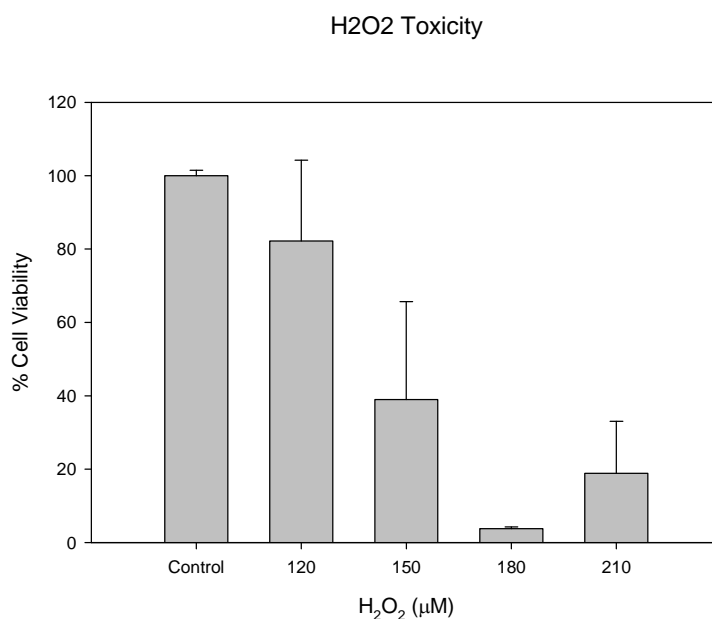




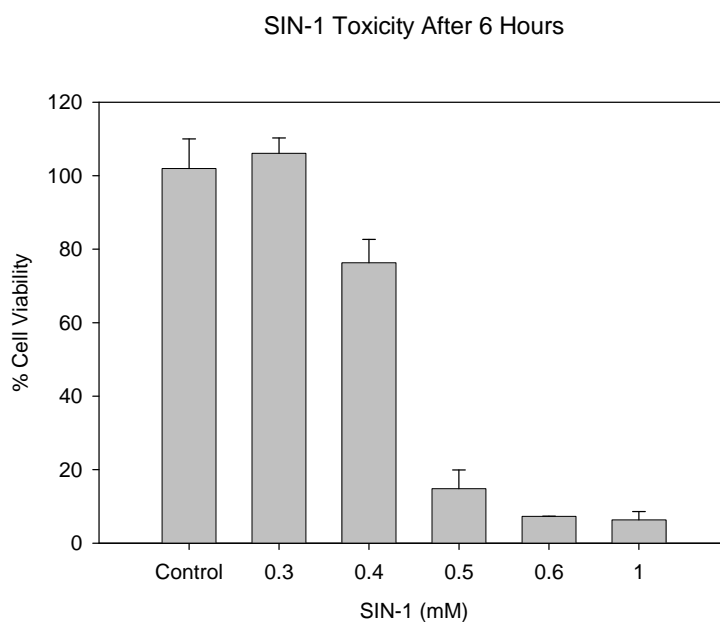
**Figure S8.** Particle size distribution by volume of 5 mM solutions of FAMPO (Top) and FAPBN (bottom) at 25°C. The graphs reported are the average of 10 measurements.



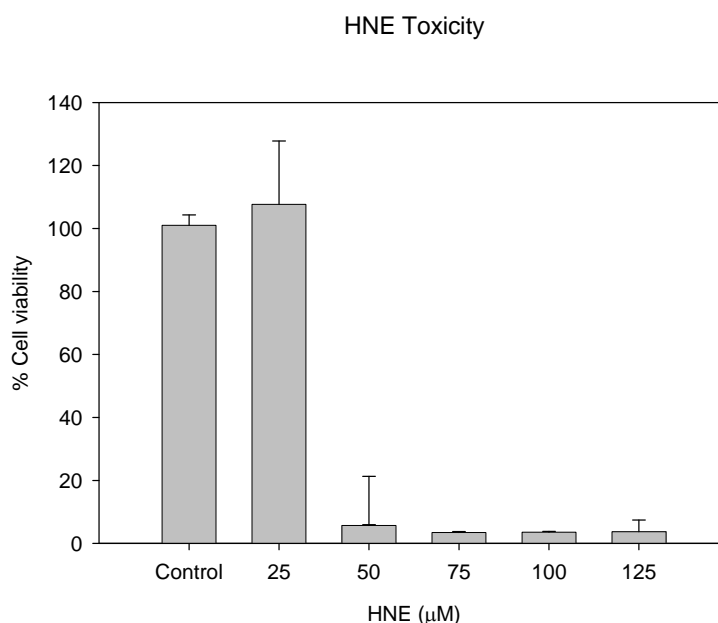
**Figure S9.** Typical chromatograms of nitrones in media. (Top) Compares 50  $\mu\text{M}$  FAMPO in media exposed to cells compared to media alone exposed to cells at 235 nm. (Bottom) Compares 50  $\mu\text{M}$  FAPBN in media with no cell exposure to 50  $\mu\text{M}$  FAPBN in media exposed to cells for 6 hours and media alone at 295 nm.



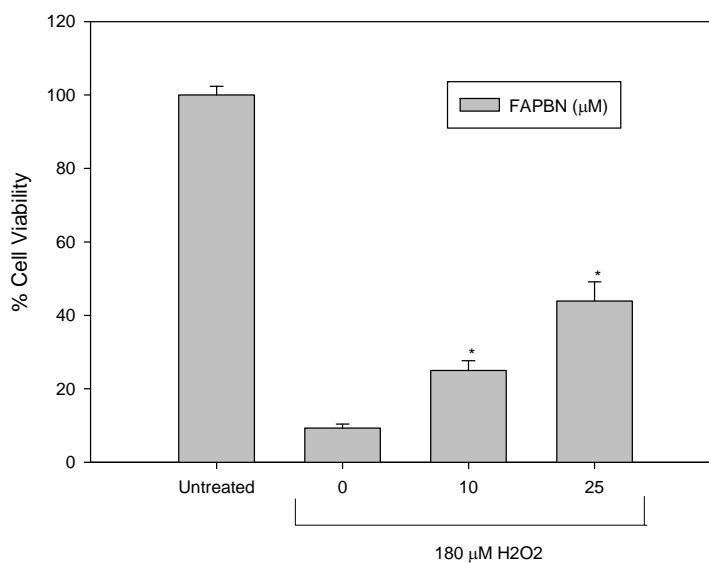
**Figure S10.** Cytotoxicity of Hydrogen Peroxide on BAEC. Cells were incubated for 24 h in the presence of H<sub>2</sub>O<sub>2</sub>. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 4.



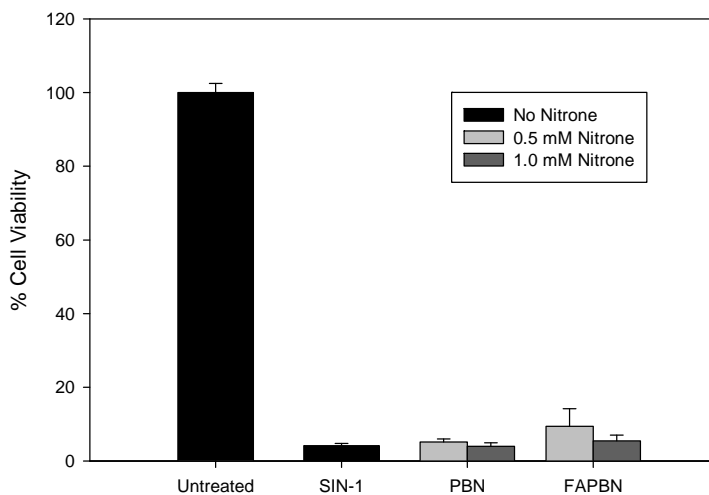
**Figure S11.** Cytotoxicity of SIN-1 on BAEC. Cells were incubated for 24 h in the presence of SIN-1. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 2-5.



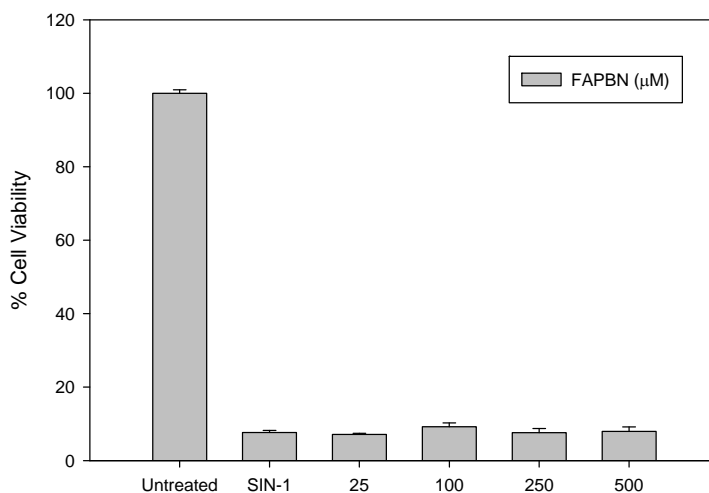
**Figure S12.** Cytotoxicity of HNE on BAEC. Cells were incubated for 24 h in the presence of HNE. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 4-6.



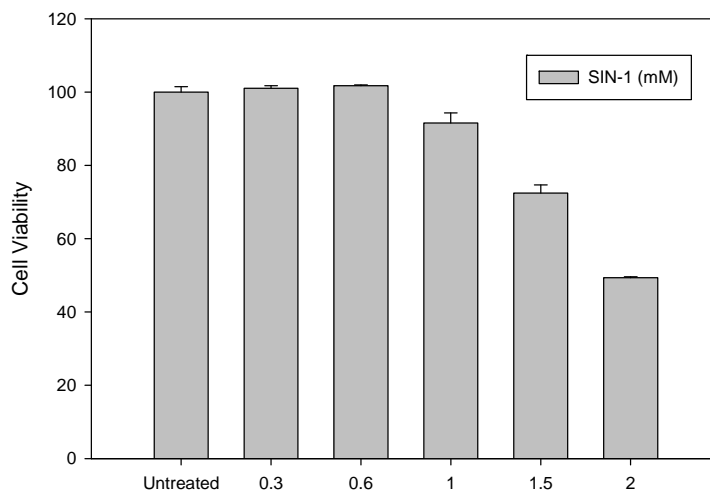
**Figure S13.** Cytoprotective properties of short incubation time of FAPBN against H<sub>2</sub>O<sub>2</sub>-induced cell death. Cells were incubated in the absence or presence of FAPBN for 15 min before being exposed to 180 μM H<sub>2</sub>O<sub>2</sub> for 24h. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. \*Significantly different from H<sub>2</sub>O<sub>2</sub> treatment alone by t-test, p<0.05. n = 2.



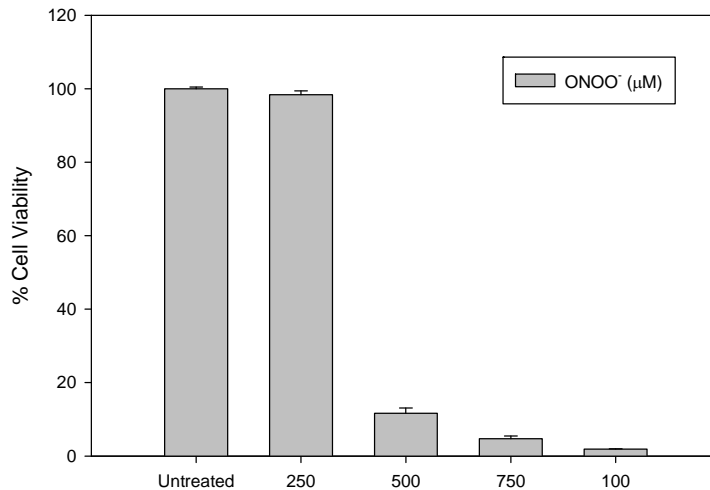
**Figure S14.** Cytoprotective properties of PBN and FAPBN at 0.5 mM and 1.0 mM against SIN-1 induced cell death. Cells were incubated in the absence or presence of nitrones for 24 h before being exposed to 600  $\mu$ M SIN-1 for another 6 h. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 2.



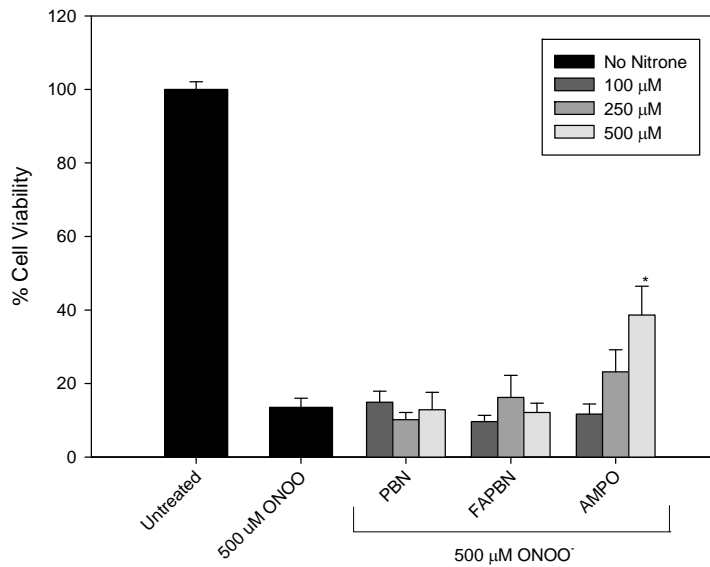
**Figure S15.** Cytoprotective properties of short incubation time of FAPBN against SIN-1 induced cell death. Cells were incubated in the absence or presence of FAPBN for 15 min before being exposed to 600  $\mu$ M SIN-1 for 6h. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 2.



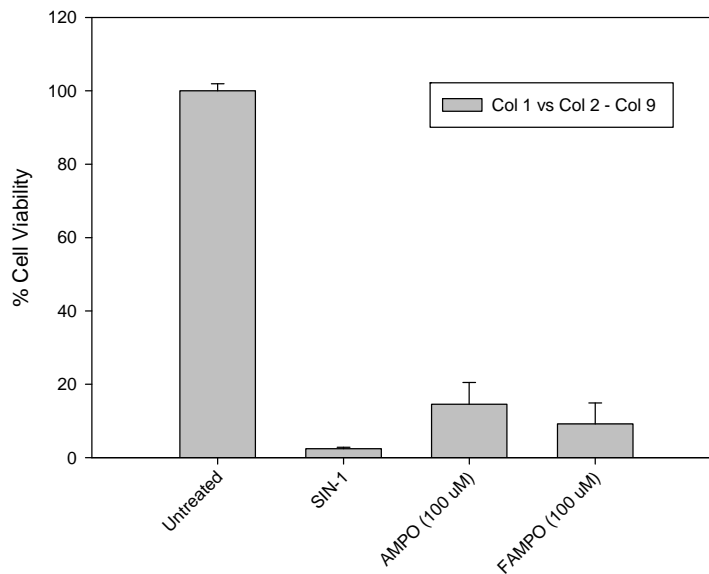
**Figure S16.** SIN-1 toxicity in the presence of 500 U/mL Catalase. Cells were pre-treated with 500 U/mL of catalase before being exposed to between 0.3 and 2 mM SIN-1 for another 6 h. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 2.



**Figure S17.** Cytotoxicity of peroxynitrite on BAEC. Cells were incubated for 6 h in the presence of peroxynitrite. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. n = 2.



**Figure S18.** Cytoprotective property of various nitrones against peroxynitrite toxicity. Cells were incubated in the absence or presence of nitrones for 15 min before being exposed to ~500 μM peroxynitrite for another 6 h. Cell viability was measured using MTT assay (see experimental for details). The y-axis corresponds to the % viability relative to untreated cells. \*Significantly different from peroxynitrite treatment alone by t-test,  $p < 0.05$ ;  $n = 2$ .



**Figure S19.** Cytoprotective properties of 24 h incubation with AMPO or FAMPO followed by washing once with PBS. Cells were then exposed to 2 mM SIN-1 for an additional 6 h. The y-axis corresponds to the % viability relative to untreated cells.

### Cartesian Coordinates for FAMPO

O	5.658548	-1.633561	-1.348212	F	-6.371017	2.039171	-0.067416
C	5.997982	-1.289840	-0.002923	F	-8.381066	-0.362045	1.537548
C	7.715386	-0.592138	-2.214535	F	-8.757712	1.739644	0.997407
C	6.183625	-0.697564	-2.305136	F	-8.188605	0.903206	-1.727793
O	8.402271	-1.771569	-2.627821	F	-8.340490	-1.151795	-0.939152
O	9.583255	-0.324034	-0.689839	F	-10.536300	-0.325989	-2.104654
O	7.882123	-1.044621	1.519542	F	-10.627612	1.518240	-0.909710
C	5.687717	-1.209743	-3.655932	C	-11.122520	-0.517030	0.152982
O	5.432440	-2.222538	0.867357	F	-12.397468	-0.503573	-0.253593
C	7.519923	-1.338616	0.175358	F	-10.723836	-1.787030	0.290127
C	8.172225	-0.318216	-0.770184	F	-11.046069	0.099420	1.339804
O	6.109243	-2.562668	-3.875119	O	5.797590	2.558535	-1.359285
C	4.016136	-2.103680	1.077048	C	5.678671	3.638175	0.792295
C	3.759866	-2.253604	2.584078	C	7.146526	4.114026	0.680327
C	3.294746	-3.148013	0.207932	C	7.980079	3.141277	1.561083
C	1.742627	-3.158199	0.251177	C	7.012441	2.064240	1.913626
O	2.398879	-1.867749	2.845166	N	5.795714	2.314770	1.522717
C	1.082828	-1.881114	-0.287824	C	4.788022	4.555482	1.632183
O	0.669579	-1.864023	-1.448973	O	4.733807	1.611917	1.667071
N	0.957001	-0.845511	0.577331	H	8.029600	0.258855	-2.840663
C	0.396283	0.451079	0.185427	H	7.843446	0.686412	-0.480667
C	1.275487	1.213774	-0.825193	H	7.852406	-2.347362	-0.106352
C	0.988687	2.722221	-0.871024	H	5.608791	-0.281514	0.212746
C	1.679091	3.455790	-2.034777	H	5.767313	0.303239	-2.118493
C	3.195338	3.270417	-2.142806	H	7.815867	-2.260523	-3.242527
N	3.876469	3.679589	-0.915789	H	9.866034	-1.103398	-1.201499
C	5.115462	3.246422	-0.601975	H	7.509752	-1.763878	2.053430
O	3.738846	-4.435225	0.604523	H	4.592770	-1.138491	-3.702141
C	4.660830	-1.361608	3.449544	H	6.107339	-0.614306	-4.471739
O	4.104324	-1.296068	4.774617	H	5.799259	-3.056167	-3.094104
O	1.311826	-4.244443	-0.556175	H	3.696581	-1.097219	0.781031
C	-1.071409	0.311155	-0.293506	H	3.891592	-3.307603	2.866679
O	-1.558055	1.044088	-1.146604	H	3.586835	-2.946951	-0.833047
N	-1.807653	-0.624182	0.366877	H	1.421386	-3.350683	1.278754
C	-3.186218	-0.903420	-0.003427	H	2.412460	-1.591777	3.784570
C	-4.147557	0.177864	0.520379	H	1.413793	-0.947180	1.486227
C	-5.593725	-0.166681	0.221373	H	0.355942	1.031628	1.117215
C	-6.593919	0.925885	0.671789	H	2.317645	1.050899	-0.525911
C	-8.120864	0.601398	0.622312	H	1.136886	0.765157	-1.814071
C	-8.703760	0.135522	-0.739137	H	-0.087794	2.878474	-0.971479
C	-10.254875	0.219996	-0.897659	H	1.283729	3.171657	0.089896
F	-5.769539	-0.349656	-1.122701	H	1.241629	3.115824	-2.981703
F	-5.943409	-1.335980	0.842409	H	1.450717	4.529072	-1.966467
F	-6.334738	1.221491	1.975736	H	3.457248	2.225820	-2.334581
				H	3.582015	3.852924	-2.989177
				H	3.350561	4.203167	-0.233226



H	3.172973	-5.052700	0.106297	C	-2.167229	5.509331	2.845598
H	5.686609	-1.741991	3.472576	N	-2.747393	4.163058	2.877779
H	4.674759	-0.335934	3.069141	C	-3.974266	3.892813	3.371848
H	4.351671	-2.108926	5.243543	O	-2.757145	1.305968	-0.728471
H	1.022584	-3.824488	-1.394248	C	-6.083587	-1.105214	-3.385659
H	-1.323223	-1.263608	0.979451	O	-6.911211	-0.888442	-4.554740
H	-3.261662	-0.963792	-1.092802	O	-1.228922	0.675738	-2.819159
H	-3.455179	-1.877851	0.411543	C	0.923652	3.540740	-1.095748
H	-4.040173	0.291366	1.602778	O	1.783257	4.124199	-0.447550
H	-3.907637	1.134106	0.048891	N	0.939143	2.202117	-1.272142
H	7.474544	4.054089	-0.358076	C	1.866417	1.378140	-0.524974
H	7.245904	5.150911	1.011998	C	3.299014	1.429666	-1.085563
H	8.374357	3.632174	2.461934	C	4.197143	0.588462	-0.225644
H	8.846732	2.736070	1.025822	C	5.600446	0.418723	-0.781143
H	7.232595	1.113847	2.381346	C	6.613108	-0.104342	0.232791
H	4.607199	5.504529	1.116191	C	7.782855	-0.821338	-0.418485
H	3.836114	4.066759	1.860634	C	9.032017	-0.961852	0.435296
H	5.279861	4.784898	2.582990	F	4.308717	1.113942	1.034034

#### Cartesian Coordinates for FAPBN

O	-1.883947	-1.397969	-0.633710	F	3.671497	-0.684036	-0.076359
C	-3.126381	-1.864178	-1.216816	F	5.530959	-0.442122	-1.831780
C	-1.163884	-3.665067	-0.059155	F	6.037803	1.624540	-1.224317
C	-1.350479	-2.229180	0.437749	F	7.072079	0.936835	0.963511
O	-0.281103	-3.778079	-1.183804	F	6.005883	-1.004192	1.052202
O	-2.337500	-5.511229	-1.125269	F	7.387087	-2.056893	-0.798838
O	-4.294093	-3.714928	-2.095848	F	8.152496	-0.103309	-1.514725
C	-0.059190	-1.588513	0.923287	F	9.535137	0.261992	0.712398
O	-3.362521	-1.032508	-2.329897	F	9.932590	-1.654403	-0.314391
C	-2.975836	-3.282673	-1.697671	C	8.861452	-1.719908	1.727898
C	-2.485351	-4.186306	-0.583440	F	8.275500	-2.901064	1.508018
O	0.975194	-1.803667	-0.068993	F	10.060098	-1.924665	2.285388
C	-4.251070	0.105777	-2.182757	F	8.107820	-1.006697	2.576222
C	-5.134438	0.079447	-3.408687	O	-4.675806	4.718179	3.936238
C	-3.422434	1.371751	-2.021797	C	-4.420597	2.467902	3.216957
C	-2.361975	1.527879	-3.120477	C	-5.383223	2.001866	4.099413
O	-5.890109	1.297709	-3.378829	C	-3.946314	1.637686	2.217370
C	-1.715208	2.906229	-3.168204	C	-5.832718	0.704566	4.005056
O	-1.472425	3.490279	-4.205932	C	-4.377770	0.328128	2.131042
N	-1.336284	3.323007	-1.939934	C	-5.324246	-0.153000	3.026877
C	-0.269151	4.278262	-1.719574	C	-5.894697	-1.496170	2.959926
C	-0.706291	5.439388	-0.809381	N	-5.512759	-2.475537	2.249333
C	-1.105926	4.950100	0.595516	O	-4.378998	-2.426419	1.436963
C	-1.913802	5.983868	1.400644	C	-6.217856	-3.807631	2.164403
				C	-6.625713	-3.981872	0.692178
				C	-5.198463	-4.869415	2.595962
				C	-7.456755	-3.867621	3.066140
				H	-0.824176	-4.274885	0.770883

H	-3.223999	-4.220368	0.195843	H	-4.918981	-4.723975	3.633133
H	-2.277446	-3.310446	-2.517785	H	-8.198020	-3.128789	2.785060
H	-3.916059	-1.804850	-0.491444	H	-7.905816	-4.845609	2.947092
H	-2.069162	-2.242846	1.246106	H	-7.202300	-3.747305	4.112895
H	0.441436	-3.132647	-1.085728				
H	-1.486722	-5.533514	-1.592613				
H	-4.257537	-4.671514	-2.247707				
H	-0.222869	-0.531744	1.077105				
H	0.220683	-2.047526	1.863178				
H	1.862085	-1.568115	0.234083				
H	-4.851139	-0.008999	-1.290019				
H	-4.529383	0.009603	-4.301275				
H	-4.087925	2.215521	-2.000886				
H	-2.770328	1.323018	-4.094870				
H	-6.611891	1.217442	-4.019387				
H	-1.658072	2.775030	-1.166709				
H	0.023909	4.660619	-2.688760				
H	0.108289	6.146446	-0.728848				
H	-1.547515	5.927415	-1.287292				
H	-1.718595	4.063317	0.495203				
H	-0.202243	4.684948	1.132994				
H	-1.377858	6.927328	1.438287				
H	-2.865065	6.157214	0.909556				
H	-1.231995	5.502080	3.394158				
H	-2.859949	6.162135	3.353105				
H	-2.170929	3.409992	2.579519				
H	-2.209801	0.498615	-0.688825				
H	-5.539781	-2.035583	-3.412154				
H	-6.684435	-1.062241	-2.483706				
H	-7.540181	-1.607337	-4.688560				
H	-1.517886	-0.247591	-2.749472				
H	0.250040	1.738211	-1.834214				
H	1.901311	1.718147	0.502330				
H	1.497768	0.368811	-0.563466				
H	3.319624	1.052614	-2.097959				
H	3.647909	2.448964	-1.061329				
H	-5.769650	2.672430	4.838228				
H	-3.283928	1.991399	1.456212				
H	-6.582716	0.353041	4.687374				
H	-4.002534	-0.316526	1.374940				
H	-6.755362	-1.650572	3.573556				
H	-7.367815	-3.237512	0.424378				
H	-5.777817	-3.874088	0.035676				
H	-7.063946	-4.964268	0.561219				
H	-5.636437	-5.853724	2.487277				
H	-4.317658	-4.798929	1.983440				