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SYNTHESIS OF ACETAMIDOSULFONAMIDE DERIVATIVES WITH ANTIOXIDATIVE AND QSAR STUDIES

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Table S1: Intercorrelation matrix of significant descriptors for predicted RSA

	G2u	Lop	RDF120m	N-067	H1v	RDF045m
G2u	1.000					
Lop	-0.128	1.000				
RDF120m	-0.195	0.222	1.000			
N-067	0.201	0.213	0.155	1.000		
H1v	0.038	-0.61	0.102	-0.363	1.000	
RDF045m	0.131	0.507	0.013	0.124	0.122	1.000

Table S2: Intercorrelation matrix of significant descriptors for predicted SOD activity

	RDF120m	Mor27u	R7u+	BELp5	G3m	BELm8
RDF120m	1.000					
Mor27u	-0.119	1.000				
R7u+	0.055	0.089	1.000			
BELp5	-0.042	0.1	-0.063	1.000		
G3m	-0.079	-0.244	0.49	0.186	1.000	
BELm8	0.287	-0.151	-0.51	0.565	0.117	1.000

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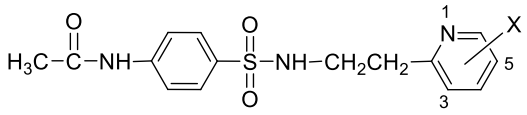
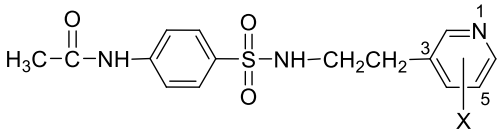
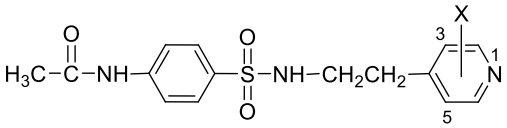
Table S3: New 80 rationally designed sulfonamide derivatives with predicted antioxidant activities



15-(1-32)



15-(33-64)



15-(65-80)

Compound	X	Predicted activity (%)	
		RSA	SOD
15-1	3-OH	0.34	25.13
15-2	3-OCH_3	NA	29.63
15-3	3-NH_2	4.40	28.16
15-4	3-SH	6.42	42.14
15-5	3-CN	7.98	34.20
15-6	3-NO_2	2.17	28.66
15-7	3-COH	0.15	32.78
15-8	3-COOH	NA	30.57
15-9	4-OH	4.88	36.45
15-10	4-OCH_3	3.73	27.62
15-11	4-NH_2	4.48	27.26
15-12	4-SH	4.43	40.00
15-13	4-CN	1.89	34.18
15-14	4-NO_2	4.81	44.65
15-15	4-COH	5.67	37.88
15-16	4-COOH	3.06	29.96
15-17	5-OH	1.82	32.13
15-18	5-OCH_3	5.31	33.69
15-19	5-NH_2	2.14	26.09
15-20	5-SH	2.90	31.57
15-21	5-CN	3.98	31.61
15-22	5-NO_2	8.09	42.78
15-23	5-COH	6.67	38.26
15-24	5-COOH	0.78	26.99

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Compound	X	Predicted activity (%)	
		RSA	SOD
15-25	6-OH	NA	31.33
15-26	6-OCH_3	4.74	37.09
15-27	6-NH_2	NA	30.13
15-28	6-SH	7.13	40.68
15-29	6-CN	4.00	36.01
15-30	6-NO_2	8.55	42.53
15-31	6-COH	5.46	35.47
15-32	6-COOH	NA	35.19
15-33	2-OH	NA	30.61
15-34	2-OCH_3	0.07	27.89
15-35	2-NH_2	NA	34.87
15-36	2-SH	5.98	35.16
15-37	2-CN	NA	29.94
15-38	2-NO_2	NA	30.26
15-39	2-COH	2.38	37.82
15-40	2-COOH	4.21	36.56
15-41	4-OH	2.95	27.74
15-42	4-OCH_3	NA	28.11
15-43	4-NH_2	3.72	29.99
15-44	4-SH	1.29	31.14
15-45	4-CN	NA	28.36
15-46	4-NO_2	NA	31.25
15-47	4-COH	4.84	42.63
15-48	4-COOH	0.94	30.08
15-49	5-OH	6.91	29.12
15-50	5-OCH_3	1.13	25.71
15-51	5-NH_2	3.04	31.41
15-52	5-SH	NA	30.02
15-53	5-CN	4.10	39.54
15-54	5-NO_2	NA	30.40
15-55	5-COH	3.07	30.00
15-56	5-COOH	2.18	29.15
15-57	6-OH	NA	27.84
15-58	6-OCH_3	0.67	34.44
15-59	6-NH_2	3.68	33.91
15-60	6-SH	6.52	29.92

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Compound	X	Predicted activity (%)	
		RSA	SOD
15-61	6-CN	4.08	33.47
15-62	6-NO_2	1.37	33.53
15-63	6-COH	4.10	29.20
15-64	6-COOH	6.45	39.06
15-65	2-OH	2.85	37.34
15-66	2-OCH_3	2.72	38.99
15-67	2-NH_2	1.66	30.29
15-68	2-SH	4.05	32.71
15-69	2-CN	0.98	32.05
15-70	2-NO_2	1.89	23.00
15-71	2-COH	NA	30.81
15-72	2-COOH	NA	22.60
15-73	3-OH	0.51	26.60
15-74	3-OCH_3	0.77	28.05
15-75	3-NH_2	5.26	37.45
15-76	3-SH	1.92	36.16
15-77	3-CN	0.56	32.38
15-78	3-NO_2	NA	33.55
15-79	3-COH	NA	27.87
15-80	3-COOH	NA	25.46

NA: no activity

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Table S4: Molecular descriptor values of 80 new sulfonamide derivatives for predicted RSA

Compound	G2u	Lop	RDF120m	N-067	H1v	RDF045m
15-1	0.171	1.069	0.006	1	1.232	12.530
15-2	0.178	1.152	1.003	1	1.258	5.825
15-3	0.194	1.069	1.127	1	1.072	10.676
15-4	0.183	1.069	4.373	1	1.205	23.425
15-5	0.238	1.152	2.530	1	1.21	12.781
15-6	0.194	1.157	1.461	1	1.246	11.962
15-7	0.170	1.152	1.712	1	1.217	11.701
15-8	0.180	1.157	0.071	1	1.252	8.409
15-9	0.183	1.069	2.860	1	1.052	10.887
15-10	0.208	1.152	1.051	1	1.142	9.558
15-11	0.200	1.069	0.734	1	1.106	10.472
15-12	0.177	1.069	3.676	1	1.165	12.091
15-13	0.183	1.152	3.065	1	1.261	6.005
15-14	0.194	1.157	3.787	1	1.104	10.361
15-15	0.194	1.152	4.409	1	1.065	10.524
15-16	0.192	1.157	2.466	1	1.146	8.280
15-17	0.171	1.069	1.679	1	1.169	9.077
15-18	0.201	1.152	3.23	1	1.079	10.525
15-19	0.194	1.069	0.008	1	1.235	6.278
15-20	0.183	1.069	1.653	1	1.225	11.092
15-21	0.209	1.152	1.925	1	1.208	7.003
15-22	0.220	1.157	4.543	1	1.116	10.565
15-23	0.220	1.152	3.904	1	1.231	6.905
15-24	0.180	1.157	1.580	1	1.175	6.837
15-25	0.158	1.069	0.094	1	1.225	9.962
15-26	0.195	1.152	3.159	1	1.060	10.587
15-27	0.157	1.069	0.000	1	1.265	8.127
15-28	0.183	1.069	5.589	1	1.109	13.621
15-29	0.209	1.152	2.204	1	1.286	9.511
15-30	0.227	1.157	4.311	1	1.138	11.257
15-31	0.194	1.152	4.492	1	1.118	10.727
15-32	0.180	1.157	0.000	1	1.325	12.768
15-33	0.171	1.069	0.000	1	1.322	7.291
15-34	0.190	1.152	0.000	1	1.271	7.403
15-35	0.157	1.069	0.000	1	1.300	6.925
15-36	0.196	1.069	2.926	1	1.160	14.469
15-37	0.171	1.152	1.537	1	1.241	9.703

Compound	G2u	Lop	RDF120m	N-067	H1v	RDF045m
15-38	0.182	1.157	0.000	1	1.328	12.779
15-39	0.182	1.152	2.132	1	1.120	12.751
15-40	0.204	1.157	1.682	1	1.123	13.451
15-41	0.196	1.069	0.007	1	1.195	10.595
15-42	0.168	1.152	0.315	1	1.208	8.889
15-43	0.206	1.069	0.000	1	1.250	11.202
15-44	0.183	1.069	0.000	1	1.325	15.224
15-45	0.171	1.152	0.985	1	1.360	5.638
15-46	0.170	1.157	0.410	1	1.252	11.345
15-47	0.206	1.152	2.297	1	1.168	14.026
15-48	0.180	1.157	1.564	1	1.228	12.131
15-49	0.223	1.069	1.464	1	1.196	9.969
15-50	0.190	1.152	0.078	1	1.195	13.887
15-51	0.206	1.069	0.021	1	1.300	6.500
15-52	0.171	1.069	0.361	1	1.358	9.159
15-53	0.189	1.152	4.753	1	1.276	8.612
15-54	0.182	1.157	0.399	1	1.244	10.921
15-55	0.194	1.152	1.753	1	1.109	9.473
15-56	0.204	1.157	0.404	1	1.173	5.967
15-57	0.158	1.069	0.732	1	1.206	9.888
15-58	0.178	1.152	1.872	1	1.207	6.109
15-59	0.170	1.069	3.647	1	1.134	10.121
15-60	0.223	1.069	0.653	1	1.174	11.919
15-61	0.202	1.152	2.841	1	1.234	9.087
15-62	0.194	1.157	0.310	1	1.205	11.324
15-63	0.206	1.152	1.698	1	1.145	9.982
15-64	0.204	1.157	4.220	1	1.047	9.390
15-65	0.171	1.069	2.885	1	1.179	9.783
15-66	0.190	1.152	2.001	1	1.140	9.825
15-67	0.182	1.069	0.171	1	1.182	9.812
15-68	0.196	1.069	0.855	1	1.178	13.680
15-69	0.183	1.152	1.659	1	1.299	11.695
15-70	0.200	1.157	0.000	1	1.275	17.763
15-71	0.170	1.152	0.000	1	1.285	16.196
15-72	0.156	1.157	0.000	1	1.276	18.435
15-73	0.171	1.069	0.000	1	1.271	16.950
15-74	0.19	1.152	0.000	1	1.302	17.310
15-75	0.200	1.069	1.675	1	1.147	12.829

Compound	G2u	Lop	RDF120m	N-067	H1v	RDF045m
15-76	0.177	1.069	1.529	1	1.284	12.010
15-77	0.196	1.152	0.000	1	1.353	11.192
15-78	0.170	1.157	0.000	1	1.279	27.558
15-79	0.157	1.152	0.000	1	1.290	16.341
15-80	0.169	1.157	0.000	1	1.286	18.067

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Table S5: Molecular descriptor values of 80 new sulfonamide derivatives for predicted SOD activity

Compound	RDF120m	Mor27u	R7u+	BELp5	G3m	BELm8
15-1	0.006	-0.171	0.035	1.296	0.189	0.917
15-2	1.003	-0.286	0.019	1.374	0.156	0.970
15-3	1.127	-0.047	0.026	1.296	0.206	0.946
15-4	4.373	0.088	0.028	1.296	0.158	0.885
15-5	2.530	-0.153	0.035	1.296	0.158	0.941
15-6	1.461	-0.287	0.023	1.508	0.176	0.944
15-7	1.712	0.098	0.024	1.297	0.200	0.947
15-8	0.071	-0.109	0.028	1.331	0.156	0.945
15-9	2.860	0.011	0.024	1.303	0.171	0.909
15-10	1.051	-0.209	0.026	1.381	0.190	1.012
15-11	0.734	-0.083	0.020	1.317	0.206	0.999
15-12	3.676	0.051	0.023	1.293	0.158	0.873
15-13	3.065	-0.095	0.020	1.317	0.183	0.982
15-14	3.787	0.190	0.023	1.475	0.157	0.993
15-15	4.409	0.016	0.025	1.329	0.194	1.001
15-16	2.466	-0.287	0.021	1.359	0.18	0.994
15-17	1.679	-0.097	0.028	1.309	0.171	0.926
15-18	3.230	-0.247	0.021	1.390	0.168	0.988
15-19	0.008	-0.187	0.019	1.332	0.182	0.930
15-20	1.653	-0.199	0.024	1.289	0.158	0.925
15-21	1.925	-0.053	0.024	1.331	0.189	0.928
15-22	4.543	0.112	0.022	1.469	0.170	0.929
15-23	3.904	-0.029	0.024	1.346	0.170	0.930
15-24	1.580	-0.257	0.021	1.374	0.192	0.929
15-25	0.094	-0.001	0.022	1.303	0.165	0.909
15-26	3.159	0.005	0.021	1.388	0.178	0.979
15-27	0.000	-0.129	0.018	1.320	0.157	0.959
15-28	5.589	0.005	0.025	1.293	0.177	0.850
15-29	2.204	-0.038	0.026	1.319	0.158	0.952
15-30	4.311	0.078	0.028	1.485	0.164	0.956
15-31	4.492	0.048	0.025	1.334	0.220	0.960
15-32	0.000	0.128	0.024	1.368	0.156	0.957
15-33	0.000	-0.060	0.018	1.292	0.158	0.880
15-34	0.000	-0.201	0.023	1.380	0.168	0.978
15-35	0.000	0.130	0.018	1.292	0.157	0.960
15-36	2.926	-0.020	0.028	1.292	0.171	0.809
15-37	1.537	-0.137	0.022	1.292	0.183	0.951

Compound	RDF120m	Mor27u	R7u+	BELp5	G3m	BELm8
15-38	0.000	-0.087	0.022	1.512	0.170	0.956
15-39	2.132	0.063	0.026	1.293	0.157	0.961
15-40	1.682	0.028	0.026	1.341	0.156	0.957
15-41	0.007	-0.059	0.029	1.292	0.183	0.886
15-42	0.315	-0.176	0.020	1.370	0.178	1.010
15-43	0.000	0.001	0.020	1.292	0.182	1.009
15-44	0.000	0.093	0.020	1.292	0.177	0.854
15-45	0.985	-0.185	0.018	1.292	0.183	1.003
15-46	0.410	-0.167	0.031	1.500	0.157	1.009
15-47	2.297	0.280	0.023	1.293	0.157	1.009
15-48	1.564	-0.216	0.022	1.324	0.174	1.009
15-49	1.464	-0.077	0.023	1.301	0.196	0.900
15-50	0.078	-0.265	0.025	1.385	0.178	0.976
15-51	0.021	0.023	0.017	1.320	0.170	0.935
15-52	0.361	-0.128	0.017	1.287	0.158	0.876
15-53	4.753	-0.112	0.028	1.319	0.158	0.924
15-54	0.399	0.041	0.025	1.476	0.194	0.930
15-55	1.753	-0.095	0.024	1.334	0.194	0.937
15-56	0.404	-0.119	0.025	1.365	0.174	0.932
15-57	0.732	-0.216	0.022	1.306	0.171	0.897
15-58	1.872	-0.065	0.020	1.393	0.168	0.994
15-59	3.647	-0.028	0.025	1.331	0.206	0.964
15-60	0.653	-0.162	0.022	1.284	0.158	0.880
15-61	2.841	0.018	0.023	1.330	0.202	0.944
15-62	0.310	-0.010	0.027	1.473	0.157	0.955
15-63	1.698	-0.073	0.027	1.347	0.206	0.967
15-64	4.220	-0.045	0.024	1.377	0.169	0.958
15-65	2.885	-0.022	0.032	1.294	0.158	0.931
15-66	2.001	0.088	0.021	1.388	0.156	1.009
15-67	0.171	-0.051	0.031	1.314	0.170	0.960
15-68	0.855	-0.045	0.023	1.282	0.158	0.909
15-69	1.659	-0.105	0.035	1.313	0.171	0.952
15-70	0.000	-0.397	0.019	1.482	0.182	0.956
15-71	0.000	-0.092	0.024	1.331	0.157	0.961
15-72	0.000	-0.403	0.019	1.367	0.180	0.957
15-73	0.000	-0.208	0.030	1.286	0.171	0.937
15-74	0.000	-0.275	0.019	1.375	0.156	1.003
15-75	1.675	0.099	0.023	1.287	0.157	0.942

Compound	RDF120m	Mor27u	R7u+	BELp5	G3m	BELm8
15-76	1.529	0.134	0.025	1.286	0.171	0.934
15-77	0.000	0.020	0.029	1.287	0.158	0.940
15-78	0.000	0.174	0.031	1.503	0.182	0.941
15-79	0.000	-0.224	0.033	1.287	0.157	0.943
15-80	0.000	-0.154	0.034	1.333	0.192	0.941

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Table S6: Lipinski rule of five of sulfonamide derivatives (**1**-**16**)

Compound	MW	nHDon	nHAcc	ALogP	Rule of five[a]
1	304.40	2	5	1.640	***0***
2	305.39	2	6	0.917	***0***
3	305.39	2	6	0.489	***0***
4	298.40	2	6	0.415	***0***
5	297.42	1	6	0.549	***0***
6	373.52	1	6	2.133	***0***
7	480.62	2	10	0.821	***0***
8	284.37	1	6	0.280	***0***
9	330.44	1	5	2.250	***0***
10	296.43	2	5	1.914	***0***
11	282.40	2	5	1.458	***0***
12	290.37	2	5	1.911	***0***
13	318.43	2	5	1.961	***0***
14	378.49	2	7	1.928	***0***
15	319.42	2	6	0.952	***0***
16	313.47	2	6	0.892	***0***

MW: molecular weight <500; nHDon: number of hydrogen bond donor <5; nHAcc: number of hydrogen bond acceptor; AlogP: partition coefficient
[a]Rule of five-number of Lipinsky rule violation

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Table S7: Lipinski rule of five of 80 new rationally designed sulfonamide derivatives

Compound	MW	nHDon	nHAcc	ALogP	Rule of five[a]
15-1	335.42	3	7	0.685	0
15-2	349.45	2	7	0.936	0
15-3	334.44	4	7	0.206	0
15-4	351.49	2	6	1.312	0
15-5	344.43	2	7	0.831	0
15-6	364.42	2	8	0.847	0
15-7	347.43	2	7	0.712	0
15-8	363.43	3	8	0.557	0
15-9	335.42	3	7	0.685	0
15-10	349.45	2	7	0.936	0
15-11	334.44	4	7	0.206	0
15-12	351.49	2	6	1.312	0
15-13	344.43	2	7	0.831	0
15-14	364.42	2	8	0.847	0
15-15	347.43	2	7	0.712	0
15-16	363.43	3	8	0.557	0
15-17	335.42	3	7	0.685	0
15-18	349.45	2	7	0.936	0
15-19	334.44	4	7	0.206	0
15-20	351.49	2	6	1.312	0
15-21	344.43	2	7	0.831	0
15-22	364.42	2	8	0.847	0
15-23	347.43	2	7	0.712	0
15-24	363.43	3	8	0.557	0
15-25	335.42	3	7	1.224	0
15-26	349.45	2	7	1.475	0
15-27	334.44	4	7	0.745	0
15-28	351.49	2	6	1.851	0
15-29	344.43	2	7	1.260	0
15-30	364.42	2	8	1.386	0
15-31	347.43	2	7	1.140	0
15-32	363.43	3	8	0.985	0
15-33	335.42	3	7	1.082	0
15-34	349.45	2	7	1.333	0
15-35	334.44	4	7	0.603	0
15-36	351.49	2	6	1.709	0
15-37	344.43	2	7	1.118	0

Compound	MW	nHDon	nHAcc	ALogP	Rule of five[a]
15-38	364.42	2	8	1.244	0
15-39	347.43	2	7	0.998	0
15-40	363.43	3	8	0.843	0
15-41	335.42	3	7	0.543	0
15-42	349.45	2	7	0.794	0
15-43	334.44	4	7	0.063	0
15-44	351.49	2	6	1.170	0
15-45	344.43	2	7	0.689	0
15-46	364.42	2	8	0.704	0
15-47	347.43	2	7	0.569	0
15-48	363.43	3	8	0.414	0
15-49	335.42	3	7	0.543	0
15-50	349.45	2	7	0.794	0
15-51	334.44	4	7	0.063	0
15-52	351.49	2	6	1.170	0
15-53	344.43	2	7	0.689	0
15-54	364.42	2	8	0.704	0
15-55	347.43	2	7	0.569	0
15-56	363.43	3	8	0.414	0
15-57	335.42	3	7	1.082	0
15-58	349.45	2	7	1.333	0
15-59	334.44	4	7	0.603	0
15-60	351.49	2	6	1.709	0
15-61	344.43	2	7	1.118	0
15-62	364.42	2	8	1.244	0
15-63	347.43	2	7	0.998	0
15-64	363.43	3	8	0.843	0
15-65	335.42	3	7	1.082	0
15-66	349.45	2	7	1.333	0
15-67	334.44	4	7	0.603	0
15-68	351.49	2	6	1.709	0
15-69	344.43	2	7	1.118	0
15-70	364.42	2	8	1.244	0
15-71	347.43	2	7	0.998	0
15-72	363.43	3	8	0.843	0

Compound	MW	nHDon	nHAcc	ALogP	Rule of five[a]
15-73	335.42	3	7	0.543	0
15-74	349.45	2	7	0.794	0
15-75	334.44	4	7	0.063	0
15-76	351.49	2	6	1.170	0
15-77	344.43	2	7	0.689	0
15-78	364.42	2	8	0.704	0
15-79	347.43	2	7	0.569	0
15-80	363.43	3	8	0.414	0

MW: molecular weight <500; nHDon: number of hydrogen bond donor <5; nHAcc: number of hydrogen bond acceptor; AlogP: partition coefficient
[a]Rule of five-number of Lipinsky rule violation