

Figure S1. Identification of overlapping genes in the TNF signaling pathway, NF- κ B signaling pathway and apoptosis. Twelve common elements (TRAF2, TNF, NFKBIA, NFKB1, TNFRSF1A, CHUK, RELA, BIRC3, BIRC2, TRADD, RIPK1 and IKBKG) were identified via Venn analysis.

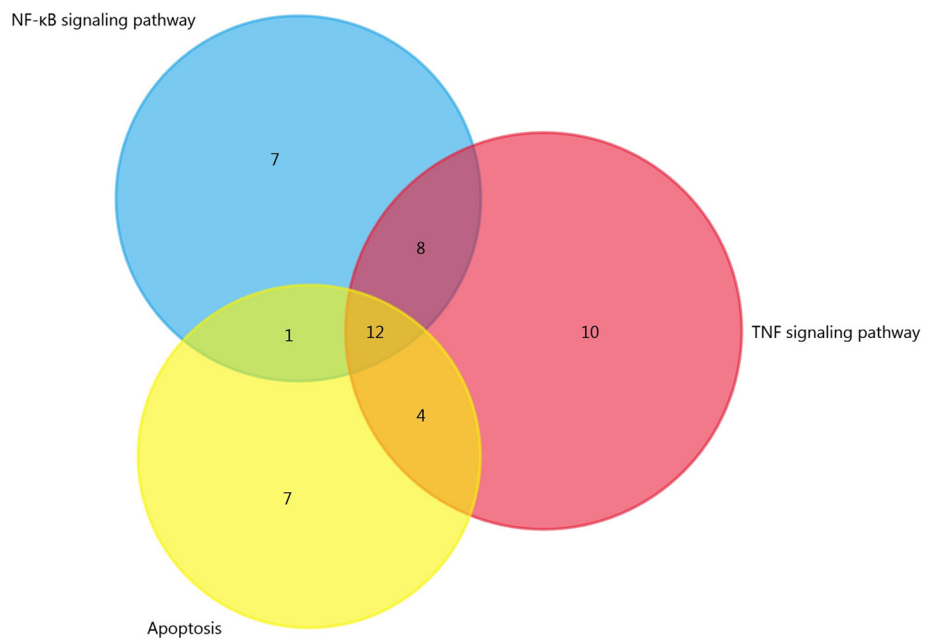


Table SI. Predicted functional partners of five glycyrrhizic acid primary protein targets, as determined by STRING protein-protein interaction analysis.

Searched_Drug		Target-protein interactions				
#	Name	Target_Symbol	Target_ID	PPI_Symbol	PPI_ID	Combined_Score
1	Glycyrrhizic acid	CASP3	836	CYCS	54205	0.997
2	Glycyrrhizic acid	CASP3	836	BIRC2	329	0.996
3	Glycyrrhizic acid	CASP3	836	BIRC3	330	0.995
4	Glycyrrhizic acid	CASP3	836	BIRC5	332	0.99
5	Glycyrrhizic acid	CASP3	836	TNFSF10	8743	0.987
6	Glycyrrhizic acid	CASP3	836	GZMB	3002	0.985
7	Glycyrrhizic acid	CASP3	836	FADD	8772	0.982
8	Glycyrrhizic acid	CASP3	836	RB1	5925	0.976
9	Glycyrrhizic acid	CASP3	836	TNFRSF10B	8795	0.973
10	Glycyrrhizic acid	CASP3	836	TNFRSF10A	8797	0.973
11	Glycyrrhizic acid	CASP3	836	CDH1	999	0.971
12	Glycyrrhizic acid	CASP3	836	AKT1	207	0.971
13	Glycyrrhizic acid	CASP3	836	BIRC7	79444	0.969
14	Glycyrrhizic acid	CASP3	836	MAPK14	1432	0.967
15	Glycyrrhizic acid	CASP3	836	VIM	7431	0.966
16	Glycyrrhizic acid	CASP3	836	BAX	581	0.965
17	Glycyrrhizic acid	CASP3	836	CASP6	839	0.961
18	Glycyrrhizic acid	CASP3	836	ACIN1	22985	0.959
19	Glycyrrhizic acid	CASP3	836	TP53	7157	0.953
20	Glycyrrhizic acid	CASP3	836	IL16	3603	0.949
21	Glycyrrhizic acid	CASP3	836	PRKCQ	5588	0.946
22	Glycyrrhizic acid	CASP3	836	ARHGDIB	397	0.945
23	Glycyrrhizic acid	CASP3	836	CASP10	843	0.944
24	Glycyrrhizic acid	HSD11B1	3290	AKR1D1	6718	0.961
25	Glycyrrhizic acid	HSD11B1	3290	CYP2E1	1571	0.927
26	Glycyrrhizic acid	HSD11B1	3290	UGT2A3	79799	0.908
27	Glycyrrhizic acid	HSD11B1	3290	EHHADH	1962	0.81
28	Glycyrrhizic acid	HSD11B1	3290	NR3C1	2908	0.641
29	Glycyrrhizic acid	LPL	4023	APOE	348	0.991
30	Glycyrrhizic acid	LPL	4023	APOB	338	0.991
31	Glycyrrhizic acid	LPL	4023	ANGPTL4	51129	0.987
32	Glycyrrhizic acid	LPL	4023	APOC3	345	0.981
33	Glycyrrhizic acid	LPL	4023	APOA1	335	0.978
34	Glycyrrhizic acid	LPL	4023	PPARG	5468	0.974
35	Glycyrrhizic acid	LPL	4023	PPARA	5465	0.969
36	Glycyrrhizic acid	LPL	4023	FABP4	2167	0.966
37	Glycyrrhizic acid	LPL	4023	MGLL	11343	0.946
38	Glycyrrhizic acid	LPL	4023	PPARGC1A	10891	0.944
39	Glycyrrhizic acid	LPL	4023	CPT1A	1374	0.943
40	Glycyrrhizic acid	LPL	4023	NR3C1	2168	0.941
41	Glycyrrhizic acid	LPL	4023	FABP1	3630	0.941
42	Glycyrrhizic acid	LPL	4023	INS	23175	0.938
43	Glycyrrhizic acid	LPL	4023	LPIN1	51	0.935
44	Glycyrrhizic acid	LPL	4023	ACOX1	80339	0.933
45	Glycyrrhizic acid	LPL	4023	PNPLA3	4035	0.928
46	Glycyrrhizic acid	LPL	4023	LRP1	55908	0.925
47	Glycyrrhizic acid	LPL	4023	C19orf80	5469	0.921
48	Glycyrrhizic acid	LPL	4023	MED1	5045	0.92
49	Glycyrrhizic acid	LPL	4023	EHHADH	9611	0.92
50	Glycyrrhizic acid	LPL	4023	FURIN	8841	0.918
51	Glycyrrhizic acid	LPL	4023	NCOR1	9412	0.917
52	Glycyrrhizic acid	LPL	4023	HDAC3	9663	0.915
53	Glycyrrhizic acid	LPL	4023	MED21	9442	0.915

Table SI. Continued.

Searched_Drug		Target-protein interactions				
#	Name	Target_Symbol	Target_ID	PPI_Symbol	PPI_ID	Combined_Score
54	Glycyrrhizic acid	LPL	4023	LPIN2	9441	0.914
55	Glycyrrhizic acid	LPL	4023	MED27	602	0.913
56	Glycyrrhizic acid	LPL	4023	MED26	5971	0.913
57	Glycyrrhizic acid	NFKB2	4791	BCL3	4792	0.993
58	Glycyrrhizic acid	NFKB2	4791	RELB	4793	0.989
59	Glycyrrhizic acid	NFKB2	4791	NFKBIA	8517	0.984
60	Glycyrrhizic acid	NFKB2	4791	NFKBIB	4790	0.981
61	Glycyrrhizic acid	NFKB2	4791	IKBKG	5966	0.973
62	Glycyrrhizic acid	NFKB2	4791	NFKB1	8737	0.953
63	Glycyrrhizic acid	NFKB2	4791	REL	3553	0.949
64	Glycyrrhizic acid	NFKB2	4791	RIPK1	5717	0.944
65	Glycyrrhizic acid	NFKB2	4791	IL1B	7316	0.943
66	Glycyrrhizic acid	NFKB2	4791	PSMD11	23291	0.941
67	Glycyrrhizic acid	NFKB2	4791	UBC	8454	0.938
68	Glycyrrhizic acid	NFKB2	4791	FBXW11	7297	0.938
69	Glycyrrhizic acid	NFKB2	4791	CUL1	6500	0.935
70	Glycyrrhizic acid	NFKB2	4791	TYK2	3552	0.931
71	Glycyrrhizic acid	NFKB2	4791	SKP1	11035	0.929
72	Glycyrrhizic acid	NFKB2	4791	IL1A	5710	0.928
73	Glycyrrhizic acid	NFKB2	4791	RIPK3	5713	0.926
74	Glycyrrhizic acid	NFKB2	4791	PSMD4	3593	0.924
75	Glycyrrhizic acid	NFKB2	4791	PSMD7	3606	0.924
76	Glycyrrhizic acid	NFKB2	4791	IL12B	5700	0.923
77	Glycyrrhizic acid	NFKB2	4791	IL18	5699	0.923
78	Glycyrrhizic acid	NFKB2	4791	PSMC1	5705	0.922
79	Glycyrrhizic acid	NFKB2	4791	PSMB10	5704	0.922
80	Glycyrrhizic acid	NFKB2	4791	PSMC5	5709	0.922
81	Glycyrrhizic acid	NFKB2	4791	PSMC4	5714	0.92
82	Glycyrrhizic acid	NFKB2	4791	PSMD3	5707	0.92
83	Glycyrrhizic acid	NFKB2	4791	PSMD8	5701	0.92
84	Glycyrrhizic acid	NFKB2	4791	PSMD1	5702	0.919
85	Glycyrrhizic acid	NFKB2	4791	PSMC2	5686	0.919
86	Glycyrrhizic acid	NFKB2	4791	PSMC3	5708	0.919
87	Glycyrrhizic acid	NFKB2	4791	PSMA5	5684	0.918
88	Glycyrrhizic acid	NFKB2	4791	PSMD2	5718	0.917
89	Glycyrrhizic acid	NFKB2	4791	PSMA3	7314	0.916
90	Glycyrrhizic acid	NFKB2	4791	PSMD12	9861	0.916
91	Glycyrrhizic acid	NFKB2	4791	UBB	5689	0.916
92	Glycyrrhizic acid	NFKB2	4791	PSMD6	7979	0.915
93	Glycyrrhizic acid	NFKB2	4791	PSMB1	7133	0.914
94	Glycyrrhizic acid	NFKB2	4791	SHFM1	7132	0.914
95	Glycyrrhizic acid	TNF	7124	TNFRSF1B	8717	0.999
96	Glycyrrhizic acid	TNF	7124	TNFRSF1A	7186	0.998
97	Glycyrrhizic acid	TNF	7124	BIRC2	23118	0.995
98	Glycyrrhizic acid	TNF	7124	IKBKG	6885	0.994
99	Glycyrrhizic acid	TNF	7124	RIPK1	959	0.992
100	Glycyrrhizic acid	TNF	7124	TRADD	3569	0.992
101	Glycyrrhizic acid	TNF	7124	TRAF2	5970	0.99
102	Glycyrrhizic acid	TNF	7124	NFKB1	7185	0.989
103	Glycyrrhizic acid	TNF	7124	TAB2	10673	0.986
104	Glycyrrhizic acid	TNF	7124	IL1B	3725	0.983
105	Glycyrrhizic acid	TNF	7124	BIRC3	3458	0.983
106	Glycyrrhizic acid	TNF	7124	MAP3K7	4055	0.983
107	Glycyrrhizic acid	TNF	7124	FADD	1147	0.982

Table SI. Continued.

Searched_Drug		Target-protein interactions				
#	Name	Target_Symbol	Target_ID	PPI_Symbol	PPI_ID	Combined_Score
108	Glycyrrhizic acid	TNF	7124	CD40LG	6868	0.981
109	Glycyrrhizic acid	TNF	7124	IL6	2353	0.981
110	Glycyrrhizic acid	TNF	7124	RELA	7128	0.979
111	Glycyrrhizic acid	TNF	7124	TRAF1	3558	0.979
112	Glycyrrhizic acid	TNF	7124	TNFSF13B	331	0.978
113	Glycyrrhizic acid	TNF	7124	JUN	3565	0.978
114	Glycyrrhizic acid	TNF	7124	IFNG	10454	0.977
115	Glycyrrhizic acid	TNF	7124	PSMC3	9530	0.977
116	Glycyrrhizic acid	TNF	7124	LTBR	7187	0.975
117	Glycyrrhizic acid	TNF	7124	CHUK	1437	0.974
118	Glycyrrhizic acid	TNF	7124	ADAM17	115650	0.971
119	Glycyrrhizic acid	TNF	7124	FOS	55072	0.971
120	Glycyrrhizic acid	TNF	7124	IL8	3383	0.97
121	Glycyrrhizic acid	TNF	7124	TNFAIP3	1540	0.966
122	Glycyrrhizic acid	TNF	7124	IL2	6347	0.965
123	Glycyrrhizic acid	TNF	7124	XIAP	10616	0.964
124	Glycyrrhizic acid	TNF	7124	IL4	51330	0.96
125	Glycyrrhizic acid	TNF	7124	TAB1	6610	0.958
126	Glycyrrhizic acid	TNF	7124	BAG4	54205	0.954
127	Glycyrrhizic acid	TNF	7124	TRAF3	329	0.952
128	Glycyrrhizic acid	TNF	7124	CSF2	330	0.951
129	Glycyrrhizic acid	TNF	7124	UBC	332	0.951
130	Glycyrrhizic acid	TNF	7124	TNFRSF13C	8743	0.95
131	Glycyrrhizic acid	TNF	7124	RNF31	3002	0.949
132	Glycyrrhizic acid	TNF	7124	ICAM1	8772	0.947
133	Glycyrrhizic acid	TNF	7124	CYLD	5925	0.946
134	Glycyrrhizic acid	TNF	7124	CCL2	8795	0.946
135	Glycyrrhizic acid	TNF	7124	RBCK1	8797	0.944
136	Glycyrrhizic acid	TNF	7124	TNFRSF12A	999	0.941
137	Glycyrrhizic acid	TNF	7124	PSMD2	207	0.941
138	Glycyrrhizic acid	TNF	7124	SMPD2	79444	0.941

Active interaction sources: Textmining, Experiments, Databases, Co-expression, Neighborhood, Gene Fusion, Co-occurrence. Minimum required interaction score: Confidence (0.500). Maximum number of interactions to show: No more than 50 interactions.