

Supplementary materials

Supplementary tables

Tab. S1 Information Table for 29 Sample Collection Sites of *Cornus officinalis*

Batch.NO	Locality	longitude (E)	latitude (N)	altitude (m)
1	LongGang Town	119.1092	30.2418	140
2	FenKou Town	118.5458	29.4393	110
3	HuaYang Town	107.5334	33.5979	1150
4	XiChahe Town	107.9794	33.4653	880
5	ShiDunhe Town	108.0825	33.4428	700
6	DaHeba Town	108.0213	33.3523	530
7	YueBa Town	107.8453	33.4797	1120
8	ChangJiaoba Town	107.9592	33.6944	1120
9	YueJiazhuang Town	107.9928	33.5078	1100
10	CaiChuan Town	110.3071	33.8565	1260
11	WuGuan Town	110.6604	33.6304	480
12	TuMen Town	110.3253	33.4636	480
13	YuLing Town	110.4967	33.9010	1270
14	ChenHe Town	108.2085	34.2134	690
15	JingKou Town	107.1776	34.0399	1400
16	TanTou Town	111.7592	34.0080	480
17	MaShankou Town	112.0113	33.1938	220
18	ZhuLin Town	113.1451	34.7127	330

19	YangCheng Town	111.6968	33.2788	310
20	DanShui Town	111.7475	33.1580	220
21	MiPing Town	111.4758	33.66201	860
22	QvGou Town	114.2197	36.1121	100
23	YaoShan Town	112.3793	33.7587	350
24	YunTai Town	105.6752	33.4450	1300
25	XinCheng Town	111.6659	35.2830	580
26	MangHe Town	112.4470	35.3877	720
27	MoZitan Town	116.2846	31.2188	230
28	XiaoBa Town	104.3186	31.6394	640
29	JingFu Town	105.1668	30.9055	430

Tab. S2 RGB values of 29 batches of Corni Fructus.

NO.	R	G	B	NO.	R	G	B	NO.	R	G	B	NO.	R	G	B
1	107.69	58.35	51.16	9	113.86	62.58	54.45	17	108.51	66.31	57.1	25	106.42	65.67	58.12
	108.56	55.93	48.63		116.67	63.73	54.76		112.35	71.87	63.14		107.9	66.85	59.17
	108.60	57.76	52.18		116.26	63.64	55.89		108.03	64.88	55.37		109.19	67.04	60.05
	108.73	57.36	50.52		117.13	63.89	55.83		108.44	64.99	54.69		108.99	65.92	58.17
2	110.44	54.72	44.75	10	115.74	69.06	62.32	18	126.72	85.39	75.19	26	121.30	66.92	55.98
	111.51	55.19	45.36		113.30	66.40	58.99		123.44	81.51	71.93		123.52	69.07	58.32
	108.05	53.40	44.04		109.72	62.98	55.32		124.48	87.98	79.33		123.21	68.06	57.91
	109.32	54.41	45.04		113.35	66.35	58.2		123.28	82.62	72.82		126.95	72.80	61.62
3	125.08	53.67	46.96	11	109.23	70.09	66.08	19	134.92	64.5	54.72	27	109.53	73.72	64.00
	126.92	51.88	46.21		106.60	66.02	61.57		133.38	64.02	53.99		107.83	72.88	63.05
	124.59	51.75	45.93		105.83	65.47	61.10		132.47	63.88	54.70		106.35	71.89	62.68
	127.72	54.85	49.56		106.29	65.72	60.83		129.35	61.57	52.29		106.45	72.06	61.53
4	107.41	57.28	50.14	12	116.64	56.04	49.95	20	107.98	47.64	41.26	28	135.87	51.7	40.79
	106.07	56.24	49.58		118.77	56.63	49.51		108.82	48.2	42.23		135.89	50.85	39.96
	108.77	59.43	51.85		120.82	57.03	50.75		110.03	46.97	39.84		137.89	51.00	39.34

	106.32	55.01	48.21		121.54	58.16	49.98		109.75	49.14	41.99		134.36	49.77	38.78
5	119.47	49.35	43.77	13	109.83	66.85	59.5	21	112.56	54.57	48.41	29	121.59	46.32	40.60
	118.88	47.67	41.06		112.32	69.43	61.64		112.79	53.43	48.37		119.52	45.52	39.54
	118.49	47.22	40.30		112.19	70.94	64.38		113.91	52.86	47.69		123.97	47.27	42.15
	117.33	47.19	40.90		110.55	67.7	59.64		116.34	55.99	50.53		123.16	48.56	43.29
6	108.03	59.32	52.92	14	95.53	58.13	54.89	22	123.86	72.07	63.95				
	111.01	60.91	53.79		91.61	54.63	51.53		126.95	72.8	61.62				
	118.90	66.10	58.25		93.78	56.54	53.4		122.49	67.84	58.89				
	114.30	61.76	53.61		94.76	57.86	54.6		120.27	59.63	51.16				
7	124.87	56.13	51.51	15	123.06	60.26	53.13	23	125.30	75.38	62.20				
	119.91	54.40	48.68		119.04	57.70	51.14		124.44	72.98	60.53				
	124.67	56.94	50.61		119.46	59.86	53.23		124.62	76.86	65.12				
	122.48	53.68	47.98		121.28	59.74	52.86		125.41	77.25	67.31				
8	134.7	76.69	67.66	16	128.29	56.91	49.98	24	98.44	56.50	50.90				
	132.58	75.04	65.96		126.25	56.91	49.75		99.73	57.87	51.25				
	137.40	80.33	71.14		133.55	63.79	56.62		98.57	56.71	50.81				
	134.82	75.06	65.76		134.98	62.13	54.76		97.78	56.50	49.90				

Tab. S3 Calibration curves, correlation coefficients, test ranges, precision, repeatability and recovery tests for seven analytes.

Analyte	Calibration curve	R2	Test Ranges ($\mu\text{g/ml}$)	precision (%)	stability (%)	Repeatability (%)	Original mean (μg)	Spiked mean (μg)	Detected mean (μg)	Recovery mean (%)	RSD (%)
gallic acid	$Y=0.0026x+0.0046$	0.9999	0.053 ~ 0.844	1.97	1.22	0.79	0.290	0.338	0.625	99.11	3.17
5-HMF	$Y=0.0031x+0.0016$	0.9995	0.060 ~ 0.964	1.25	1.15	2.23	0.821	0.647	1.467	99.82	6.47
protocatechuic acid	$Y=0.0016x+0.0024$	0.9998	0.052 ~ 0.824	1.59	0.65	0.89	0.093	0.089	0.181	98.69	6.73
morroneiside	$Y=0.0116x+0.0025$	0.9999	0.053 ~ 0.840	0.93	2.15	0.97	14.278	9.707	24.273	102.96	4.94
sweroside	$Y=0.0073x+0.0017$	0.9999	0.050 ~ 0.796	1.57	0.83	1.03	0.893	1.026	1.918	99.87	2.98
loganin	$Y=0.0155x+0.0034$	0.9999	0.037 ~ 0.592	1.02	0.73	1.33	7.880	7.565	15.445	98.35	2.83
cor-nuside	$Y=0.0062x+0.0056$	0.9999	0.049 ~ 0.780	1.85	0.71	0.75	1.486	1.287	2.816	103.30	8.83

Tab. S4 Content of seven analytes in different sample batches. (mg/g, n=3)

Batch No.	gallic acid		5-HMF		protocatechuic acid		morrnisode		sweroside		loganin		cor-nuside	
	Content	RSD	Content	RSD	Content	RSD	Content	RSD	Content	RSD	Content	RSD	Content	RSD
1	0.613	0.357	0.869	0.704	0.112	2.560	10.267	0.661	1.136	9.467	7.460	0.775	1.435	1.564
2	0.338	5.250	0.647	3.709	0.089	3.133	9.707	3.414	1.026	0.859	7.565	1.366	1.287	3.015
3	0.219	2.425	0.648	2.856	0.072	1.538	15.776	3.247	0.583	2.258	8.259	0.603	1.119	4.053
4	0.187	9.901	0.544	2.680	0.086	1.123	10.922	3.335	0.921	1.934	4.139	3.164	1.272	1.503
5	0.232	3.907	1.149	1.576	0.105	0.875	17.976	2.778	0.909	3.762	9.530	1.037	1.957	0.557
6	0.323	3.666	1.062	2.861	0.107	1.005	18.404	2.397	0.976	3.427	8.614	0.831	2.093	1.538
7	0.442	6.463	0.876	1.204	0.100	3.953	12.883	3.689	0.942	1.012	9.170	1.266	1.188	1.842
8	0.190	8.687	1.036	4.746	0.082	1.029	21.024	0.910	0.854	3.363	9.033	0.860	1.637	1.701
9	0.273	2.209	0.798	2.851	0.091	5.285	13.317	1.891	0.739	1.522	7.225	1.120	1.599	2.178
10	0.258	3.227	0.644	2.555	0.124	0.690	16.560	4.603	0.872	3.558	9.486	1.952	2.157	2.533
11	0.845	0.553	0.752	0.631	0.111	8.358	11.722	2.483	1.113	1.800	8.218	1.161	1.820	1.641
12	0.429	1.080	1.086	2.899	0.082	2.604	17.374	3.190	0.973	1.066	9.071	1.541	2.084	1.784
13	0.537	1.088	1.116	1.701	0.214	1.003	13.478	2.379	1.173	3.297	11.200	2.945	2.513	1.841
14	0.179	3.834	0.741	2.428	0.084	1.146	10.414	0.903	0.802	5.318	8.629	2.635	2.701	0.667
15	0.241	5.549	0.999	2.598	0.091	1.280	16.702	4.117	0.892	1.672	10.444	1.913	1.568	1.257
16	0.173	1.787	0.444	4.539	0.073	2.234	21.264	0.291	0.593	5.677	10.244	2.628	1.107	1.905
17	0.433	3.261	0.779	4.551	0.051	3.831	10.392	0.780	1.170	2.969	7.469	1.075	2.439	0.593
18	0.226	1.301	0.345	6.078	0.088	0.849	11.768	2.397	0.876	3.031	9.407	2.880	1.536	2.483
19	0.318	1.952	1.147	1.553	0.086	2.964	19.351	0.495	1.036	1.969	11.619	0.856	2.257	1.146

20	0.243	5.720	1.040	1.633	0.087	0.465	9.390	1.920	1.064	3.402	8.618	1.999	2.323	2.905
21	0.274	5.404	1.055	4.009	0.076	2.347	16.665	1.446	0.956	4.849	8.502	1.300	1.947	2.342
22	0.193	5.762	0.878	2.190	0.077	3.976	18.212	0.016	0.926	1.923	10.048	1.647	2.054	0.938
23	0.388	3.539	0.689	2.694	0.099	0.900	19.313	0.829	1.008	2.477	11.311	1.479	2.897	0.639
24	0.875	1.788	0.306	5.628	0.210	0.642	9.271	5.694	1.375	2.497	5.428	3.908	1.045	2.120
25	0.904	1.778	0.949	1.823	0.127	2.487	22.960	0.727	1.622	1.452	6.056	1.801	1.902	1.686
26	0.343	4.525	0.720	8.064	0.106	1.522	20.003	3.463	1.252	5.699	9.953	2.082	1.743	2.367
27	0.457	5.625	1.176	2.741	0.038	1.474	23.581	3.243	1.131	1.190	9.007	1.404	2.638	3.045
28	0.178	3.607	1.251	1.702	0.064	5.819	22.853	5.296	1.019	3.422	11.036	1.175	1.335	0.831
29	0.208	6.297	0.876	1.745	0.067	2.907	15.811	0.597	1.038	1.260	9.330	1.252	1.884	1.679

Table S5.The average weight of mice in each group after drug intervention (g, n=10)

Group	CG	MG	L-LOG	M-LOG	H-LOG
1W	27.00±2.15	26.42±2.77	26.85±1.48	26.89±2.16	26.46±1.63
2W	27.43±2.21	24.97±1.05	25.20±1.24	26.56±1.94	26.84±0.71
3W	26.93±2.37	24.89±2.04	24.84±1.00	26.55±1.56	26.58±1.25
4W	27.24±1.78	25.33±1.45	25.20±1.01	26.41±1.52	26.88±0.88
5W	27.09±1.44	24.94±1.28	26.34±2.04	26.83±1.44	26.23±0.78
6W	27.78±1.54	25.99±1.01	26.74±1.96	27.15±1.62	27.60±0.68
7W	27.63±1.32	25.06±1.06	26.48±2.10	26.58±1.55	27.24±0.67
8W	28.53±1.22	25.21±0.98	27.77±2.19	28.02±1.87	28.60±1.31

Supplementary figures

Fig. S1 29 batch co fingerprint similarity correlation plot

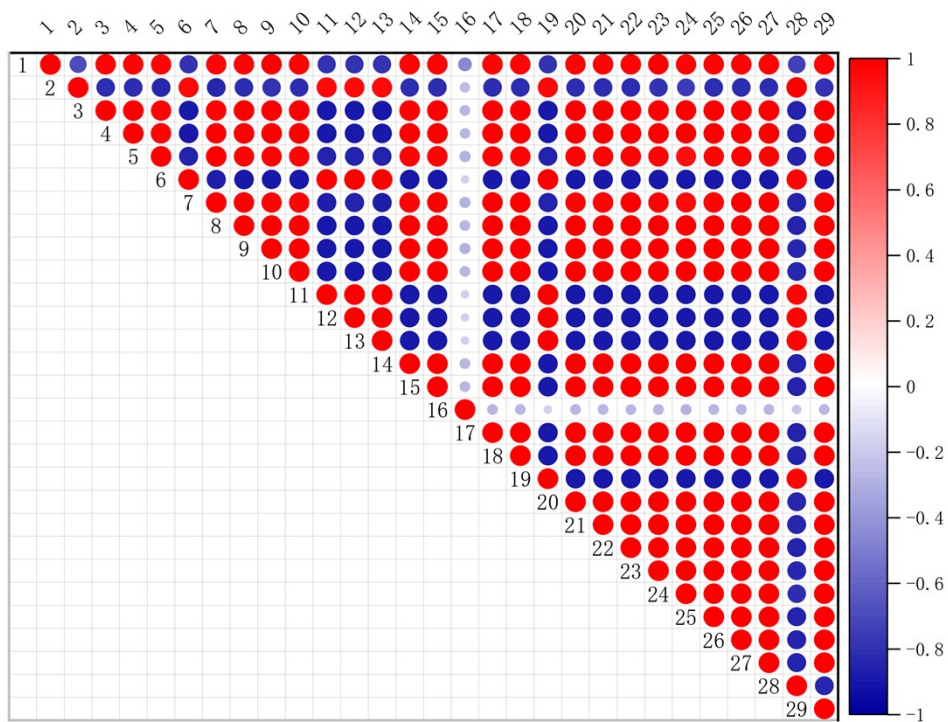


Fig. S2 Loganin structure and purity identification. (A) structure; (B) HPLC; (C) LC-MS; (D) H-NMR; (E) C-NMR

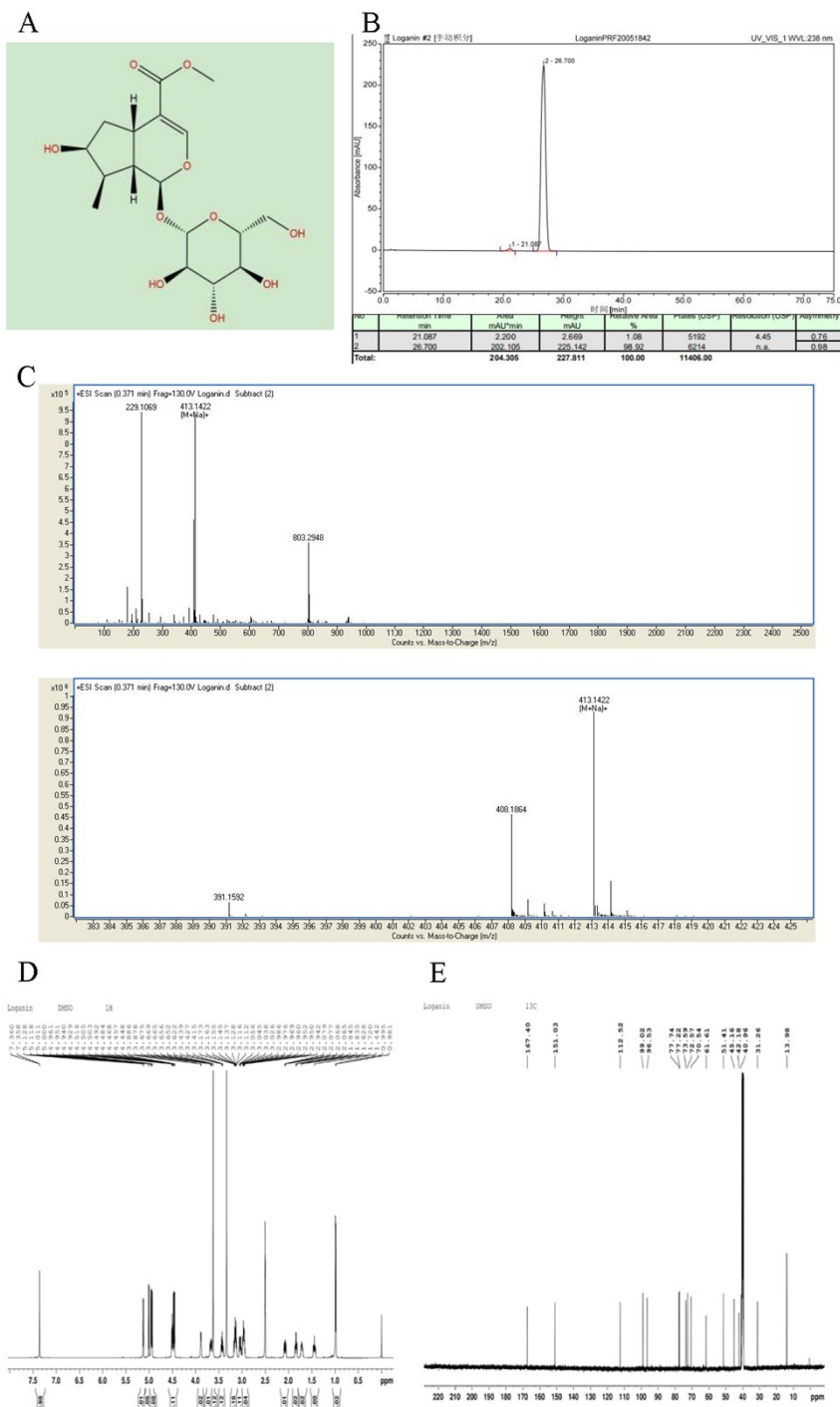


Fig. S3 Prediction model of loganin content constructed by BP-ANN.

