

**Table S2 Determination of triterpenoid content in mutant *Ganoderma lucidum* strains.**

Strain No.	average total triterpenoid content (DW, mg/60 mg)	average total triterpenoid content			label
		(%)	log <sub>2</sub> FC	p-value	
ZZ28	2.821948134	4.70%	1.487897298	0.108156815	0
TT89	2.638730761	4.40%	1.39104998	0.010579277	1
QQ45	2.489774404	4.15%	1.307220853	0.058966422	0
XX12	2.295593506	3.83%	1.190073024	0.006341382	0
XX94	2.285684166	3.81%	1.183831892	0.081907927	1
LL93	2.20820156	3.68%	1.13407769	0.003439426	1
QQ81	2.190596669	3.65%	1.122529706	0.008589378	0
X54	2.006746785	3.34%	0.996064411	0.02982526	0
X74	1.977967531	3.30%	0.975224569	0.011495451	0
X49	1.947185326	3.25%	0.952596026	0.007567863	0
QQ77	1.941281889	3.24%	0.948215449	0.02285669	0
ZZ65	1.908812988	3.18%	0.92388159	0.008885465	0
X91	1.890153911	3.15%	0.90970954	0.022824653	0
XX47	1.8838288	3.14%	0.904873686	0.00198515	0
X13	1.838077166	3.06%	0.869403161	0.008608837	0
ZZ100	1.816360953	3.03%	0.852256753	6.11414E-05	0
QQ21	1.814252583	3.02%	0.850581149	0.001441815	0
PP32	1.777461522	2.96%	0.821024155	0.000402149	0
ZZ90	1.776512756	2.96%	0.820253873	0.071419691	0
X23	1.773982711	2.96%	0.818197775	0.063485312	0
ZZ91	1.773139363	2.96%	0.817511757	0.120111586	0
R40	1.769660552	2.95%	0.814678482	0.061830435	0
Y9	1.756799494	2.93%	0.804155369	0.040390531	0
PP1	1.725068522	2.88%	0.777859494	0.048193767	0
ZZ8	1.687328695	2.81%	0.745946866	0.052487211	0
X67	1.67278094	2.79%	0.733454354	0.661756889	0
X8	1.666772085	2.78%	0.728262669	0.051628419	0
XX59	1.618174151	2.70%	0.685572707	0.023107067	0
QQ3	1.553974278	2.59%	0.627168449	0.019669176	0
X17	1.458886781	2.43%	0.53607375	0.028808122	0
QQ80	1.437275986	2.40%	0.51454294	0.009062554	0
X38	1.421884883	2.37%	0.499010493	0.004712427	0
X4	1.293063462	2.16%	0.361998908	0.005546902	0
X82	1.183006536	1.97%	0.23366387	0.013663978	0
TT2	1.095825427	1.83%	0.12322381	0.060566511	0
ZZ64	1.092135779	1.82%	0.118358055	0.005958964	0
Z90	1.082331857	1.80%	0.105348742	0.013833092	0
X84	1.07368754	1.79%	0.093780032	0.001477691	0
ZZ16	1.069576218	1.78%	0.088245117	0.019129072	0

X26	1.064937803	1.77%	0.081974999	0.745472179	0
X48	1.053658022	1.76%	0.066612524	0.009176844	0
XX13	1.053658022	1.76%	0.066612524	0.207393988	0
X92	1.049125026	1.75%	0.060392442	0.005685786	0
X89	1.04817626	1.75%	0.059087164	0.268044644	0
X11-2	1.047227493	1.75%	0.057780704	0.008814739	0
T35	1.040691545	1.73%	0.048748351	0.037202142	0
X58	1.035736875	1.73%	0.041863364	0.003261025	0
XX50	1.030149694	1.72%	0.034059821	0.651323466	0
X62	1.011068944	1.69%	0.007087202	0.023416048	0
ZZ86	1.008117225	1.68%	0.002869233	0.463990151	0
CK	1.006114274	1.68%	0	0.004752424	0
WW60	0.997786211	1.66%	-0.011991537	0.104277904	0
X81	0.97027198	1.62%	-0.052333059	0.002694147	0
R38	0.961943917	1.60%	-0.064769484	0.00294476	0
P35	0.955724225	1.59%	-0.074127882	0.013117165	0
WW57	0.949609952	1.58%	-0.083387216	0.059067989	0
XX58	0.948661185	1.58%	-0.08482935	0.037134089	0
QQ56	0.945709467	1.58%	-0.089325231	0.043527019	0
ZZ33	0.939911448	1.57%	-0.098197426	0.216713551	0
QQ73	0.938962682	1.56%	-0.099654449	0.330858979	0
QQ46	0.936643475	1.56%	-0.103222267	0.023856828	0
T19	0.936010964	1.56%	-0.104196841	0.08056407	0
ZZ49	0.936010964	1.56%	-0.104196841	0.044115225	0
X5	0.926734135	1.54%	-0.118566758	0.991487778	0
W92	0.926628716	1.54%	-0.118730878	0.233381235	0
ZZ79	0.914821843	1.52%	-0.137231457	0.412912399	0
QQ97	0.913662239	1.52%	-0.139061338	0.227265758	0
X79	0.910605102	1.52%	-0.143896726	0.193240394	0
QQ23	0.90512334	1.51%	-0.15260787	0.055242026	0
ZZ74	0.902698714	1.50%	-0.156477718	0.296711966	0
QQ6	0.899114485	1.50%	-0.162217443	0.159620324	0
ZZ42	0.894897744	1.49%	-0.168999428	0.035747062	0
XX2	0.891735189	1.49%	-0.174106921	0.006304669	0
ZZ43	0.890786422	1.48%	-0.175642702	0.008509759	0
X37	0.876976597	1.46%	-0.198183926	0.022637622	0
X47	0.870124394	1.45%	-0.209500605	0.018560936	0
QQ32	0.868648535	1.45%	-0.211949706	0.023799925	0
S88	0.86685642	1.44%	-0.214929214	0.006040357	0
Y10	0.864958887	1.44%	-0.218090709	0.005768395	0
QQ79	0.856630824	1.43%	-0.232048678	0.010990799	0
ZZ36	0.844402277	1.41%	-0.2527918	0.006098973	0
X76	0.839553026	1.40%	-0.261100822	0.041857418	0
ZZ7	0.829116593	1.38%	-0.279147277	0.006641834	0

ZZ47	0.825954038	1.38%	-0.284660768	0.010476575	0
ZZ37	0.822369808	1.37%	-0.29093497	0.004369279	0
ZZ32	0.821210205	1.37%	-0.292970715	0.021980484	0
QQ19	0.814568838	1.36%	-0.304685645	0.002873358	0
S49	0.813514653	1.36%	-0.306553937	0.004823021	0
LL92	0.810773772	1.35%	-0.31142285	0.068988049	0
ZZ30	0.808454565	1.35%	-0.315555573	0.026137755	0
QQ11	0.808349146	1.35%	-0.315743706	0.205370268	0
ZZ62	0.807822054	1.35%	-0.316684737	0.095846107	0
ZZ26	0.80592452	1.34%	-0.320077541	0.21627224	0
XX21-1	0.804132406	1.34%	-0.323289199	0.42797535	0
KK41	0.800337339	1.33%	-0.330114051	0.056808045	0
XX40	0.794960995	1.32%	-0.339838193	0.827956949	0
QQ26	0.793695973	1.32%	-0.342135784	0.001633413	0
X9	0.792430951	1.32%	-0.344437039	0.021067267	0
QQ24	0.792325532	1.32%	-0.344628976	0.002704308	0
QQ49	0.790006325	1.32%	-0.348858065	0.007070725	0
QQ72	0.788530466	1.31%	-0.351555773	0.001529478	0
QQ92	0.783364959	1.31%	-0.361037674	0.001249434	0
ZZ92	0.781045752	1.30%	-0.365315209	0.007414714	0
XX32	0.777777778	1.30%	-0.371364254	0.035309687	0
X81	0.777566941	1.30%	-0.371755387	0.014019701	0
D47	0.775563989	1.29%	-0.375476452	0.019968985	0
MM58	0.773771874	1.29%	-0.37881398	0.008304403	0
QQ12	0.772928526	1.29%	-0.380387257	0.008737005	0
ZZ67	0.77197976	1.29%	-0.382159247	0.006808913	0
QQ16	0.769765971	1.28%	-0.386302374	0.02801851	0
QQ84	0.769660552	1.28%	-0.386499963	0.016152798	0
XX69	0.76839553	1.28%	-0.388873143	0.006180567	0
X20	0.764073371	1.27%	-0.397011088	0.217884783	0
ZZ52	0.762913768	1.27%	-0.399202271	0.011850894	0
YY66	0.755850727	1.26%	-0.412620924	0.00501128	0
ZZ61	0.753953194	1.26%	-0.416247307	0.017854083	0
XX90	0.749103943	1.25%	-0.425556354	0.004900927	0
S85	0.748260595	1.25%	-0.427181469	0.126022855	0
X2	0.747944339	1.25%	-0.427791359	0.008128645	0
ZZ4	0.746890154	1.24%	-0.42982619	0.007846515	0
QQ52	0.746679317	1.24%	-0.430233501	0.002275409	0
X51	0.745203458	1.24%	-0.433087901	0.003616239	0
YY69	0.745098039	1.24%	-0.433292003	0.005932332	0
ZZ27	0.744887202	1.24%	-0.433700294	0.015549719	0
N14	0.737297069	1.23%	-0.448476247	0.005258128	0
Y4	0.734661607	1.22%	-0.453642388	0.013731602	0
X75	0.734239933	1.22%	-0.45447069	0.002918236	0

X15	0.727071474	1.21%	-0.468625076	0.004775873	0
QQ38	0.726438963	1.21%	-0.469880686	0.003983675	0
ZZ39	0.726228126	1.21%	-0.470299465	0.054056863	0
XX56	0.716635041	1.19%	-0.489483681	0.002721922	0
XX93	0.716424204	1.19%	-0.489908191	0.011690815	0
X90	0.71389416	1.19%	-0.49501207	0.009099701	0
X25	0.713472486	1.19%	-0.495864475	0.004356497	0
T36	0.704406494	1.17%	-0.51431406	0.006979192	0
S62	0.702719798	1.17%	-0.517772726	0.010818812	0
QQ78	0.702403542	1.17%	-0.518422149	0.02959145	0
QQ63	0.702403542	1.17%	-0.518422149	0.111900541	0
XX15	0.700822264	1.17%	-0.521673661	0.002605694	0
QQ48	0.698924731	1.16%	-0.525585173	0.056929552	0
QQ17	0.698608476	1.16%	-0.526238124	0.018145794	0
S86	0.698608476	1.16%	-0.526238124	0.005820284	0
X29	0.694180898	1.16%	-0.535410603	0.068233324	0
QQ54	0.684904069	1.14%	-0.554820338	0.052065195	0
XX41	0.684587814	1.14%	-0.555486658	0.001799754	0
ZZ3	0.679527725	1.13%	-0.566189855	0.012334314	0
ZZ97	0.678684377	1.13%	-0.567981466	0.014402538	0
QQ58	0.678684377	1.13%	-0.567981466	0.026410578	0
X68	0.676576007	1.13%	-0.572470253	0.006433156	0
YY67	0.668037107	1.11%	-0.590794028	0.026782427	0
X42	0.666772085	1.11%	-0.593528563	0.003203528	0
X71	0.665928737	1.11%	-0.595354471	0.029163884	0
QQ83	0.660236137	1.10%	-0.607740164	0.000449814	0
S49	0.659709045	1.10%	-0.608892384	0.020658774	0
QQ71	0.659181952	1.10%	-0.610045526	0.041600243	0
QQ93	0.658127767	1.10%	-0.612354577	0.00895537	0
ZZ76	0.652118912	1.09%	-0.62558721	0.320986396	0
QQ57	0.650748471	1.08%	-0.628622252	0.721220872	0
QQ76	0.65011596	1.08%	-0.630025197	0.899816586	0
X46	0.65011596	1.08%	-0.630025197	0.008090173	0
ZZ48	0.649799705	1.08%	-0.630727181	0.672263948	0
ZZ46	0.649061775	1.08%	-0.632366474	0.73752188	0
ZZ11	0.646110057	1.08%	-0.638942338	0.002719048	0
XX54	0.64589922	1.08%	-0.639413192	0.089123361	0
ZZ71	0.645372127	1.08%	-0.640590998	0.000515226	0
ZZ20	0.639890365	1.07%	-0.652897527	0.021792519	0
X39	0.639257854	1.07%	-0.65432429	0.003614389	0
X21	0.639152435	1.07%	-0.654562221	0.016363645	0
X85	0.637781995	1.06%	-0.657658901	0.014482889	0
QQ87	0.637044065	1.06%	-0.659329101	0.062171797	0
ZZ68	0.636833228	1.06%	-0.659806656	0.284888139	0

QQ91	0.634830276	1.06%	-0.664351335	0.016906688	0
ZZ50	0.632511069	1.05%	-0.669631542	0.033265268	0
QQ65	0.630191862	1.05%	-0.674931146	0.011116827	0
Z26	0.62892684	1.05%	-0.677830065	0.084373169	0
ZZ94	0.627134725	1.05%	-0.681946865	0.268644358	0
X80	0.626396795	1.04%	-0.683645438	0.003476432	0
X27-1	0.623023403	1.04%	-0.691435913	0.269429755	0
T20	0.62112587	1.04%	-0.695836613	0.009512385	0
ZZ63	0.619650011	1.03%	-0.699268684	0.034806521	0
QQ96	0.615854944	1.03%	-0.708131685	0.01584184	0
XX51	0.615222433	1.03%	-0.70961416	0.045889306	0
X35	0.611743622	1.02%	-0.717795114	0.007107557	0
X64	0.609213578	1.02%	-0.723774173	0.053617791	0
X6	0.608686485	1.01%	-0.725022935	0.076164335	0
QQ53	0.603204723	1.01%	-0.738074545	0.101479233	0
QQ14	0.602466793	1.00%	-0.739840545	0.070624747	0
ZZ60	0.601412608	1.00%	-0.742367157	0.163089742	0
W91	0.598882564	1.00%	-0.74844914	0.760844581	0
QQ70	0.59846089	1.00%	-0.749465301	0.4511625	0
X87	0.598144634	1.00%	-0.750227892	0.078096878	0
QQ82	0.59561459	0.99%	-0.756343176	0.137260983	0
QQ29	0.595509171	0.99%	-0.756598542	0.0109465	0
XX43	0.594665823	0.99%	-0.758643106	0.331262077	0
KK59	0.594138731	0.99%	-0.759922431	0.119600375	0
QQ30	0.592346616	0.99%	-0.764280643	0.118543614	0
X70	0.592346616	0.99%	-0.764280643	0.033907132	0
ZZ53	0.591292431	0.99%	-0.76685046	0.029373088	0
T25	0.590765338	0.98%	-0.768137087	0.009751544	0
X35	0.586337761	0.98%	-0.778990298	0.001262817	0
S33	0.585916087	0.98%	-0.780028208	6.09286E-05	0
P27	0.585810668	0.98%	-0.780287803	0.00085134	0
ZZ84	0.585283576	0.98%	-0.781586475	0.184482601	0
ZZ55	0.584861902	0.97%	-0.782626255	0.001590857	0
ZZ44	0.583491461	0.97%	-0.786010726	0.349482496	0
XX89	0.582542694	0.97%	-0.788358481	0.042318721	0
ZZ31	0.580961417	0.97%	-0.792279916	0.069747877	0
ZZ77	0.58075058	0.97%	-0.79280358	0.133786482	0
W21	0.576006747	0.96%	-0.804636559	0.019756934	0
ZZ75	0.574320051	0.96%	-0.80886734	0.635551234	0
T21	0.573371284	0.96%	-0.811252617	0.034361574	0
QQ68	0.572422517	0.95%	-0.813641845	0.085943038	0
ZZ98	0.567151592	0.95%	-0.82698787	0.054069174	0
W72	0.566097407	0.94%	-0.829671955	0.007532127	0
QQ43	0.566097407	0.94%	-0.829671955	0.036960366	0

QQ4	0.563251107	0.94%	-0.836944026	0.595583254	0
ZZ95	0.560404807	0.93%	-0.844252938	0.081619454	0
QQ10	0.55945604	0.93%	-0.846697494	0.306043242	0
XX5	0.552709256	0.92%	-0.864201497	0.047433407	0
QQ33	0.551971326	0.92%	-0.866128946	0.129752542	0
QQ41	0.551338815	0.92%	-0.867783097	0.012269017	0
QQ74	0.550495467	0.92%	-0.869991585	0.636605119	0
YY20	0.548387097	0.91%	-0.875527644	0.480020924	0
XX52	0.541851149	0.90%	-0.892825684	0.591455459	0
ZZ44	0.541745731	0.90%	-0.893106391	0.031658879	0
ZZ21	0.539004849	0.90%	-0.900424017	0.308591208	0
ZZ85	0.536474805	0.89%	-0.907211852	0.071183639	0
QQ60	0.522981236	0.87%	-0.943963086	0.954452026	0
XX48	0.522770398	0.87%	-0.944544818	0.06733695	0
P25	0.517815728	0.86%	-0.958283482	0.032078626	0
ZZ78	0.517815728	0.86%	-0.958283482	0.194036286	0
X99	0.515074847	0.86%	-0.965940179	0.0770372	0
X30	0.511912292	0.85%	-0.974825621	0.577117365	0
QQ5	0.510858107	0.85%	-0.977799638	0.923445509	0
QQ62	0.510541851	0.85%	-0.97869304	0.040939721	0
X32	0.508117225	0.85%	-0.985560897	0.798501454	0
XX46	0.506852203	0.84%	-0.989157147	0.084556084	0
QQ39	0.504849252	0.84%	-0.994869607	0.528983164	0
X73	0.504322159	0.84%	-0.996376653	0.024069836	0
ZZ54	0.502213789	0.84%	-1.00242063	0.796272105	0
X19	0.49926207	0.83%	-1.010924962	0.42858373	0
X56	0.490723171	0.82%	-1.035812875	0.047451925	0
T93	0.490406915	0.82%	-1.036742946	0.408946023	1
X41	0.488087708	0.81%	-1.04358185	0.025083065	0
ZZ51	0.487349779	0.81%	-1.04576468	0.197279651	0
X7	0.481235505	0.80%	-1.063979183	0.677708962	0
XX88	0.475121231	0.79%	-1.082426593	0.719111077	0
ZZ66	0.474699557	0.79%	-1.083707565	0.018310184	0
ZZ45	0.472907443	0.79%	-1.089164423	0.007393471	0
ZZ40	0.469428632	0.78%	-1.099816431	0.031463231	0
W65	0.459519292	0.77%	-1.130596839	0.010477825	0
XX1	0.457094666	0.76%	-1.138229286	0.013890576	0
X43	0.454880877	0.76%	-1.145233484	0.006275806	0
X10	0.447817837	0.75%	-1.167810277	0.013943281	0
QQ69	0.442019819	0.74%	-1.186611213	0.013175456	1
QQ89	0.435167615	0.73%	-1.209151072	0.024176111	1
XX60	0.434956778	0.72%	-1.209850222	0.002873411	0
QQ2	0.433797175	0.72%	-1.213701612	0.010997936	0
QQ34	0.43274299	0.72%	-1.217211821	0.011630489	1

ZZ29	0.424625764	0.71%	-1.24453036	0.065248637	0
ZZ57	0.42420409	0.71%	-1.245963738	1	0
X93	0.411870124	0.69%	-1.288532788	0.846243307	1
QQ7	0.410921358	0.68%	-1.291859952	0.448470547	0
X11	0.407653384	0.68%	-1.303379279	0.659068038	0
X28	0.403225806	0.67%	-1.319134295	0.717262992	0
QQ8	0.387518448	0.65%	-1.376457276	0.772749384	0
QQ95	0.383196289	0.64%	-1.392638679	0.555047063	0
ZZ89	0.382985452	0.64%	-1.393432677	0.417987594	0
X24	0.370967742	0.62%	-1.439428529	0.129890905	0
Y81	0.368226861	0.61%	-1.4501274	0.327039154	0
ZZ99	0.346616066	0.58%	-1.537383744	0.016628486	0
X76	0.336179633	0.56%	-1.581489945	0.016058222	1
X18	0.328800337	0.55%	-1.61351049	0.628866826	0
YY13	0.258907864	0.43%	-1.958283482	0.057819527	1
ZZ82	0.204722749	0.34%	-2.297050842	0.367182279	0
X16	0.164452878	0.27%	-2.613048014	0.015725674	0

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