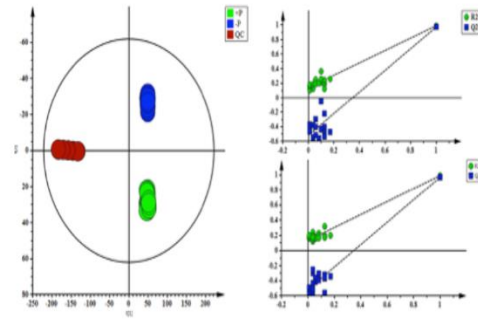
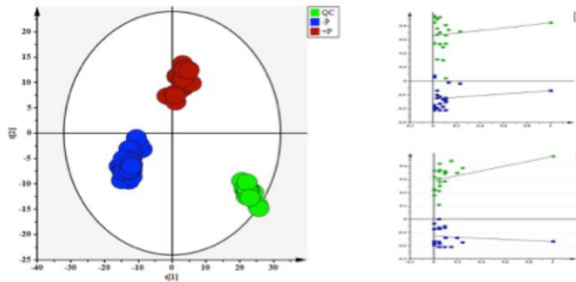


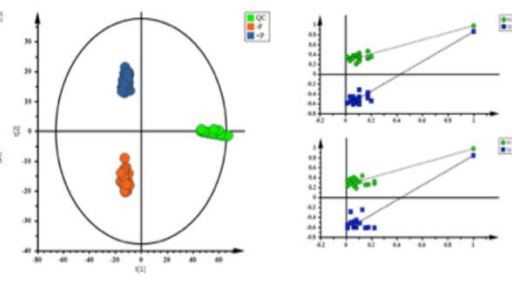
Unsupervised OPLS-DA and Permutations test of Primary Metabolites



Supervised OPLS-DA and Permutations test of Primary Metabolites



Unsupervised OPLS-DA and Permutations test of Secondary Metabolites



Supervised OPLS-DA and Permutations test of Secondary Metabolites

Figure S1. Supervised and unsupervised OPLS-DA and permutations test, with variables phosphate starvation (-P) and phosphate sufficient (+P) samples. Score plot and permutations sequencing tests of metabolites analysed by GC/GC-TOF/MS and UPLC-Q-TOF/MS in Fengqing and Longjing-43 cultivar. Test for Quality control (QC), -P and +P

Table S1. Fold changes ($\log_2^{[-P/+P]}$) and *t-test* of selected metabolites in tea plant organs in response to P limitation measured by GC×GC-TOF/MS

Class	Compound	Mass	1st DT (minutes)	2nd DT (seconds)	VIP	Young Shoot $\log_2^{[-P/+P]}$				Leaves $\log_2^{[-P/+P]}$				Root $\log_2^{[-P/+P]}$			
						Fengqing	<i>P-value (t-test)</i>	Longjing-43	<i>P-value (t-test)</i>	Fengqing	<i>P-value (t-test)</i>	Longjing-43	<i>P-value (t-test)</i>	Fengqing	<i>P-value (t-test)</i>	Longjing-43	<i>P-value (t-test)</i>
Phosphates	D-Mannose 1 phosphate	387	19.6	2.22	1.90326	1.04	<0.001	0.75	<0.001	-29.45	<0.01	-26.52	<0.001	-0.73	<0.001	-0.33	<0.001
	Fructose 6-phosphate	315	33.3	0.01	1.39642	-30.89	<0.01	27.12	<0.001	1.36	<0.001	0.15	NS	-1.41	<0.001	-0.16	<0.001
	Glucose-6-Phosphate	387	23.8	0.04	1.90992	-6.79	<0.001	5.5	<0.001	0.45	<0.05	0.65	<0.01	-0.21	<0.001	-1.91	<0.001
	D-Myo-Inositol 1 phosphate	259	33.5	1.86	1.38598	27.36	<0.05	26.44	<0.05	-0.48	<0.001	-0.35	<0.01	-1.68	<0.001	-0.56	<0.001
	D-Erythro-Pentofuranose phosphate	211	31.5	2.82	1.12797	32.59	<0.001	0.15	<0.001	-0.84	<0.05	0.26	<0.001	0.44	<0.001	0.71	<0.001
Sugars	Fructose	305	33.3	0.03	1.84388	-0.37	<0.01	-0.15	<0.05	24.72	<0.05	25.6	<0.01	0.19	<0.001	0.09	<0.001
	Glucose	287	28.8	2.32	1.75573	0.95	<0.001	0.11	NS	24.75	<0.001	25.82	<0.001	3.21	<0.001	0.98	<0.001
	D-Xylose	204	21.5	0.04	1.75318	3.65	<0.001	3.51	<0.001	-0.56	<0.01	-0.77	<0.001	1.03	<0.001	2.11	<0.001
	Gluconate	174	35	2.1	1.23656	0.23	<0.05	0.11	NS	3.07	<0.001	0.23	<0.05	2.25	<0.001	3.24	<0.001
	Ribose	50	8.4	1.4	1.61528	27.62	<0.001	30.33	<0.001	-0.01	NS	-0.76	<0.001	2.5	<0.001	A/P	-
	Mannose	205	23.2	2.35	1.37363	3.01	<0.001	27.33	<0.001	0.56	<0.001	0.13	NS	-0.45	<0.001	-1.17	<0.001
	4-Ketoglucose	232	21.7	2.92	1.24563	27.49	<0.001	3.77	<0.001	-1.01	<0.001	0.6	<0.001	3.62	<0.001	-0.54	<0.001
Myo-Inositol	44	37.2	1.4	1.27525	-28.46	<0.01	-27.53	<0.01	1.42	<0.05	-0.07	<0.001	3.04	<0.001	-0.07	<0.001	
Amino Acids & N compounds	Threonine	209	21.5	0.05	1.65724	-26.72	<0.05	24.66	<0.001	23.1	<0.01	22.98	<0.01	-0.28	<0.001	-1.49	<0.001
	Hydroxyproline	230	6.3	0.05	1.36545	-0.32	<0.01	-0.77	<0.001	26.83	<0.01	23.65	<0.01	0.32	<0.001	1.4	<0.001
	Phenylalanine	244	8.3	0.02	1.27286	0.6	<0.001	-0.63	<0.01	-2.54	<0.001	0.5	<0.001	2.6	<0.001	4.63	<0.001
	Asparagine	159	18	0.04	1.65589	-0.74	<0.05	-0.27	<0.001	P/A	-	-24.11	<0.01	-0.34	<0.001	-3.59	<0.001
	Ethanolamine	220	30.8	0.06	1.27224	0.9	<0.001	0.37	<0.001	-4.56	<0.001	-27.05	<0.001	0.49	<0.001	-0.16	<0.001
	Alanine	30	15.5	0.02	1.68114	0.44	<0.001	-0.87	<0.001	1	<0.001	0.2	<0.05	16.89	<0.001	19.71	<0.001
	Tryptophan	202	36.1	0.05	1.25853	1.08	<0.001	0.55	<0.05	0.42	<0.05	0.44	<0.001	5.22	<0.001	22.85	<0.001
	Tyrosine	180	26.5	0.05	1.12788	-2.98	<0.05	3.11	<0.001	-3.09	<0.001	0.36	<0.01	4.41	<0.001	9.52	<0.001
	Isoleucine	159	21.5	0.05	1.66455	27.35	<0.001	25.13	<0.05	-0.72	<0.001	-0.05	NS	2.8	<0.001	-0.55	<0.001
	Proline	243	6.3	0.05	1.41583	32.75	<0.001	30.02	<0.05	-0.46	<0.001	-0.87	<0.05	-0.98	<0.001	-1.94	<0.001
	Glycine	178	36.8	0.04	1.35468	-1.84	<0.001	-25.43	<0.001	1.23	<0.001	-0.41	<0.001	0.63	<0.001	-1.68	<0.001
	Leucine	95	5.7	0.06	1.59664	-29.87	<0.01	-28.68	<0.05	-0.62	<0.001	0.19	<0.01	1.96	<0.001	2.2	<0.001
	Glutamine	46	21.5	0.05	1.52591	-0.49	<0.05	1.12	<0.01	0.13	<0.001	-1.46	<0.001	-0.19	<0.001	0.98	<0.001
Serine	73	12.6	0.03	1.14362	-0.73	<0.05	0.25	<0.01	1.23	<0.05	-0.48	NS	-0.62	<0.01	-1.71	<0.001	
Methionine	115	21.5	0.05	1.35569	0.13	<0.01	-1.46	<0.001	5.89	<0.01	3.32	<0.001	0.56	<0.01	0.65	<0.001	

	Glutamate	98	8.8	2	1.32546	0.79	<0.001	-1.55	<0.001	1.07	<0.001	-0.8	<0.001	-1.08	<0.001	-2.57	<0.001
	Glutamic acid	46	17	0.04	1.23145	0.95	<0.001	-0.63	<0.05	0.56	<0.01	0.13	<0.001	1.06	<0.001	1.3	<0.001
	Glutaric acid	230	17	2.39	1.32532	0.91	<0.001	-0.06	<0.01	-0.53	<0.01	1.23	<0.01	-1.08	<0.001	-0.74	<0.001
	Lysine	46	7.6	1.75	1.09621	-0.81	<0.001	-1.62	<0.05	-0.63	<0.01	-0.38	<0.01	-1.45	<0.001	-0.23	<0.001
	Ornithine	70	21.4	2.52	1.23614	-1.41	<0.001	-2.81	<0.001	-0.47	<0.001	0.18	NS	-2.63	<0.001	3.09	<0.001
	Valine	207	10	1.8	1.22545	-0.37	<0.01	-0.76	<0.001	-0.82	<0.001	-	-	-0.12	<0.001	1.45	<0.01
Organic acid	Butanoic acid	315	18.9	0.07	1.09515	1.07	<0.001	-1.07	<0.01	21.51	<0.01	26.77	<0.05	-0.23	<0.001	-2.4	<0.001
	Pyruvate	50	7.9	1.4	1.32564	-0.08	<0.05	-0.04	<0.05	6.64	<0.001	24.76	<0.01	-2.04	<0.001	-2.4	<0.001
	Benzenebutanoic acid	98	21.5	0.05	1.33264	-0.74	<0.01	-0.94	<0.05	P/A	-	24.11	<0.01	-3.09	<0.001	1.55	<0.001
	Pentanedioic acid	158	13	2.13	1.12749	0.86	<0.001	-1.63	<0.001	-27.9	<0.001	-27.73	<0.001	0.86	<0.001	0.52	<0.001
	2-ketoglutarate	173	22.3	2.99	1.20838	26.14	<0.001	27.16	<0.001	0.47	<0.05	-0.28	<0.05	1.96	<0.001	2.11	<0.001

'NS' indicates not significant ($p < 0.005$) differences between P treatments.

Table S2. Fold changes ($\log_2^{[-P/+P]}$) and *t*-test of selected metabolites in tea plant organs in response to P limitation measured by UPLC-Q-TOF/MS

Class	Compound	Monoisotopic Mass	Retention Time	Adduct	VIP	Young Shoot $\log_2^{[-P/+P]}$				Leaves $\log_2^{[-P/+P]}$				Root $\log_2^{[-P/+P]}$				iC
						Fengqing	<i>P</i> -value (<i>t</i> -test)	Longjing-43	<i>P</i> -value (<i>t</i> -test)	Fengqing	<i>P</i> -value (<i>t</i> -test)	Longjing-43	<i>P</i> -value (<i>t</i> -test)	Fengqing	<i>P</i> -value (<i>t</i> -test)	Longjing-43	<i>P</i> -value (<i>t</i> -test)	
Flavonoids	Luteolin-7-O-glucoside	448.1005615	4.96	M-H2O-H	1.07890	24.9	<0.001	-	<0.001	13.99	<0.001	13.08	<0.001	0.43	NS	2.06	<0.01	(i)
	Delphinidin	337.0149	3.9	M-H	1.21593	0.87	<0.05	2.25	<0.001	12.16	<0.001	1.42	<0.001	P/A	-	P/A	-	(iii)
	Cyanidin	286.0477381	3.16	M+NA-2H/M+FA-H	1.28302	1.81	<0.001	2.96	<0.001	A/P	-	15.07	NS	P/A	-	P/A	-	(iii)
	Epigallocatechin	306.0739528	2.72	M+FA-H	1.42885	P/A	-	-14.8	<0.001	A/P	-	21.54	<0.001	P/A	-	A/P	-	(i)
	Rutin	610.1533849	4.5	M-H2O-H	1.56987	3.53	<0.001	-1.17	<0.001	0.12	<0.01	15.73	<0.001	16.88	<0.001	-	-	(i)
	Isoquercitrin	464.0954761	4.85	M-H	1.54177	17.93	<0.001	7.04	<0.001	14.15	<0.05	0.51	<0.01	-	-	-15.2	<0.001	(i)
	Procyanidin B1	578.1424263	2.62	M-H2O-H	1.55174	-4	<0.001	-2.08	<0.001	9.48	<0.001	A/P	-	14.15	<0.001	0.11	<0.05	(i)
	Kaempferol-3-O-glucoside	448.1006	5.88	M-H	1.09133	15.07	<0.001	-1.93	<0.001	0	-	-6.23	<0.001	-1.89	<0.01	-0.33	<0.05	(i)
	Quercetin-3,4'-diglucoside	324.1144	3.9	M-H2O-H	1.28735	0.87	<0.05	2.25	<0.001	-12.16	<0.05	P/A	-	0.66	<0.01	-0.11	<0.001	(i)
	Epiafzelechin-epicatechin 3,3'-digallate	887.148	6.83	M-H2O-H	1.73042	8.41	<0.05	3.05	<0.001	0.5	<0.05	-8.85	<0.001	1.93	<0.01	15.42	<0.001	(iii)
	Diosmetin 7-O-beta-D-glucuronopyranoside	476.095476104/1048.37584	2.99	M-H2O-H	1.07112	-0.13	<0.05	-0.74	<0.001	0.93	<0.001	0.12	<0.01	13.17	<0.001	17.78	<0.001	(iii)
	Kaempferol 3-β-d-glucopyranoside	448.1006	5.53	M-H, M+Na-2H	1.53710	5.19	<0.001	0.08	<0.001	-1.7	<0.05	-3.11	<0.001	0.57	<0.05	20.07	<0.05	(i)
	Tricin 7-glucuronide	1034.217561	3.83	M-2H, M-H	1.29161	2.4	<0.001	-0.81	<0.001	-0.47	<0.05	-0.76	<0.01	16.17	<0.001	0.28	<0.05	(iii)
	Prunin 6"-p-coumarate	580.1580764	2.97	M-H2O-H	1.07112	-1.06	<0.01	-2	<0.001	-0.14	<0.05	0.17	<0.05	18.12	<0.01	18.98	<0.001	(i)
	Quercetin 3-glucoside	934.2379024	4	M-H	1.55270	4.34	<0.001	2.02	<0.001	0.2	<0.05	0.38	<0.05	0.25	<0.05	-0.72	<0.05	(iii)
	Quercetin -(2"-galloyl-α-L-arabinopyranoside)	586.09587	4.25	M+FA-H	1.73065	15.61	<0.001	3.11	<0.001	-0.66	<0.05	-0.42	<0.05	0.96	<0.05	0.94	<0.05	(iii)
	Catechin	289.0741	2.38	M-H	1.46300	1.14	<0.01	0.99	<0.001	1.04	<0.05	0.91	<0.001	1.05	<0.05	1.54	<0.05	(iii)
	Epigallocatechin gallate	457.0828	2.99	M-H	1.07112	1	<0.01	0.96	<0.001	1.18	<0.05	1.02	<0.001	0.49	<0.05	0.81	<0.05	(iii)
	Kaempferol 3-sophoroside 7-glucuronide	786.1854729	2.15	M+FA-H	1.19289	-15.21	<0.001	-0.41	<0.001	-2.48	<0.01	0.96	<0.01	-0.38	<0.05	-0.35	<0.05	(iii)
	Quercetin-3-sulfate	381.9994672	4.5	M+Na-2H	1.07434	-1.43	<0.001	-0.28	<0.001	0.28	<0.05	-0.19	NS	-1.34	<0.05	-17.02	<0.05	(ii)
(-)-Epigallocatechin 3,3'-digallate	610.095870034/631.0705	5.82	M-H/M+Na-2H	1.73042	3.27	<0.05	-2.28	<0.001	0.15	<0.05	-3.32	<0.001	2.61	<0.01	7.44	<0.05	(iii)	
Prunin 6"-O-gallate	586.1322555	5.69	M-H2O-H	1.41871	3.99	<0.01	1.51	<0.001	-3.23	<0.05	-1.43	<0.001	-0.35	<0.05	-	-	(iii)	

	Gallocatechin	306.0739528	2.04	M-H2O-H	1.41323	17.14	<0.001	0.27	<0.001	-1.87	<0.001	-0.07	NS	1.28	<0.001	-0.52	<0.05	(i)
	Malvidin	330.047/ 366.050630541	0.81	M-H/M- H2O-H	2.02670	0.42	<0.05	0.07	<0.001	0.06	<0.05	0.46	<0.01	1.56	<0.05	-	-	(iii)
	Epicatechin	207.0662/ 290.07903818	3.32	M-H2O-H	1.34065	P/A	-	-1.23	<0.001	-0.48	<0.05	4.48	<0.01	-0.81	<0.05	0.37	<0.05	(ii)
	(-)-Epiafzelechin 3-gallate	135.9791	2.31	(M-H2O-H, M-H)	1.77701	2.16	<0.01	0.19	<0.001	-0.81	<0.05	-0.23	<0.01	3.64	<0.01	6.13	<0.01	(iii)
	Licorice glycoside A	726.2159852	7.42	M-H	1.53554	-1.55	<0.05	-6.23	<0.001	2.96	<0.05	1.09	<0.05	0.32	<0.05	-22.17	<0.05	(iii)
	Paratocarpin A	388.1674593	3.44	M-H	1.93691	0.89	<0.01	-0.42	<0.001	-0.69	<0.05	-0.69	<0.001	15.34	<0.001	21.02	<0.001	(i)
Chalcone	4'-Methoxychalcone	534.1502	2.62	/M-H2O-H	1.66973	-4.42	<0.05	-8.48	<0.001	-3.82	<0.001	-3.71	<0.001	-0.7	<0.05	-0.69	<0.05	(i)
	4,2',4',alpha-tetrahydroxydihydrochalcone	274.0841236	4.13	M+Na-2H	1.21483	-6.9	<0.001	-20.32	<0.001	-0.5	<0.001	0.47	<0.01	-0.39	<0.05	0.21	<0.05	(i)
Benzenoids	Gallic acid	170.0215233	1.43	M-H2O-H	1.14956	8.36	<0.05	-2.57	<0.001	-0.94	<0.05	-0.33	<0.001	5.86	<0.05	-1.43	<0.05	(i)
	M-trigallic acid	474.0434405	3.32	M+Na- 2H/M- H2O-H	1.05172	2.33	<0.001	1.12	<0.001	-15.07	<0.001	P/A	-	0.77	<0.05	1.76	<0.05	(i)
	2,4-dihydroxybenzoic acid	154.0266087	3.31	M-H2O-H	1.34065	0.28	<0.05	0.2	<0.001	0.32	<0.05	0.55	<0.001	-17.42	<0.001	-14.81	<0.05	(ii)
	Catechol	110.0367794	3.06	M-H2O-H	1.33244	0.09	<0.05	-0.96	<0.001	-10.96	<0.001	0.68	<0.001	P/A	-	0.56	<0.05	(i)
Organic Acids	Quinic acid	192.0633881	0.81	M-H2O-H	1.32319	1.23	<0.001	1.04	<0.001	-0.46	<0.05	1.06	<0.001	14.48	<0.001	2.08	<0.05	(i)
	Shikimic acid	174.0528234	3.43	M-H	1.33649	-0.87	<0.01	2.6	<0.001	0.73	<0.001	2.72	<0.001	12.95	<0.01	13.99	<0.05	(i)

'P/A' means a metabolite is detected in -P but absent in +P, or vice versa.

^aIdentification Category

(i) Actual Mass (AM), Retention Time and Standard

(ii) AM and RT

(iii) AM and Isotopic Distribution (ID)

Table S3. Transcription factor primer sequences for *cv. assamica* (Fengqing) and *cv. sinensis* (Longjing-43) for qRT-PCR analysis.

Transcription Factor	Cultivar	Gene Identifier	Forward primer (5'>3')	Reverse Primer (5'>3')
<i>PHR1</i> (phospahte starvation response 1)	<i>cv. sinensis</i>	CL15435Contig1	ATCTGCACAATGAACAGCACCAT	GCTCCAAAGAGGCTTAGGATAGA
	<i>cv. assamica</i>	CL69205Contig1	CTGCCCAGAATCGGACAATAAGA	AACGCAAACCTGAGAATCCTGAAATG
<i>PHO1</i> (phosphate signal transduction 1)	<i>cv. sinensis</i>	CL27009Contig1	TCGAGTCCTGGTAGGAAGAACCT	GTTGATTATTGGCAACTCAAGAAAG
	<i>cv. assamica</i>	CL39177Contig1	ATCATCCCATACAAGTACAAGAATC	CTAAATGTCCAAACTCCACCTAA
<i>SPX2</i> (Pi transport, Pi stress, sensing and signalling)	<i>cv. sinensis</i>	CL117Contig2	CAGGGTAGCAGAGGCTCGGGATT	AGCACCGCTTCGCTTGTCTATT
	<i>cv. assamica</i>	CL58020Contig1	GCGGTGGCAACGAGAACTCACTC	CTTCTTCGCTCGCCTTTCATTCA

Table S4. Primer sequences for the gene transcripts of *cv. assamica* (Fengqing) cultivar of selected pathways for qRT-PCR analysis.

Pathway	Reaction, Gene and Enzymatic activity	Gene Identifier <i>cv. assamica</i>	Forward primer (5'>3')	Reverse Primer (5'>3')
Valine, Leucine and Isoleucine Biosynthesis	Branch Chain Amino Transferease 1 (2.6.1.42, <i>BCAT1</i>)	CL60167Contig1	GCCTTTGACATCCTTTGATTCTG	GGAGCTTATCTTGCCTTCTTTTCG
Phenylalanine, Tyrosine and Tryptophan biosynthesis	tryptophan synthase alpha chain (<i>TSA1</i> , 4.2.1.20)	CL76112Contig1	ACATTTATCGGAAGGTCGCATTT	TAACAAGTAAGCCTGTGGCAGTT
	arogenate/ prephenate dehydrase (<i>ADT1</i> , 4.2.1.51/4.2.1.91)	CL49595Contig1	CAGCAGAACAGTGGCTATGGAAT	TGAATGGAAGTAACCTCGAAGAAT
Methionine Biosynthesis	methyltransferase (2.1.1.14, <i>MS2</i>)	CL27145Contig1	CTCCAGTCACAAGCGTGTAGCCT	GTCCTCGTTCTGGTCTCATCTTCTTTC
Alanine, asparate and glutamate biosynthesis	Omega-amidase, chloroplast (3.5.1.111, <i>NPL3</i>)	CL69393Contig1	ACTATTCCATATTTTCAGGCAAGAC	CCACTACCACCACCTATCCATCT
	glutamate synthase (1.4.1.13/1.4.1.14, <i>GLT1</i>)	CL40912Contig1	TGTATGAGGAAGAAACCAGCAAC	TAAAGACGGAGTATCCTAAAGGT
Butanoate metabolism	acyl-CoA synthetase (6.2.1.2, <i>ACS</i>)	CL45357Contig1	GCATAGGTGTTCGGAGTCTTTGAG	GGAACCACTTGAGCGACCTTACT
Arginine and Proline Biosynthesis	prolyl 4-hydroxylase (1.14.11.2, <i>P4H</i>)	CL35020Contig1	CAGTTTGCCAAATGAACTATCAAG	TATGGTAGGCTCTGAAGGTGTAG
Flavonoid Biosynthesis	anthocyanidin reductase (1.3.1.77, <i>ANR</i>)	CL2560Contig1	GGACTTCTTAGGTGGGATTTCTA	AATCATCTGGCTGGCTTACTACA
	leucoanthocyanidin dioxygenase (1.4.11.19, <i>LDOX</i>)	CL59191Contig1	TCCATACTCTTCTATCACTTCCCTAA	AGTAATCCGTGTTCAATCCTTGT
Flavone and Flavonol Biosynthesis	glucosyltransferases (2.1.4.81, <i>UGT75L12</i>)	CL68486Contig1	ATCTACTGTTATGACATGGGCTTTA	ATCTTACAATGGTGATTTGAGGG
	flavonol 3-O-glucosyltransferase (2.4.1.91, <i>UGT78D2</i>)	CL4384Contig1	TAATCATCGGAAGACAAGCACAT	AAGGGTTGATAGTGAGGAGTTGG
	flavonol-3-O-glucoside L-rhamnosyltransferase (2.4.1.159, <i>UGT78D1</i>)	CL38490Contig1	GGTAGGTGAGTTGTGAAATCGCTGAA	GCTGGGCTCTTGGATGCTTCTTC

Table S5. Primer sequences for the gene transcripts of *cv. sinensis* (Longjing-43) cultivar of selected pathways and the reference was used for qRT-PCR analysis.

Pathway	Reaction, Gene and Enzymatic activity	Gene Identifier <i>cv. sinensis</i>	Forward primer (5'>3')	Reverse Primer (5'>3')
Valine, Leucine and Isoleucine Biosynthesis	Branch Chain Amino Transferease 1 (2.6.1.42, <i>BCATI</i>)	CL23657Contig1	TATGTTGTTGAGGAGGTTGTTGT	GAAAGACTATCATCCCAGCCAGA
Phenylalanine, Tyrosine and Tryptophan biosynthesis	tryptophan synthase alpha chain (<i>TSAl</i> , 4.2.1.20)	CL5201Contig2	GCTCGTGTATCTGTAAGCGGAAAG	CACTATGGCACTACCAACAATCA
	arogenate/ prephenate dehydrase (<i>ADTI</i> , 4.2.1.51/4.2.1.91)	CL9637Contig1	CAACTGGTCGTTTGTCCGTAATG	CTTGCTCAGACTTCCTAAGAGGC
Methionine Biosynthesis	methyltransferase (2.1.1.14, <i>MS2</i>)	CL16257Contig1	ATATGCCATGACTGGAGCGATGA	GGTATTGAAAGCGCAGCACATCA
Alanine, asparate and glutamate biosynthesis	Omega-amidase, chloroplast (3.5.1.111, <i>NPL3</i>)	CL22649Contig1	ACTAATCAGGTCACTACGGTCAA	AGGTCAGGGAAGTTCTAGGGTAT
	glutamate synthase (1.4.1.13/1.4.1.14, <i>GLTI</i>)	CL21Contig13	ACATCACGCATAGCATCCATCTC	GTTCACTGTAATTGTGGTTCCCT
Butanoate metabolism	acyl-COA synthetase (6.2.1.2, <i>ACS</i>)	CL263Contig1	TGCTGCGTCTTCACTCACTGTTT	TCCTTGTAAGCCTTATGCCATCC
Arginine and Proline Biosynthesis	prolyl 4-hydroxylase (1.14.11.2, <i>P4H</i>)	CL32565Contig1	AAATCGGACTGGAGGGTGCTGTT	TGTCTTCGTTGCTGAGTTGAGGG
Flavonoid Biosynthesis	anthocyanidin reductase (1.3.1.77, <i>ANR</i>)	CL16739Contig1	ATCAAGGACATGGCAAGACCAAT	GAGCAGACCTCACCGATGAACAG
	leucoanthocyanidin dioxygenase (1.4.11.19, <i>LDOX</i>)	CL12667Contig1	TGAGCCGCCAAAGGAGAAGATTA	CAGGCAAAGGACAAGCACTGAGACA
Flavone and Flavonol Biosynthesis	glucosyltransferase (2.4.1.81, <i>UGT75L12</i>)	CL10868Contig1	AGAATAACTCGCCGCACAACCTG	CCATCCTCAAGACCATCAAACCC
	flavonol 3-O-glucosyltransferase (2.4.1.91, <i>UGT78D2</i>)	CL11167Contig1	CAAACACCTTTACCCAGTCCACC	GCATCTGAGACCTCGAAATACCA
	flavonol-3-O-glucoside L-rhamnosyltransferase (2.4.1.159, <i>UGT78D1</i>)	CL72084Contig1	TTCGCAGTCATCAAGATCGTGTC	TTTGTTC AACGCAACTTCCGTCA