

Supplementary Material

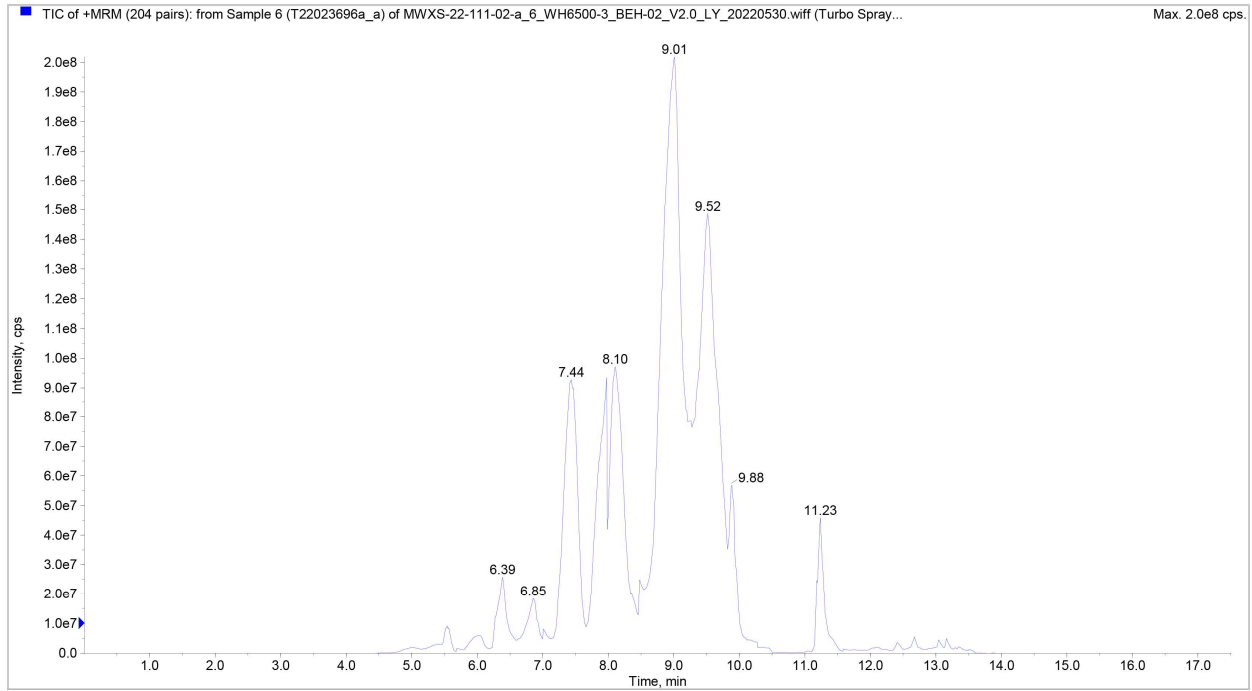


Figure S1: HPLC chromatogram of anthocyanin identified from *C. purpurascens* flower (BXK1).

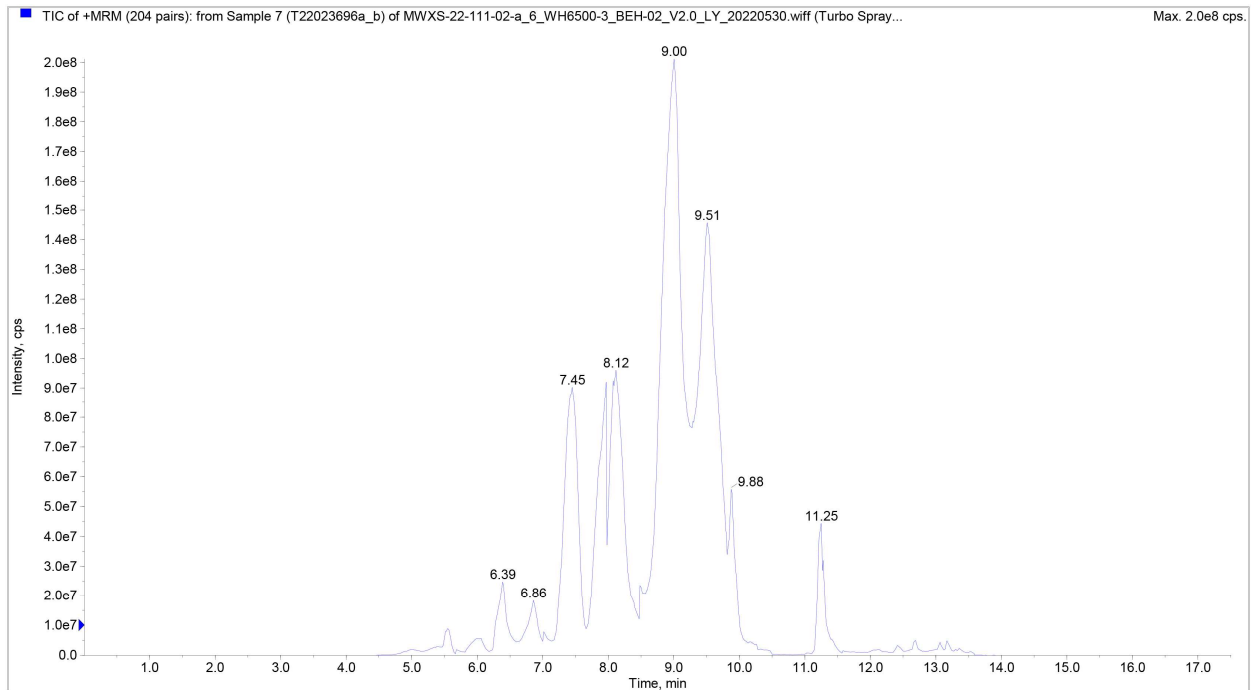


Figure S2: HPLC chromatogram of anthocyanin identified from *C. purpurascens* flower (BXK2).

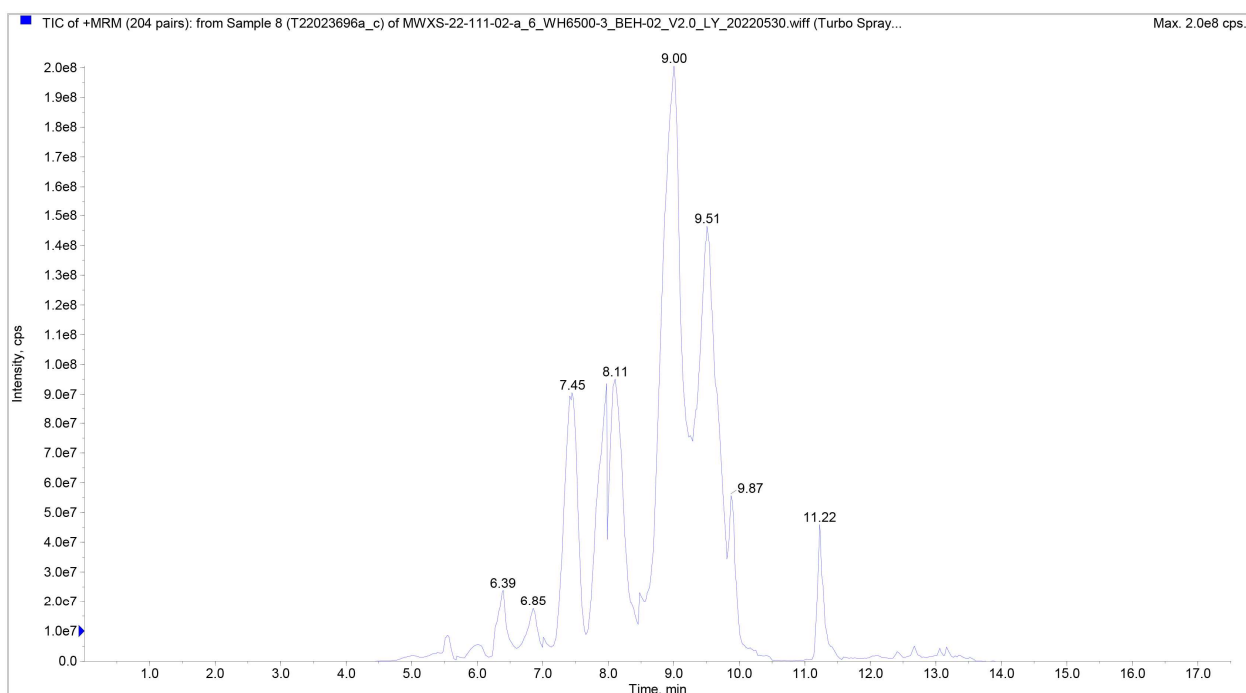


Figure S3: HPLC chromatogram of anthocyanin identified from *C. purpurascens* flower (BXK3).

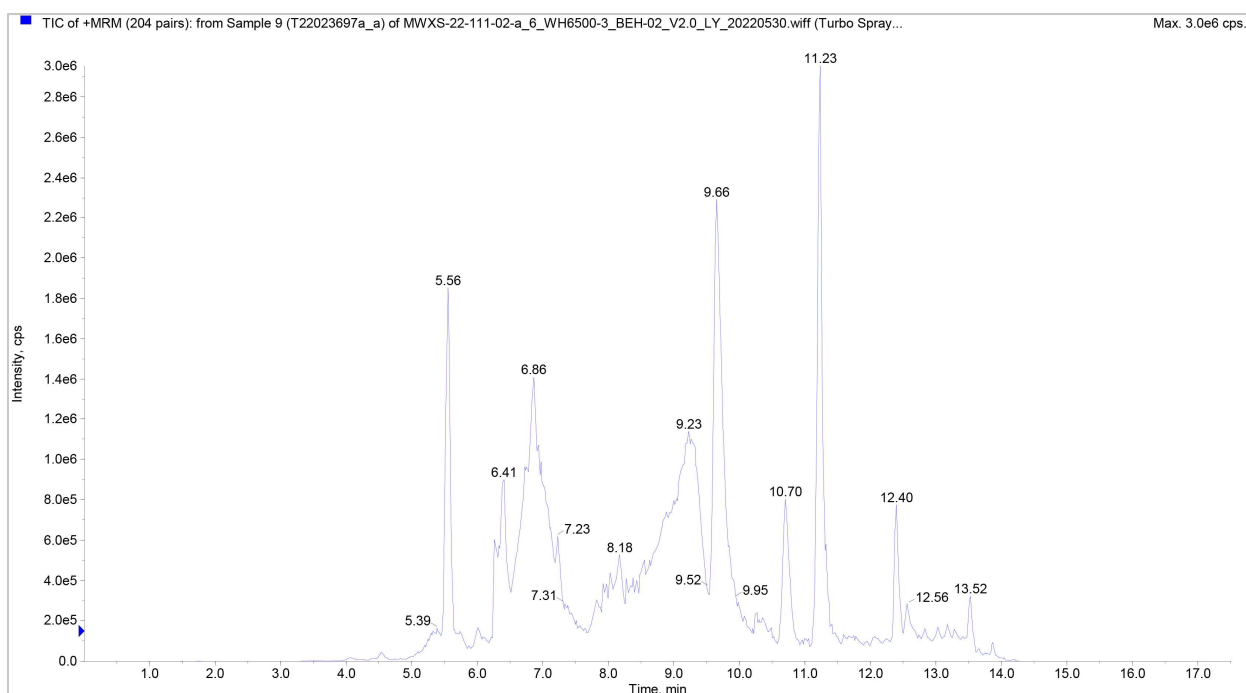


Figure S4: HPLC chromatogram of anthocyanin identified from *C. purpurascens* flower (HXX1).

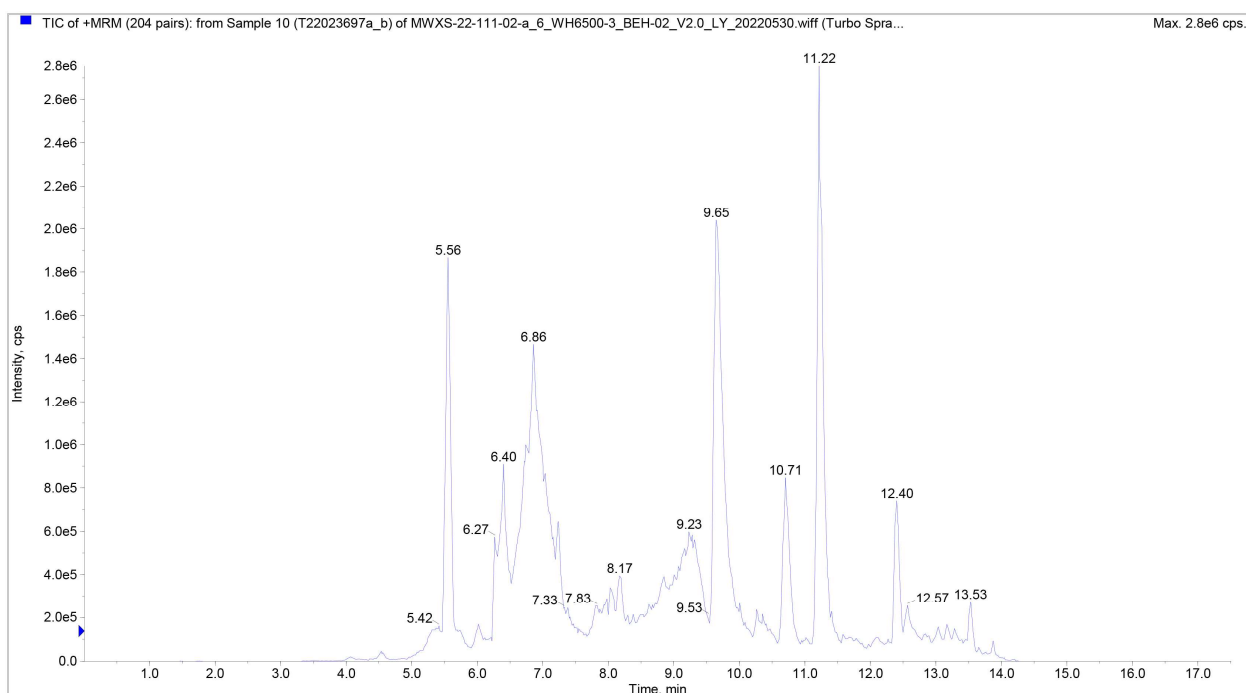


Figure S5: HPLC chromatogram of anthocyanin identified from *C. purpurascens* flower (HXK2).

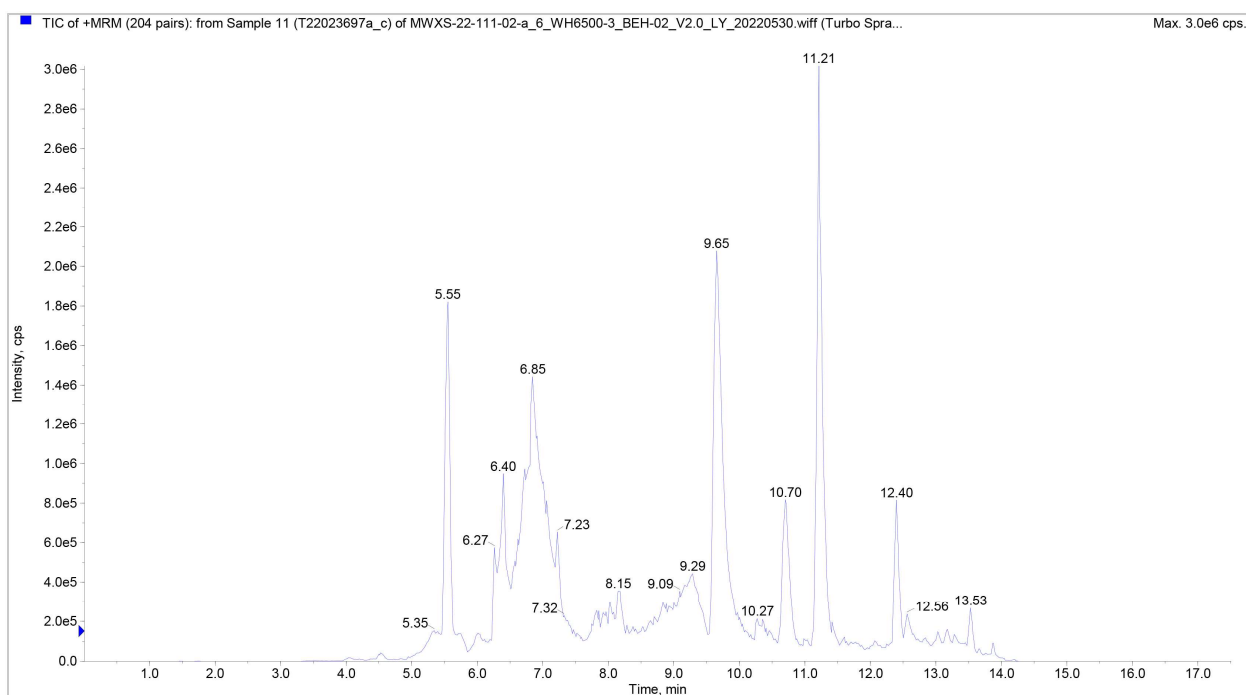


Figure S6: HPLC chromatogram of anthocyanin identified from *C. purpurascens* flower (HXK3).

Supplementary Table S1. Primers used in quantitative RT-PCR analysis

Gene ID	Sequence of 5' primer	Sequence of 3' primer
g1022_i0	TGGGGAAATTCATCCACATT	CACATTTTGGCTTCATGTGC
g10365_i0	GGCAATTCATGTTGCCTCTT	CGGGAGGTACAGTCAGGTGT
g10266_i0	CCTGCTGCTGAATGATTTTG	ATTACCCATCCCACCACAAC
g10340_i0	GAATGCAGGGCCATTGTACT	TGGTCCGTCTCCAGAATAC
g10589_i0	TGATCGAGACCCGAAAAATC	TCAGCCGTCCATTCTTCTCT
g11358_i0	ACCCGAAAAGCAGAGTAGCA	TGCTGTCTTGTCTCGTTTG
g34436_i0	AGCTGTTGTCGTTTCATGCTG	TTTTGTCTCGAACCCAGACC
g18620_i0	CTCCGTGGTGGATTCTGATT	TTGGGCAAACCAACACATAA
g526_i0	GGTAACTCGGGACAAAGCA	ACATTGCCACATCAACCTCA
eEF1 α	CTGGTGGTTTTGAGGCTGG	CTGGCCAGGGTGGTTCATGAT
g5626_i0	GGTCGGAGTGTTTGAGCAAT	ATGGACGCTTGAACAAAACC
g8206_i0	GGTCGGAGTGTTTGAGCAAT	ATGGACGCTTGAACAAAACC

Supplementary Table S2. The candidate TFs involved in anthocyanin accumulation.

Transcription factor	Gene ID	Annotation	Up or Down-regulated TFs in BXK-VS-HXK
SRF	g31608_i0	MADS-domain transcription factor	up
	g27602_i0	MADS-domain transcription factor	up
	g23754_i0	like MADS-box protein AGL8	up
	g19111_i0	like MADS-box protein AGL15	up
	g26811_i0	like MADS-box protein AGL12	up
	g28187_i0	MADS-domain transcription factor	up

	g20026_i0	like MADS-box protein AGL66	up
MYB	g25403_i0	flavonoid-related R2R3 MYB 4a repressor transcription factor	up
	g6939_i0	Myb-related protein 3R-3	up
	g21772_i0	Myb-related protein 306	up
	g10657_i0	Myb-related protein 3R-3	up
	g27153_i0	Myb-related protein 73	up
	g6484_i0	Myb-related protein 3R-5	up
	g20876_i0	Myb-related protein 102	up
	g32204_i0	Myb-related protein 77	up
	g29503_i0	Atypical R2R3-MYB transcription factor CDC5	up
	g25712_i0	Myb-related protein 308	up
	g30397_i0	Myb-related protein 73	up
	g18595_i0	Myb-related protein MYB3R-2	up
	g18251_i0	Myb-related protein 41	up
	g21878_i0	Myb-related protein 3R-3	up
MBD	g15098_i0	Histone H3-K9 methyltransferase 4	up
	g7947_i0	C2H2 zinc finger-SET histone methyltransferase	up
Homeobox	g7677_i0	like homeodomain protein	up
	g25065_i0	homeobox-leucine zipper protein HAT5-like	up
	g11677_i0	like homeodomain protein	up
	g7543_i0	like homeodomain protein	up
	g14735_i0	Homeobox protein knotted-1-like 3	up
	g21714_i0	Homeobox protein HOS16	up

	g26153_i0	Homeodomain transcription factor ATHB-13	up
	g12891_i0	like homeodomain protein	up
CSD	g23776_i0	Cold shock domain-containing protein 3	up
TF_others	g33674_i0	Thymocyte nuclear protein 1	up
	g31650_i0	Protein MHF1 homolog	up
	g42606_i0	Histone H3.1	up
SRF	g33460_i0	like MADS-box protein AGL2	down
	g26358_i0	MADS-box transcription factor	down
C2H2	g2452_i0	Probable protein arginine N-methyltransferase 3	down
MYB	g2206_i0	transcription factor R2R3-MYB1	down
	g33866_i0	MYB family transcription factor	down
	g8716_i0	transcription factor R2R3-MYB1	down
	g5782_i0	MYB family transcription factor	down
	g27919_i0	Myb-related protein 66	down
	g19104_i0	Myb-related protein 61	down
	g34207_i0	Myb-related protein 23	down
	g30143_i0	MYB-like protein	down
	g17765_i0	MYB-like protein	down
	g36054_i0	transcription factor R2R3-MYB1	down
MBD	g7186_i0	Histone-lysine N-methyltransferase SUVR4	down
	g5449_i0	Histone-lysine N-methyltransferase family member protein	down
	g8491_i0	Histone H3-K9 methyltransferase 4	down
HSF	g11233_i0	Heat stress transcription factor B-2a	down

	g2691_i0	hypothetical protein TanjilG_28154	down
	g13489_i0	Heat shock transcription factor 30	down
	g11233_i0	Heat stress transcription factor B-2a	down
Homeobox	g22517_i0	Homeobox protein like	down
	g11440_i0	BEL1-like homeodomain protein 2	down
HMG	g5303_i0	WD repeat and HMG-box DNA-binding protein like	down
	g31522_i0	HMG1/2-like protein	down
	g5082_i0	Histone-lysine N-methyltransferase	down
E2F	g14734_i0	E2F transcription factor-3v	down
	g16173_i0	Transcription factor E2FC	down
TF_others	g20707_i0	Prohibitin-1 like	down
	g24930_i0	NAC transcription factor 037	down
	g19760_i0	ethylene-responsive transcription factor ERF014-like	down
	g36811_i0	transcription factor TCP4-like	down
	g32312_i0	ethylene-responsive transcription factor ERF014-like	down
	g2629_i0	Chloroplastic small ribosomal subunit protein cS22	down
	g22909_i0	Bromodomain and PHD finger-containing protein 1	down

Supplementary Table S3. The classification and quantification results of all detected metabolites.

Compounds	HXK 1	HXK 2	HXK 3	BXK 1	BXK 2	BXK 3	MWXS22111 02a R1	MWXS22111 02a R2	MWXS22111 02a R3
Cyanidin-3,5-O-diglucoside	6.678650 14	6.701776 14	6.176733 49	0.790998 071	0.954378 405	0.864535 388	1.643362	1.987148	2.0508
Cyanidin-3-O-galactoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3-O-arabinoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3-O-(6-O-p-coumaroyl)-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3-O-5-O-(6-O-coumaroyl)-diglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3,5,3'-O-triglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3-(6"-caffeylsophoroside)-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3-(6-O-p-caffeoyl)-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyanidin-3-O-sambubioside-5-O-glucoside	0.209188 361	0.207948 727	0.188731 844	N/A	N/A	N/A	0.0751756	0.0774764	0.0846462
Cyanidin-3-O-xyloside	0.049792 3554	0.041905 496	0.047852 7769	N/A	N/A	N/A	0.01932018	0.01820286	0.01874022
Cyanidin-3-O-sambubioside	31.10437 33	29.64262 73	29.31843 58	N/A	N/A	N/A	9.69658	9.61404	9.64202
Cyanidin-3-O-rutinoside-5-O-glucoside	0.590881 543	0.486890 08	0.487755 504	N/A	N/A	N/A	0.167724	0.1750132	0.1960626
Cyanidin-3-O-rutinoside	188.0516 53	188.7942 36	169.8534 34	N/A	N/A	N/A	74.7308	77.1604	75.5484
Cyanidin-3-O-(6-O-malonyl-beta-D-glucoside)	1.257541 32	1.169688 34	1.141774 56	N/A	N/A	N/A	0.335902	0.3447	0.349088
Cyanidin-3-O-sophoroside	25.72699 72	24.19564 34	23.40857 71	N/A	N/A	N/A	7.91688	7.82374	7.96414
Cyanidin-3-O-glucoside	117.5371 9	112.7211 8	109.8797 24	N/A	N/A	N/A	39.982	41.069	39.7926
Cyanidin-3-O-(6"-ferulylsophoroside)-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-(6-O-acetyl)-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-(6-O-p-coumaroyl)-glucoside	N/A	N/A	N/A	0.037907 0878	0.041055 7207	0.035519 5474	N/A	N/A	N/A
Delphinidin-3-O-glucoside	22.23402 2	20.42081 1	19.97446 6	0.125856 798	0.121228 826	0.113361 579	6.6097	6.79302	7.01426
Delphinidin-3-O-galactoside	0.226448 003	0.246798 257	0.243819 257	0.024500 4822	0.026636 2556	0.027047 376	0.0610562	0.07269	0.0681126
Delphinidin-3-O-sambubioside	0.099440 0826	0.089730 2279	0.086718 0414	N/A	N/A	N/A	0.0272918	0.0317702	0.0314032
Delphinidin-3-O-rutinoside	0.131274 793	0.129386 729	0.134138 679	N/A	N/A	N/A	0.0445756	0.040671	0.0455502

Delphinidin-3-O-sophoroside	0.232196 625	0.255207 775	0.240538 285	0.031160 8968 0.065106	0.029242 5458 0.061984	0.028727 6842 0.058076	0.0623244	0.0649376	0.0755346
Delphinidin-3,5-O-diglucoside	N/A	N/A	N/A	5574	6459	0713	N/A	N/A	N/A
Delphinidin-3-O-(6-O-malonyl-beta-D-glucoside)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-rutinoside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-rhamnoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin	0.719614 325	0.665613 271	0.684380 546	N/A	N/A	N/A	0.220138	0.21131	0.1888878
Delphinidin-3-O-arabinoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-5-O-(6-O-coumaroyl)-diglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-(6-O-malonyl)-glucoside-3'-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Delphinidin-3-O-sambubioside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-(6"-acetylglucoside)-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-(6-O-malonyl-beta-D-glucoside)	53.95385 67	50.78317 69	49.96483 73	0.169021 697	0.165303 616	0.169188 734	15.2102	15.4685	15.67814
Malvidin-3-O-rutinoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-sambubioside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-sophoroside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-galactoside	68.52100 55	63.63572 39	65.11896 16	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-5-O-(6-O-coumaroyl)-diglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3-O-sambubioside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Malvidin-3,5-O-diglucoside	33.92210 74	31.86146 11	32.33125 21	16.16494 7	17.98127 79	17.30491 09	12.23248	12.71612	13.61676
Malvidin-3-O-(6-O-p-coumaroyl)-glucoside	0.308038 567	0.301802 949	0.292189 287	N/A	N/A	N/A	0.1001608	0.0948152	0.1052462
Malvidin-3-O-glucoside	2969.142 56	2746.501 34	2602.559 97	N/A	N/A	N/A	912.488	911.204	932.678
Malvidin-3-O-arabinoside	0.329269 284	0.293451 072	0.308155 11	N/A	N/A	N/A	0.083391	0.0841298	0.0958266
Pelargonidin-3-O-(6"-ferulylsambubioside)-5-O-(malonyl)-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-sambubioside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-sophoroside-5-O-(malonyl)-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-rutinoside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Pelargonidin-3-O-sophoroside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-[6-O-feruloyl-2-O-glucosyl-glucoside]-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-(6-O-malonyl-beta-D-glucoside)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-(6"-caffeylsophoroside)-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-sophoroside-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-5-O-(6-O-coumaroyl)-diglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-(6-O-p-coumaroyl)-glucoside	N/A	N/A	N/A	0.085615 2363 0.071312	0.089855 3739 0.074054	0.097483 3895 0.070238	0.01460016	0.01454144	0.0188695
Pelargonidin-3-O-galactoside	N/A 0.069053	N/A 0.060897	N/A 0.059046	N/A 9219	N/A 4824	N/A 806	N/A	N/A	N/A
Pelargonidin	0303	7882	3359	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-glucoside	0.061645 6612	0.063786 193	0.066311 5347	N/A	N/A	N/A	0.0236444	0.01987832	0.0224042
Pelargonidin-3-O-rutinoside	0.462558 54 3.493491	0.469165 55 3.255995	0.536845 219	N/A	N/A	N/A	0.1680384	0.1833262	0.182968
Pelargonidin-3-O-sambubioside	74	31	3.265442	N/A	N/A	N/A	0.999726	1.036088	1.00904
Pelargonidin-3-O-[2-O-glucosyl-6-O-p-coumaroyl-glucoside]-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3-O-arabinside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pelargonidin-3,5-O-diglucoside	0.024012 1901	0.022817 1247	0.022325 7969	0.573437 801	0.634190 193	0.584597 978	0.1197752	0.1395326	0.1194548
Peonidin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-galactoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-sambubioside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-sophoroside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-sambubioside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-(6"-ferulylsophoroside)-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-P-hydroxybenzoylsophoroside-5-glucoside	N/A 0.046369	N/A 0.044280	N/A 0.042611	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-arabinside	8347	496	5675	N/A	N/A	N/A	0.01573594	0.01470546	0.01730138
Peonidin-3-(caffeoyl-glucosyl-glucoside)-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-sophoroside-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-5-O-(6-O-coumaroyl)-diglucoside	N/A 12.95764	N/A 12.31236	N/A 11.92622	N/A 3.271350	N/A 3.515309	N/A 3.184463	N/A	N/A	N/A
Peonidin-3,5-O-diglucoside	46	6	41	05	56	17	4.16726	4.03852	4.4433

Peonidin-3-O-(6-O-malonyl-beta-D-glucoside)	0.697134 986	0.613575 737	0.640246 467	N/A	N/A	N/A	0.193178	0.1762696	0.1951608
Peonidin-3-O-glucoside	22.29304 41	21.17811 66	20.66953 66	0.016193 0569	0.019748 0436	0.012698 026	7.04866	6.98522	7.10364
Peonidin-3-O-rutinoside	742.9407 71	733.1065 68	716.0236 61	N/A	N/A	N/A	276.914	276.194	271.598
Peonidin-3-O-caffeoyl-feruloyl-sophoroside-5-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peonidin-3-O-(6-O-p-coumaroyl)-glucoside	14.84793 39	13.20365 28	13.96253 7	N/A	N/A	N/A	4.10212	3.95878	4.0869
Petunidin-3-O-galactoside	17.94159 78	17.29688 34	17.09188 3	N/A	N/A	N/A	7.30028	7.33514	7.391
Petunidin-3-O-(6-O-malonyl-beta-D-glucoside)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-(6-O-p-coumaroyl)-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-5-O-(6-O-coumaroyl)-diglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3,5-O-diglucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-glucoside	3.832851 24	3.547184 99	3.448800 53	N/A	N/A	N/A	1.490794	1.46163	1.465778
Petunidin-3-O-rutinoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-arabinoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-sambubioside-5-O-glucoside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-sophoroside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Petunidin-3-O-sambubioside	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Procyanidin A1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Procyanidin C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Procyanidin B2	7.003236 91	6.554658 18	5.932960 89	0.412455 159	0.523377 91	0.432834 377	2.15686	2.15752	2.1697
Procyanidin A2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Procyanidin B1	0.242774 105	0.214054 96	0.205907 986	0.012977 9653	0.013630 8569	0.013318 9697	0.070074	0.0625666	0.0638172
Procyanidin B3	0.482193 526	0.418374 665	0.392323 365	N/A	N/A	N/A	0.1193534	0.119143	0.1171456
Quercetin-3-O-glucoside	380.5199 72	353.1534 85	356.2339 8	37.08577 63	40.71688 95	38.06124 22	124.8536	128.1436	120.2656
Naringenin-7-O-glucoside	2.920929 75	2.471347 18	2.486894 51	4.709204 44	5.201238 24	5.107510 83	1.917552	1.96913	2.0575
Kaempferol-3-O-rutinoside	7.573002 75	7.123894 1	6.353927 05	14.08254 58	14.88291 23	15.02315 84	4.85352	5.06272	3.95564
Rutin	694.9896 69	696.1930 29	640.7295 43	45.35067 5	50.33283 8	45.71511 8	226.258	222.38	193.0028

Dihydromyricetin	3.643216 25	3.218485 25	3.008024 98	8.284667 31	9.087667 16	8.849975 93	2.37136	2.2158	2.34328
Naringenin	0.231950 069	0.234326 408	0.207505 751	0.151839 923	0.125270 431	0.114402 022	0.0804574	0.0822724	0.1039818
Dihydrokaempferol	1.622134 99	1.484437	1.459369 04	18.69296 05	19.96483 41	19.50346 65	4.65926	4.6226	4.6365
Afzelin	1.650688 71	1.611876 68	1.697032 53	3.105641 27	3.313001 49	2.901839 19	1.132984	1.119402	1.127362
Chalcone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
