Supplementary Materials

Fruit quality characterization of new sweet cherry cultivars as a good source of bioactive phenolic compounds with antioxidant and neuroprotective potential

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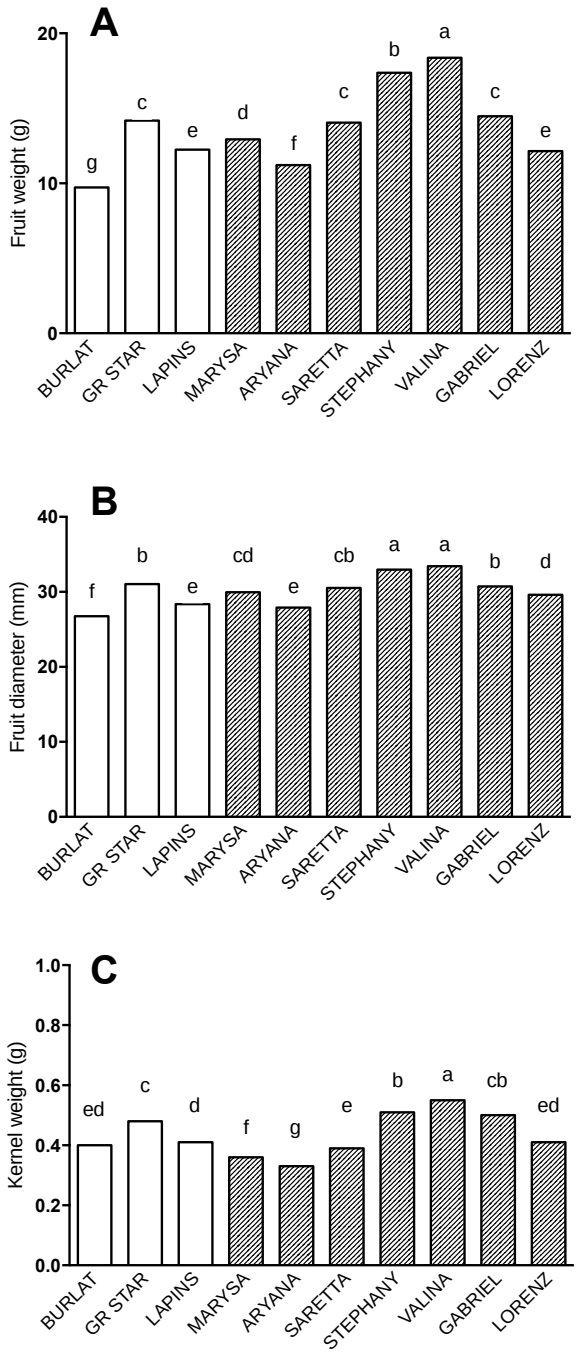

Figure S1. (**A**) Fruit weight; (**B**) fruit diameter; and (**C**) kernel weight of the different cultivars.

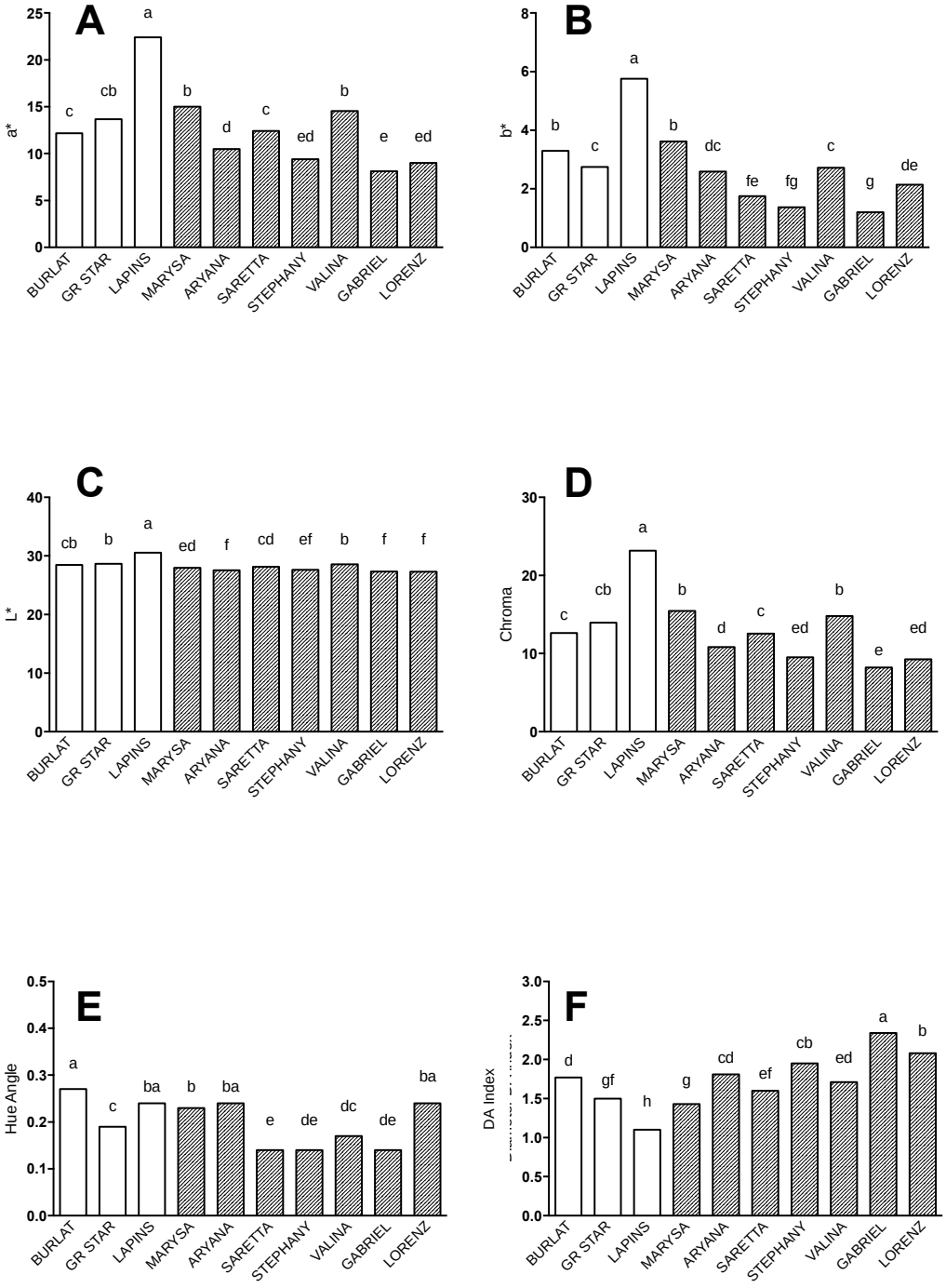

Figure S2. Color parameters of the different cultivars: (**A**) a*; (**B**) b*; (**C**) L*; (**D**) chroma; (**E**) hue angle; (**F**) DA index.

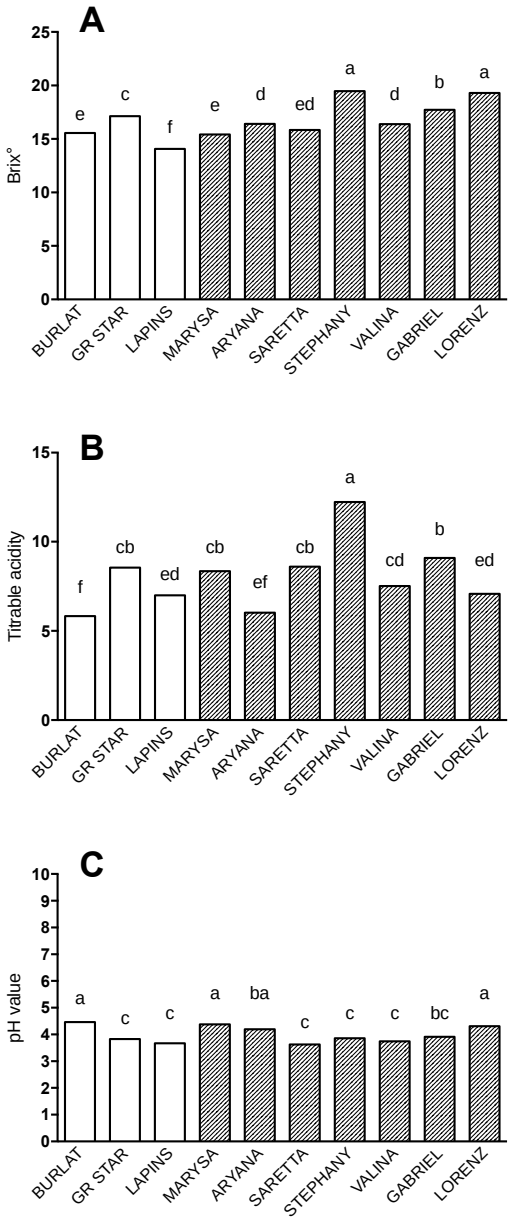

Figure S3. Other chemical-physical properties of the different cultivars: (**A**) total soluble solids; (**B**) titratable acidity; and (**C**) pH.

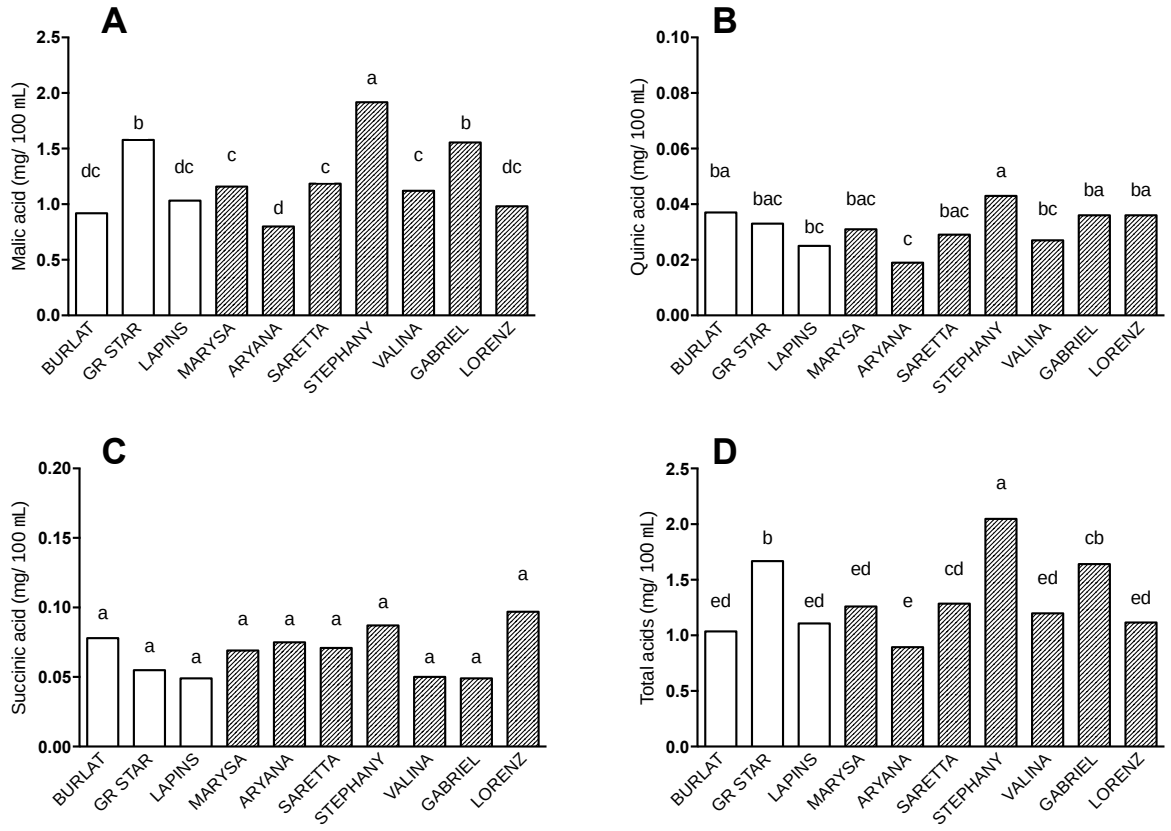

Figure S4. Results of the GC analysis of organic acids in the different cultivars: (**A**) malic acid; (**B**) quinic acid; (**C**) succinic acid; and (**D**) total acids by GC.

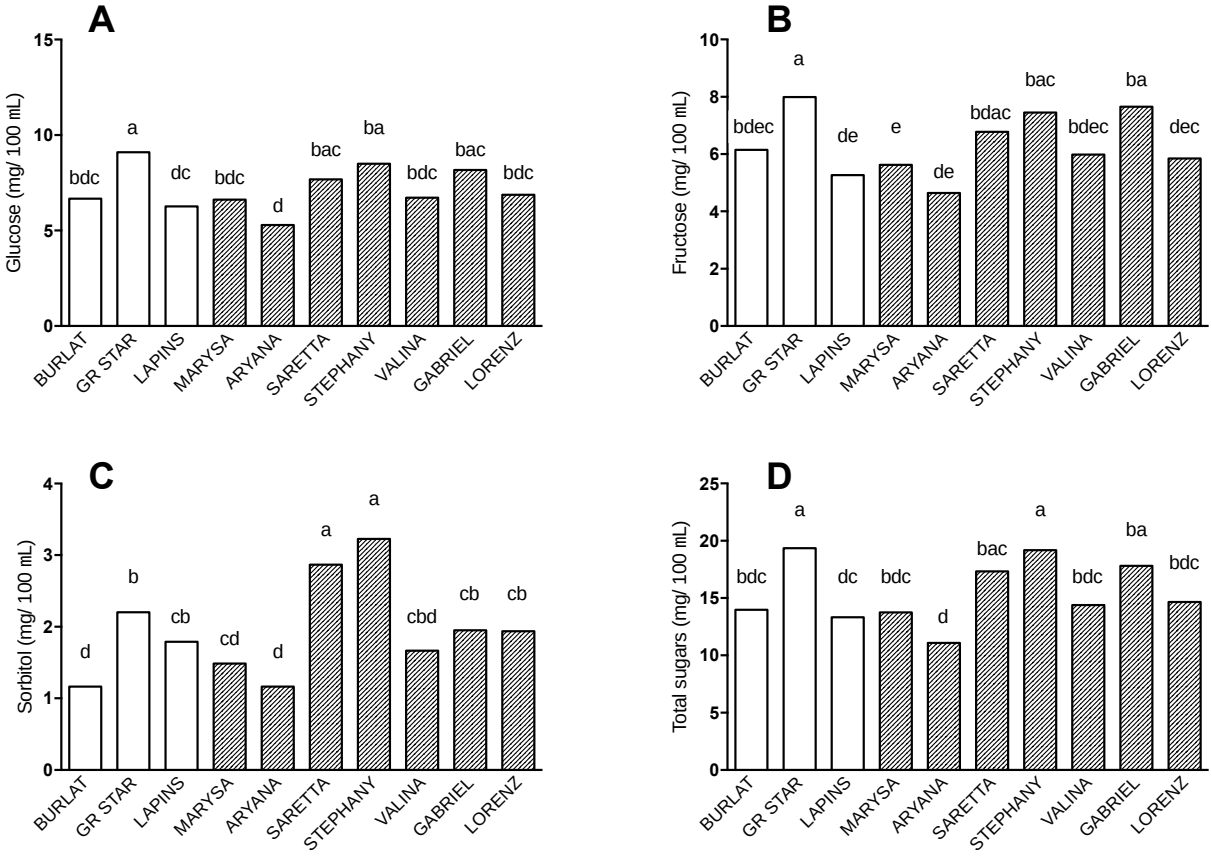

Figure S5. Results of the GC analysis of sugars in the different cultivars: (**A**) glucose; (**B**) fructose; (**C**) sorbitol; and (**D**) total sugars by GC.

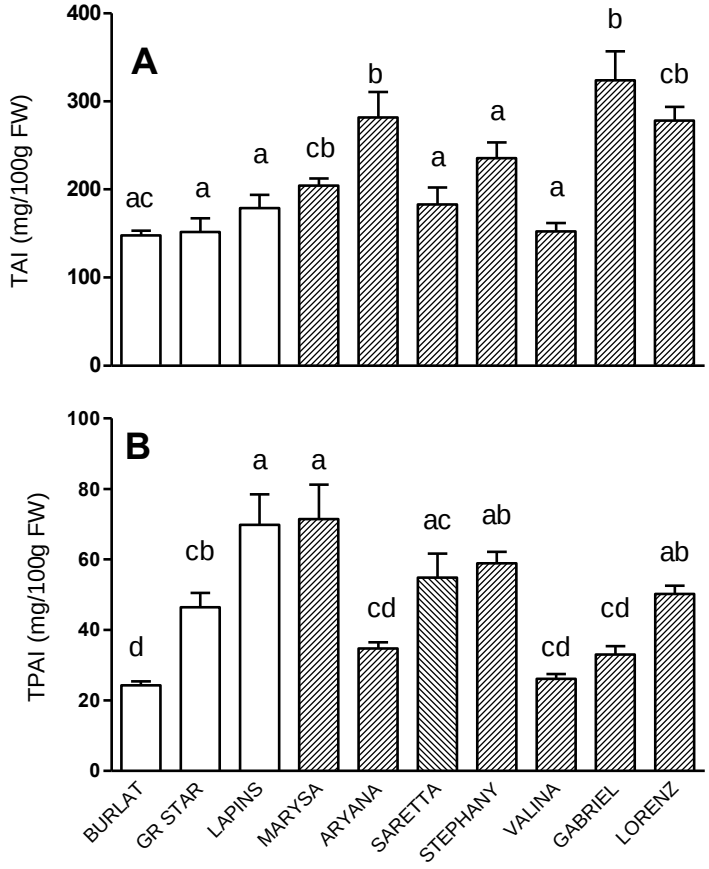

Figure S6. (**A**) Total Anthocyanin Index (TAI); and (**B**) Total Phenolic Acid Index (TPAI) in sweet cherry cultivars. Data are the mean ± SE of four biological replicates. Different letters indicate statistical significance ($p < 0.05$).

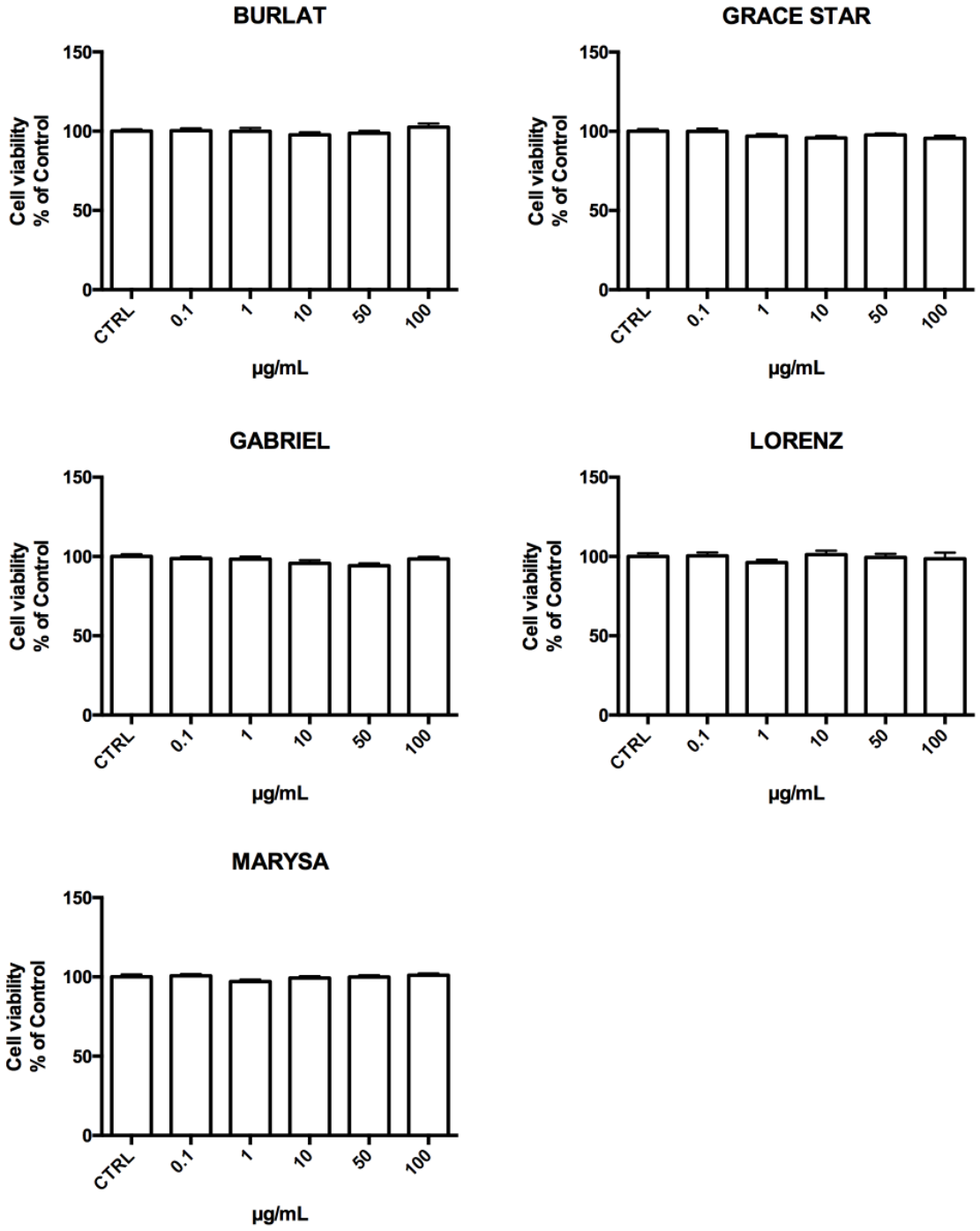

Figure S7. Effect of different concentrations of cherry extracts on SH-SY5Y cell viability as measured by the MTT assay. Each bar represents the mean ± SEM of at least three independent experiments. Data were analyzed by one-way ANOVA followed by Dunnett's test.

Table S1. Correlations (Pearson's and p) among fruit quality traits in cherry cultivars.

Fruit trait	Fruit size	Fruit weight	Cherry DA Index	Durofel	Firmness	Soluble solids (Brix)	Fruit pH	Titratable acidity	L*	a*
Fruit size	1.0000 p= ---									
Fruit weight	0.9652 p=0.000	1.0000 p= ---								
Cherry DA Index	0.2122 p=0.189	0.1595 p=0.325	1.0000 p= ---							
Durofel	0.6744 p=0.000	0.6507 p=0.000	0.3117 p=0.050	1.0000 p= ---						
Firmness	0.1093 p=0.502	0.0147 p=0.928	0.1953 p=0.227	0.6207 p=0.000	1.0000 p= ---					
Soluble solids (Brix)	0.4811 p=0.002	0.3870 p=0.014	0.7396 p=0.000	0.5632 p=0.000	0.4487 p=0.004	1.0000 p= ---				
Fruit pH	-0.5112 p=0.001	-0.5839 p=0.000	0.2255 p=0.162	-0.4646 p=0.003	-0.0749 p=0.646	0.0712 p=0.662	1.0000 p= ---			
Fruit acidity	0.7007 p=0.000	0.6595 p=0.000	0.2389 p=0.138	0.5460 p=0.000	-0.0466 p=0.775	0.5273 p=0.000	-0.3779 p=0.016	1.0000 p= ---		
L*	-0.1946 p=0.229	-0.0884 p=0.588	-0.8111 p=0.000	-0.1441 p=0.375	-0.1626 p=0.316	-0.6909 p=0.000	-0.3937 p=0.012	-0.2527 p=0.116	1.0000 p= ---	
a*	-0.1897 p=0.241	-0.1057 p=0.516	-0.9022 p=0.000	-0.1605 p=0.322	-0.1240 p=0.446	-0.7655 p=0.000	-0.2964 p=0.063	-0.2736 p=0.088	0.9305 p=0.000	1.0000 p=
b*	-0.4507 p=0.004	-0.3788 p=0.016	-0.8226 p=0.000	-0.2989 p=0.061	-0.0711 p=0.663	-0.7318 p=0.000	0.0095 p=0.954	-0.4756 p=0.002	0.8599 p=0.000	0.9227 p=0.0
Chroma	-0.2076 p=0.199	-0.1239 p=0.446	-0.9012 p=0.000	-0.1706 p=0.293	-0.1223 p=0.452	-0.7671 p=0.000	-0.2789 p=0.081	-0.2871 p=0.072	0.9308 p=0.000	0.9997 p=0.0
Hue angle	-0.7371 p=0.000	-0.7272 p=0.000	-0.3429 p=0.030	-0.5338 p=0.000	0.0320 p=0.844	-0.3644 p=0.021	0.6082 p=0.000	-0.7271 p=0.000	0.3191 p=0.045	0.3505 p=0.0
Kernel weight	0.7764 p=0.000	0.7958 p=0.000	0.3168 p=0.046	0.6527 p=0.000	0.0534 p=0.743	0.4480 p=0.004	-0.4913 p=0.001	0.5312 p=0.000	-0.0221 p=0.892	-0.1408 p=0.3

Table S2. Correlation (Pearson's and p) among fruit pH, fruit acidity, succinic acid, malic acid, quinic acid and total acid content in cherry cultivars.

Trait	Fruit pH	Fruit acidity	Succinic acid	Malic acid	Quinic acid	To
Fruit pH	1.0000 p= ---					
Fruit acidity	-0.3779 p=0.016	1.0000 p= ---				
Succinic acid	0.2919 p=0.068	0.0358 p=0.826	1.0000 p= ---			
Malic acid	-0.3835 p=0.015	0.8643 p=0.000	0.1233 p=0.448	1.0000 p= ---		
Quinic acid	0.0817 p=0.616	0.4494 p=0.004	0.5321 p=0.000	0.6455 p=0.000	1.0000 p= ---	
Total acids by GC	-0.3510 p=0.026	0.8540 p=0.000	0.2020 p=0.211	0.9967 p=0.000	0.6886 p=0.000	

Table S3. Correlation (Pearson's and p) among fructose, glucose, sorbitol, other sugars, total sugars, and soluble solids (Brix) in cherry cultivars.

Trait	Fructose	Glucose	Sorbitol	Other sugars	Total sugars	Soluble solids (Brix)
Fructose	1.0000 p= ---					
Glucose	0.9769 p=0.000	1.0000 p= ---				
Sorbitol	0.6804 p=0.000	0.7284 p=0.000	1.0000 p= ---			
Other sugars	0.5826 p=0.000	0.5576 p=0.000	0.2120 p=0.189	1.0000 p= ---		
Total sugars	0.9763 p=0.000	0.9877 p=0.000	0.8101 p=0.000	0.5268 p=0.000	1.0000 p= ---	
Soluble solids (Brix)	0.4106 p=0.008	0.4072 p=0.009	0.4642 p=0.003	-0.0325 p=0.842	0.4429 p=0.004	1.0000 p= ---

Table S4. Correlation (Pearson's and p) among anthocyanin levels, AA, and color parameters in cherry cultivars.

Trait	Cyanidin Glucoside	Cyanidin Rutinoside	Peonidin Glucoside	Peonidin Rutinoside	TAI	ORAC	L*	a*	b*	Chroma	Hue angle
Cyanidin Glucoside	1.0000 p= ---										
Cyanidin Rutinoside	0.0551 p=0.736	1.0000 p= ---									
Peonidin Glucoside	0.9390 p=0.000	0.0341 p=0.835	1.0000 p= ---								
Peonidin Rutinoside	-0.3839 p=0.014	0.5323 p=0.000	-0.3525 p=0.026	1.0000 p= ---							
TAI	0.3295 p=0.038	0.9595 p=00.00	0.2942 p=0.065	0.4336 p=0.005	1.0000 p= ---						
ORAC	0.5033 p=0.001	0.4603 p=0.003	0.5313 p=0.000	0.0382 p=0.815	0.5738 p=0.000	1.0000 p= ---					
L*	-0.1749 p=0.280	-0.5046 p=0.001	-0.1216 p=0.455	-0.3456 p=0.029	-0.5344 p=0.000	-0.1978 p=0.221	1.0000 p= ---				
a*	-0.2357 p=0.143	-0.4133 p=0.008	-0.1936 p=0.231	-0.3818 p=0.015	-0.4727 p=0.002	-0.1443 p=0.375	0.9305 p=0.000	1.0000 p= ---			
b*	0.0447 p=0.784	-0.2732 p=0.088	0.0725 p=0.657	-0.3857 p=0.014	-0.2603 p=0.105	0.0943 p=0.563	0.8599 p=0.000	0.9227 p=0.000	1.0000 p= ---		
Chroma	-0.2183 p=0.176	-0.4071 p=0.009	-0.1769 p=0.275	-0.3839 p=0.014	-0.4620 p=0.003	-0.1294 p=0.426	0.9308 p=0.000	0.9997 p=00.00	0.9318 p=0.000	1.0000 p= ---	
Hue angle	0.5989 p=0.000	0.0131 p=0.936	0.5957 p=0.000	-0.3054 p=0.055	0.1742 p=0.282	0.4627 p=0.003	0.3191 p=0.045	0.3505 p=0.027	0.6678 p=0.000	0.3719 p=0.018	1.0000 p= ---