

**Phytochemical profiles of new red-fleshed apple varieties compared with
traditional and new white-fleshed varieties**

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Table 1 Supporting Information. Optimized SRM conditions for the studied compounds in apples.

Compound	SRM quantification			Quantification (standard used to quantify)
	Transition	Cone voltage (V)	Collision energy (eV)	
Anthocyanins *				
Pelargonidin arabinoside	403 > 271	40	20	Pelargonidin-3-O-glucoside
Pelargonidin glucoside	433 > 271	40	20	Pelargonidin-3-O-glucoside
Pelargonidin acetylglucoside	475 > 271	40	20	Pelargonidin-3-O-glucoside
Carboxypirano pelargonidin glucoside	501 > 339	40	15	Pelargonidin-3-O-glucoside
Pelargonidin malonylglucoside	519 > 271	40	25	Pelargonidin-3-O-glucoside
Pelargonidin rutinoside	579 > 271	40	30	Pelargonidin-3-O-glucoside
Cyanidin arabinoside	419 > 287	40	20	Cyanidin-3-O-glucoside
Cyanidin glucoside	449 > 287	40	20	Cyanidin-3-O-glucoside
Cyanidin galactoside	449 > 287	40	20	Cyanidin-3-O-galactoside
Cyanidin acetylglucoside	491 > 287	40	30	Cyanidin-3-O-glucoside
Cyanidin malonylglucoside	535 > 287	40	15	Cyanidin-3-O-glucoside
Cyanidin rutinoside	595 > 287	40	25	Cyanidin-3-O-glucoside
Peonidin arabinoside	433 > 301	40	20	Cyanidin-3-O-glucoside
Peonidin glucoside	463 > 301	40	20	Cyanidin-3-O-glucoside
Peonidin acetylglucoside	505 > 301	40	25	Cyanidin-3-O-glucoside
Peonidin malonylglucoside	549 > 301	40	20	Cyanidin-3-O-glucoside
Peonidin rutinoside	609 > 301	40	20	Cyanidin-3-O-glucoside
Delphinidin arabinoside	435 > 303	40	20	Delphinidin-3-O-glucoside
Delphinidin rhamnoside	449 > 303	40	10	Delphinidin-3-O-glucoside
Delphinidin glucoside	465 > 303	40	20	Delphinidin-3-O-glucoside
Delphinidin acetylglucoside	507 > 303	40	20	Delphinidin-3-O-glucoside
Delphinidin malonylglucoside	551 > 303	40	20	Delphinidin-3-O-glucoside
Delphinidin rutinoside	611 > 303	40	20	Delphinidin-3-O-glucoside
Petunidin arabinoside	449 > 317	40	20	Malvidin-3-O-glucoside
Petunidin glucoside	479 > 317	40	20	Malvidin-3-O-glucoside
Petunidin acetylglucoside	521 > 317	40	25	Malvidin-3-O-glucoside
Petunidin malonylglucoside	565 > 317	40	20	Malvidin-3-O-glucoside
Petunidin rutinoside	625 > 317	40	20	Malvidin-3-O-glucoside
Malvidin arabinoside	463 > 331	40	20	Malvidin-3-O-glucoside
Malvidin glucoside	493 > 331	40	20	Malvidin-3-O-glucoside
Malvidin acetylglucoside	535 > 331	40	25	Malvidin-3-O-glucoside
Malvidin malonylglucoside	579 > 331	40	20	Malvidin-3-O-glucoside
Malvidin rutinoside	639 > 331	40	20	Malvidin-3-O-glucoside
Phenolic acids and alcohols				
<i>p</i> -Hydroxybenzoic acid	137 > 93	30	15	<i>p</i> -Hydroxybenzoic acid
Hydroxyphenylacetic acid	151 > 107	20	10	<i>p</i> -Hydroxyphenylacetic acid
Protocatechuic acid	153 > 109	45	15	Protocatechuic acid
Hydroxytyrosol	153 > 123	35	10	Hydroxytyrosol
Homogentisic acid	167 > 152	40	15	<i>p</i> -Hydroxybenzoic acid
Gallic acid	169 > 125	35	10	Gallic acid
Gallic acid hexoside	331 > 169	40	15	Gallic acid
Caffeic acid	179 > 135	35	15	Caffeic acid
Dihydroxyphenylpropionic acid	181 > 137	20	15	2-(3,4-dihydroxyphenyl)propionic acid
Caffeic acid glucoside	311 > 179	40	15	Caffeic acid
<i>p</i> -coumaric acid	163 > 119	35	10	<i>p</i> -coumaric acid
Coumaric acid hexoside	325 > 145	40	15	<i>p</i> -coumaric acid
Coumaric acid derivate	429 > 163	40	15	<i>p</i> -coumaric acid
Vanillic acid	167 > 123	30	10	Vanillic acid
Vanillic acid hexoside	329 > 167	30	15	Vanillic acid
Vanillic acid derivative	363 > 167	40	15	Vanillic acid
Ferulic acid	193 > 134	30	15	Ferulic acid
Ferulic acid hexoside	355 > 193	40	20	Ferulic acid
Ferulic acid derivate	389 > 193	40	15	Ferulic acid
Chlorogenic acid	353 > 191	30	10	Chlorogenic acid
Chlorogenic acid glucoside	515 > 353	40	15	Chlorogenic acid
Syringic acid	197 > 182	30	10	Syringic acid
Flavan-3-ols				
Catechin	289 > 245	45	15	Catechin
Epicatechin	289 > 245	45	15	Epicatechin
Dimer	577 > 289	45	20	Dimer B2
Epigallocatechin	305 > 125	40	15	Epicatechin
Epicatechin gallate	441 > 169	40	20	Epicatechin
Epigallocatechin gallate	457 > 169	40	15	Epicatechin
Trimer	865 > 287	60	30	Dimer B2
Tetramer	1153 > 865	70	20	Dimer B2
Flavone				
Apigenin	269 > 117	60	25	Luteolin
Apigenin glucoside	431 > 269	45	25	Luteolin-7-O-glucoside
Luteolin	285 > 133	55	25	Luteolin

Luteolin glucoside	447 > 285	50	25	Luteolin-7-O-glucoside
Flavonol				
Quercetin	301 > 151	40	15	Quercetin
Dihydroquercetin	303 > 285	45	10	Quercetin
Dihydroquercetin rhamnoside	549 > 303	45	15	Quercetin-3-O-rhamnoside
Quercetin arabinoside	433 > 301	45	15	Quercetin-3-O-glucoside
Quercetin rhamnoside	447 > 300	45	25	Quercetin-3-O-rhamnoside
Quercetin glucoside	463 > 301	40	25	Quercetin-3-O-glucoside
Rutin	609 > 301	45	25	Rutin
Quercetin galloyl hexoside	615 > 463	40	30	Quercetin-3-O-glucoside
Quercetin diglucoside	625 > 463	40	20	Quercetin-3-O-glucoside
Kaempferol	285 > 151	35	15	Kaempferol
Dihydroxykaempferol	287 > 259	45	10	Kaempferol-7-O-glucoside
Kaempferol rhamnoside	431 > 285	45	20	Kaempferol-7-O-glucoside
Kaempferol glucoside	447 > 285	50	25	Kaempferol-7-O-glucoside
Dihydroxykaempferol glucoside	449 > 269	40	15	Kaempferol-7-O-glucoside
Kaempferol rutoside	593 > 285	40	25	Kaempferol-7-O-glucoside
Isorhamnetin	315 > 300	45	15	Isorhamnetin
Isorhamnetin glucoside	477 > 315	45	20	Isorhamnetin-7-O-glucoside
Myricetin	317 > 179	40	15	Myricetin
Myricetin rhamnoside	463 > 316	40	25	Myricetin
Myricetin glucoside	479 > 316	45	20	Myricetin
Flavanone				
Eriodictyol	287 > 151	45	10	Eriodictyol
Eriodictyol hexoside	449 > 287	40	20	Eriodictyol
Naringenin	271 > 151	40	15	Naringenin
Naringenin glucoside	433 > 271	45	10	Naringenin
Dihydrochalcone				
Phloretin	273 > 167	40	20	Phloretin-2-O-glucoside
Phloretin glucoside	435 > 273	40	15	Phloretin-2-O-glucoside
Phloretin xylosyl glucoside	567 > 273	45	15	Phloretin-2-O-glucoside
Hydroxyphloretin xylosyl glucoside	583 > 289	45	15	Phloretin-2-O-glucoside
Triterpenes				
Betulinic acid	277 > 277	40	5	Ursolic acid
Linolic acid	279 > 279	40	5	Ursolic acid
Ursolic acid	455 > 455	40	5	Ursolic acid
Oleanolic acid	455 > 455	40	5	Ursolic acid
Maslinic acid	471 > 471	40	5	Ursolic acid
Hydroxyursolic acid	471 > 471	40	5	Ursolic acid
Hydroxyoleanolic acid	471 > 471	40	5	Ursolic acid
Dihydroxyursan-28-oic	473 > 473	40	5	Ursolic acid
Euscaphic acid	487 > 487	40	5	Ursolic acid
Coumaroyltormentic acid	633 > 633	40	5	Ursolic acid
Organic acid				
Lactic acid	89 > 45	20	10	Malic acid
Oxalic acid	89 > 61	20	10	Malic acid
Fumaric acid	115 > 71	30	10	Malic acid
Succinic acid	117 > 73	30	10	Malic acid
Malic acid	133 > 115	20	10	Malic acid
α -ketoglutaric acid	145 > 101	30	10	Malic acid
Tartaric acid	149 > 87	30	10	Malic acid
Shikimic acid	173 > 93	30	10	Malic acid
Pyruvic acid	175 > 87	15	15	Malic acid
Ascorbic acid	175 > 115	15	10	Ascorbic acid
Quinic acid	191 > 147	40	15	Malic acid
Citric acid	191 > 111	40	10	Citric acid

* Positive ionization mode

Table 2 Supporting Information. Anthocyanin concentration (mg/kg) in flesh and peel from different apple varieties (mean value ± standard deviation)(n=9).

Anthocyanin (mg/kg flesh)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothee	Zhen Aztec Fuji	Granny Smith	Story
Pelargonidin Arabinoside	n.d. ^b	n.d. ^b	0.01 ± 0.00 ^a	0.00 ± 0.00 ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b
Pelargonidin Glucoside	0.02 ± 0.00 ^a	0.01 ± 0.00 ^b	0.01 ± 0.00 ^a	0.01 ± 0.00 ^{ab}	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c
Pelargonidin Rutinoside	0.07 ± 0.00 ^{bc}	0.04 ± 0.01 ^c	0.05 ± 0.04 ^c	0.06 ± 0.01 ^c	0.44 ± 0.03 ^a	0.61 ± 0.04 ^a	0.50 ± 0.04 ^a	0.50 ± 0.06 ^a	0.30 ± 0.02 ^{ab}
Total pelargonidin derivatives	0.09 ± 0.00^b	0.05 ± 0.01^b	0.07 ± 0.04^b	0.08 ± 0.01^b	0.44 ± 0.03^a	0.61 ± 0.04^a	0.50 ± 0.04^a	0.50 ± 0.06^a	0.30 ± 0.02^{ab}
Cyanidin Arabinoside	3.07 ± 0.40 ^a	0.30 ± 0.15 ^{ab}	4.76 ± 1.84 ^a	1.61 ± 0.75 ^a	n.d. ^d	0.02 ± 0.01 ^{abc}	0.00 ± 0.01 ^{cd}	0.01 ± 0.01 ^{bcd}	0.03 ± 0.01 ^{abc}
Cyanidin Galactoside	45.4 ± 6.09 ^a	8.44 ± 3.34 ^a	44.0 ± 9.37 ^a	14.9 ± 7.56 ^a	0.03 ± 0.01 ^c	0.11 ± 0.09 ^{bc}	0.03 ± 0.02 ^c	0.07 ± 0.07 ^{bc}	0.34 ± 0.10 ^b
Total cyanidin derivatives	48.4 ± 6.49^a	8.74 ± 3.49^a	48.8 ± 11.2^a	16.5 ± 8.31^a	0.03 ± 0.01^c	0.13 ± 0.11^{bc}	0.03 ± 0.03^c	0.08 ± 0.08^{bc}	0.37 ± 0.10^b
Peonidin Arabinoside	n.d. ^b	n.d. ^b	0.01 ± 0.00 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b
Peonidin Glucoside	0.02 ± 0.00 ^a	0.01 ± 0.00 ^a	0.01 ± 0.00 ^a	0.00 ± 0.01 ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.01 ± 0.00 ^a
Total peonidin derivatives	0.02 ± 0.00^a	0.01 ± 0.00^a	0.03 ± 0.00^a	0.00 ± 0.01^b	n.d.^b	n.d.^b	n.d.^b	n.d.^b	0.01 ± 0.00^a
Delphinidin Arabinoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.04 ± 0.03 ^a	0.01 ± 0.00 ^a	0.00 ± 0.00 ^a	0.01 ± 0.00 ^a	0.01 ± 0.00 ^a
Delphinidin Rhamnoside	0.55 ± 0.06 ^a	0.39 ± 0.15 ^{ab}	0.35 ± 0.04 ^{ab}	0.26 ± 0.02 ^{bc}	0.18 ± 0.03 ^{cd}	0.44 ± 0.02 ^{ab}	0.06 ± 0.01 ^e	0.14 ± 0.03 ^d	0.27 ± 0.05 ^{bc}
Delphinidin Glucoside	0.02 ± 0.00 ^a	n.d. ^b	0.02 ± 0.01 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b
Delphinidin Acetylglucoside	0.05 ± 0.01 ^a	0.01 ± 0.00 ^b	0.04 ± 0.01 ^a	0.01 ± 0.015 ^b	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c
Delphinidin MalonylGlucoside	n.d.	n.d.	0.05 ± 0.08	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Delphinidin Rutinoside	0.01 ± 0.00 ^{ab}	0.00 ± 0.00 ^{ab}	0.00 ± 0.00 ^{ab}	0.01 ± 0.01 ^a	0.00 ± 0.00 ^{ab}	0.01 ± 0.00 ^a	n.d. ^b	0.01 ± 0.00 ^a	0.02 ± 0.00 ^a
Total delphinidin derivatives	0.62 ± 0.06^a	0.40 ± 0.16^{abc}	0.47 ± 0.11^{ab}	0.28 ± 0.03^{bc}	0.23 ± 0.02^{cd}	0.47 ± 0.02^{ab}	0.06 ± 0.01^e	0.15 ± 0.03^d	0.28 ± 0.05^{bc}
Petunidin Arabinoside	0.01 ± 0.00 ^a	0.02 ± 0.00 ^a	n.d. ^b	0.01 ± 0.01 ^a	0.02 ± 0.01 ^a	n.d. ^b	n.d. ^b	0.00 ± 0.00 ^a	0.02 ± 0.00 ^a
Petunidin Rutinoside	0.00 ± 0.00	n.d.	n.d. ^b	0.00 ± 0.00	n.d.	n.d.	n.d.	n.d.	n.d.
Total petunidin derivatives	0.01 ± 0.00^a	0.02 ± 0.00^a	n.d.^b	0.01 ± 0.01^a	0.02 ± 0.01^a	n.d.^b	n.d.^b	0.00 ± 0.00^a	0.01 ± 0.00^a
Malvidin malonylglucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.01 ± 0.00 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b
Malvidin Rutinoside	0.03 ± 0.01 ^{ab}	0.12 ± 0.06 ^a	0.03 ± 0.00 ^{bc}	0.02 ± 0.01 ^{bc}	0.01 ± 0.00 ^{bc}	0.02 ± 0.00 ^{bc}	0.01 ± 0.00 ^c	0.01 ± 0.00 ^{bc}	0.02 ± 0.01 ^{bc}
Total malvidin derivatives	0.03 ± 0.01^{ab}	0.12 ± 0.06^a	0.03 ± 0.00^{bc}	0.02 ± 0.01^{bc}	0.02 ± 0.00^{bc}	0.02 ± 0.00^{bc}	0.01 ± 0.00^c	0.01 ± 0.00^{bc}	0.02 ± 0.01^{bc}
Total anthocyanins	49.2 ± 6.55^a	9.34 ± 3.57^b	49.3 ± 11.3^a	16.9 ± 8.33^b	0.73 ± 0.06^c	1.23 ± 0.11^c	0.60 ± 0.06^c	0.74 ± 0.10^c	0.99 ± 0.10^c

Anthocyanin (mg/kg peel)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothee	Zhen Aztec Fuji	Granny Smith	Story
Pelargonidin Arabinoside	0.02±0.00 ^{ab}	n.d. ^c	0.02±0.00 ^{ab}	0.01±0.01 ^{bc}	0.00±0.01 ^c	n.d. ^e	n.d. ^c	n.d. ^c	0.03±0.00 ^a
Pelargonidin Glucoside	0.10±0.04 ^b	0.04±0.01 ^c	0.10±0.02 ^b	0.03±0.01 ^{cd}	0.03±0.01 ^{cd}	n.d. ^e	0.02±0.00 ^d	n.d. ^e	0.25±0.02 ^a
Pelargonidin acetylGlucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.01±0.00 ^a	n.d. ^b	n.d. ^b
Carboxypyranopelargonidin Glucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.01±0.00 ^a	n.d. ^b	0.01±0.00 ^a
Pelargonidin rutinoside	0.40±0.08 ^b	0.17±0.04 ^c	0.64±0.27 ^b	0.23±0.03 ^c	1.60±0.19 ^a	1.58±0.22 ^a	1.26±0.09 ^a	1.17±0.21 ^a	1.29±0.13 ^a
Total pelargonidin derivatives	0.52±0.04^b	0.21±0.04^c	0.76±0.26^b	0.26±0.02^c	1.63±0.18^a	1.59±0.22^a	1.29±0.09^a	1.17±0.21^a	1.58±0.14^a
Cyanidin Arabinoside	19.5±6.55 ^a	6.03±2.03 ^{ab}	32.12±6.13 ^a	5.33±2.78 ^{ab}	10.38±3.25 ^a	0.01±0.01 ^c	3.53±0.69 ^{ab}	0.02±0.01 ^{bc}	53.10±8.22 ^a
Cyanidin Galactoside	166±31.8 ^{ab}	66.9±17.5 ^{bc}	268±39.5 ^{ab}	39.3±19.0 ^c	47.5±13.2 ^c	0.10±0.07 ^d	24.1±5.46 ^c	0.12±0.07 ^d	315.55±40.12 ^a
Cyanidin acetyl glucoside	n.d. ^b	n.d. ^b	0.02±0.00 ^a	n.d. ^b	0.00±0.01 ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.025±0.001 ^a
Cyanidin malonylglucoside	0.24±0.14 ^{ab}	0.09±0.02 ^{bc}	0.06±0.01 ^c	n.d. ^d	0.05±0.03 ^c	n.d. ^d	0.04±0.01 ^c	n.d. ^d	0.50±0.06 ^a
Cyanidin rutinoside	0.03±0.02 ^{ab}	0.01±0.01 ^{ab}	0.03±0.01 ^{ab}	0.01±0.01 ^{bc}	0.00±0.01 ^{bc}	n.d.	0.03±0.01 ^{ab}	n.d. ^c	0.13±0.08 ^a
Total cyanidin derivatives	186±37.2^{ab}	73.0±19.2^{bc}	301±44.7^a	44.6±21.7^c	58.0±16.4^{bc}	0.11±0.08^d	27.7±6.14^c	0.14±0.07^d	369.31±47.70^a
Peonidin Arabinoside	0.11±0.04 ^a	0.03±0.01 ^a	0.10±0.03 ^a	0.23±0.10 ^a	0.15±0.03 ^a	n.d. ^b	0.00±0.01 ^b	n.d. ^b	0.08±0.02 ^a
Peonidin Glucoside	0.33±0.13 ^a	0.12±0.03 ^b	0.33±0.07 ^a	0.57±0.33 ^a	0.33±0.05 ^a	n.d. ^b	0.04±0.01 ^c	n.d. ^b	0.26±0.07 ^{ab}
Peonidin malonylGlucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.012±0.001 ^a
Total peonidin derivatives	0.43±0.17^a	0.15±0.03^b	0.43±0.09^a	0.80±0.43^a	0.48±0.07^a	n.d.^d	0.04±0.017^c	n.d.^d	0.35±0.09^{ab}
Delphinidin arabinoside	0.01±0.01 ^{ab}	n.d. ^b	0.01±0.01 ^{ab}	n.d. ^b	0.01±0.01 ^{ab}	0.00±0.01 ^{ab}	0.00±0.00 ^b	0.01±0.00 ^b	0.06±0.00 ^a
Delphinidin rhamnoside	8.10±3.47 ^{ab}	6.68±1.36 ^{bc}	8.83±1.10 ^{ab}	3.38±0.72 ^c	6.71±1.90 ^{bc}	5.23±0.24 ^{bc}	4.07±0.98 ^{bc}	4.78±1.69 ^{bc}	15.00±1.24 ^a
Delphinidin Glucoside	0.17±0.10	0.09±0.04	0.24±0.04	0.15±0.09	0.02±0.02	0.02±0.01	0.03±0.02	0.04±0.02	0.18±0.11
Delphinidin acetylGlucoside	0.18±0.06 ^{ab}	0.08±0.02 ^{bc}	0.31±0.03 ^a	0.04±0.02 ^{cd}	0.04±0.01 ^{cd}	n.d. ^e	0.02±0.00 ^d	n.d. ^e	0.29±0.03 ^a

Delphinidin rutinoside	0.79±0.80	0.89±0.57	0.59±0.35	3.00±1.74	0.98±0.34	0.39±0.18	3.01±1.80	3.30±2.33	1.78±1.61
Total delphinidin derivatives	9.24±4.37	7.74±1.89	9.98±1.43	6.57±2.53	7.77±2.23	5.64±0.33	7.12±2.70	8.11±3.90	17.31±2.32
Petunidin Arabinoside	0.01±0.01 ^{bc}	0.04±0.01 ^{ab}	n.d. ^c	0.03±0.01 ^{ab}	0.02±0.02 ^{abc}	0.03±0.01 ^{ab}	0.03±0.01 ^{ab}	0.06±0.01 ^a	n.d. ^c
Petunidin Glucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.05±0.02 ^a	n.d. ^b
Petunidin Rutinoside	0.01±0.00 ^d	n.d. ^e	0.01±0.00 ^{cd}	0.35±0.14 ^a	0.08±0.03 ^b	0.01±0.00 ^{cd}	0.02±0.01 ^{cd}	0.05±0.04 ^{bc}	0.01±0.00 ^{cd}
Total petunidin derivatives	0.01±0.01^e	0.04±0.01^d	0.01±0.00^e	0.37±0.14^a	0.10±0.02^{bc}	0.05±0.01^{cd}	0.05±0.01^{cd}	0.16±0.07^{ab}	0.01±0.00^e
Malvidin malonylGlucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.03±0.00 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b
Malvidin Rutinoside	0.04±0.01 ^{cde}	0.17±0.08 ^a	0.10±0.02 ^{abc}	0.06±0.03 ^{bcdde}	n.d. ^f	0.07±0.01 ^{abcd}	0.02±0.00 ^e	0.03±0.01 ^{de}	0.12±0.02 ^{ab}
Total malvidin derivatives	0.04±0.01^{cde}	0.17±0.08^a	0.10±0.02^{abc}	0.06±0.03^{bcdde}	0.03±0.00^a	0.07±0.01^{abcd}	0.02±0.00^e	0.03±0.01^{de}	0.12±0.02^{ab}
Total anthocyanins	197±40.7^{ab}	81.3±21.1^{bc}	312±44.3^a	52.6±24.5^c	68.0±14.5^c	7.46±0.42^d	36.2±6.57^c	9.62±3.74^d	388.69±49.12^a

For each row, values not connected by same letter are significantly different (one-way ANOVA, Tukey's test between all means, $p < 0.05$).

n.d.: not detected

Table 3 Supporting Information. Concentration of phenolic acids and dihydrochalcones in different apple varieties (mean value ± standard deviation)(*n*=9).

Phenolic compound (mg/kg flesh)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothee	Zhen Aztec Fuji	Granny Smith	Story
Protocatechuic acid	4.09 ± 0.54 ^a	4.34 ± 0.60 ^a	3.26 ± 0.38 ^a	3.24 ± 0.35 ^a	n.d. ^b	1.04 ± 0.06 ^a	0.31 ± 0.47 ^b	n.d. ^b	n.d. ^b
Hydroxytyrosol	0.62 ± 0.12 ^{abc}	0.91 ± 0.24 ^a	0.46 ± 0.07 ^{cd}	0.77 ± 0.10 ^{ab}	0.32 ± 0.07 ^d	0.49 ± 0.06 ^{bcd}	0.33 ± 0.06 ^d	0.45 ± 0.07 ^{cd}	0.43 ± 0.08 ^{cd}
Homogentisic acid	0.94 ± 0.14 ^a	0.52 ± 0.08 ^{bcd}	0.58 ± 0.07 ^{bc}	0.47 ± 0.08 ^{bcd}	0.63 ± 0.07 ^b	0.42 ± 0.09 ^{cd}	0.37 ± 0.05 ^{de}	0.28 ± 0.04 ^e	0.46 ± 0.10 ^{bcd}
Galic acid	n.d. ^b	0.57 ± 0.43 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	1.08 ± 0.12 ^a
Galic acid hexoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.79 ± 0.06 ^a
Coumaroyl hexoside	1.87 ± 0.27 ^{ode}	2.82 ± 0.88 ^{bcd}	0.88 ± 0.12 ^e	7.42 ± 1.83 ^a	1.26 ± 0.61 ^{de}	1.56 ± 0.25 ^{cde}	3.12 ± 1.22 ^{abcd}	5.67 ± 0.82 ^{ab}	3.01 ± 0.23 ^{abc}
Coumaric acid derivative	0.52 ± 0.04 ^a	0.44 ± 0.04 ^a	n.d. ^b	0.42 ± 0.03 ^a	0.35 ± 0.02 ^a	0.64 ± 0.11 ^a	0.38 ± 0.02 ^a	0.22 ± 0.17 ^a	0.44 ± 0.04 ^a
Vanillic acid	0.31 ± 0.10 ^a	0.23 ± 0.05 ^a	0.32 ± 0.05 ^a	0.22 ± 0.07 ^a	n.d. ^b	0.03 ± 0.05 ^{ab}	n.d. ^b	n.d. ^b	0.06 ± 0.06 ^{ab}
Vanillic acid hexoside	8.07 ± 0.99 ^a	6.34 ± 1.12 ^a	9.88 ± 0.77 ^a	5.80 ± 0.60 ^a	1.67 ± 0.30 ^c	3.20 ± 0.99 ^b	2.33 ± 0.81 ^{bc}	0.94 ± 0.30 ^d	2.43 ± 0.25 ^{bc}
Ferulic acid hexoside	3.05 ± 0.79 ^{ab}	2.06 ± 0.84 ^{bc}	1.27 ± 0.39 ^{cd}	3.93 ± 0.40 ^a	1.85 ± 0.42 ^{bc}	1.41 ± 0.12 ^{bcd}	2.62 ± 0.51 ^{ab}	0.78 ± 0.14 ^d	1.15 ± 0.27 ^{cd}
Ferulic acid derivative	n.d. ^b	n.d. ^b	n.d. ^b	0.01 ± 0.01 ^b	0.15 ± 0.08 ^a	n.d. ^b	0.06 ± 0.05 ^a	n.d. ^b	0.07 ± 0.07 ^a
Chlorogenic acid	238 ± 35.7 ^{ab}	196 ± 64.7 ^{ab}	168 ± 27.9 ^b	306 ± 10.8 ^a	210 ± 13.0 ^{ab}	156 ± 10.1 ^b	193 ± 21.1 ^{ab}	52.3 ± 11.5 ^c	80.4 ± 20.3 ^c
Total phenolic acids	257 ± 36.1^{ab}	214 ± 63.4^{ab}	184 ± 28.6^b	328 ± 11.0^a	217 ± 13.7^{ab}	164 ± 10.5^b	202 ± 21.7^{ab}	60.7 ± 11.1^c	90.4 ± 20.6^c
Phloridzin	7.70 ± 1.83 ^{abc}	11.8 ± 5.20 ^{ab}	14.9 ± 7.23 ^{ab}	8.61 ± 1.69 ^{abc}	6.44 ± 1.67 ^{bc}	17.0 ± 5.30 ^a	17.8 ± 7.92 ^a	4.31 ± 1.35 ^c	6.53 ± 1.21 ^{bc}
Phloretin xylosil glucoside	39.1 ± 5.00 ^{bc}	31.9 ± 12.7 ^{bcd}	51.6 ± 22.1 ^{ab}	141 ± 48.6 ^a	16.5 ± 4.16 ^{cd}	29.0 ± 13.9 ^{bcd}	14.2 ± 4.35 ^{cd}	11.4 ± 4.02 ^d	25.1 ± 5.70 ^{bcd}
Hydroxy phloretin xylosil glucoside	1.00 ± 0.24	0.64 ± 0.13	0.40 ± 0.38	1.58 ± 0.54	0.54 ± 0.12	0.50 ± 0.08	0.46 ± 0.04	0.35 ± 0.02	0.68 ± 0.14
Total dihydrochalcone	47.8 ± 4.67^{bc}	44.3 ± 14.6^{bc}	66.9 ± 19.1^b	152 ± 49.9^a	23.5 ± 4.80^{cd}	46.3 ± 13.2^{bc}	32.4 ± 7.27^{bc}	16.1 ± 4.11^d	32.3 ± 6.54^{cd}
Phenolic compound (mg/kg peel)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothee	Zhen Aztec Fuji	Granny Smith	Story
Protocatechuic acid	100 ± 42.5 ^a	90.1 ± 44.0 ^a	86.6 ± 22.2 ^a	88.0 ± 26.90 ^a	32.4 ± 9.27 ^{ab}	7.21 ± 0.60 ^{cd}	21.4 ± 7.22 ^{bc}	6.31 ± 3.03 ^d	50.0 ± 7.94 ^{ab}
Hydroxytyrosol	8.29 ± 2.39 ^a	9.41 ± 3.82 ^a	5.98 ± 1.66 ^{ab}	7.46 ± 1.66 ^a	4.24 ± 0.48 ^{abc}	2.13 ± 0.51 ^c	2.56 ± 0.83 ^c	2.86 ± 0.64 ^{bc}	2.54 ± 0.33 ^c
Homogentisic acid	1.95 ± 0.09 ^{ab}	1.17 ± 0.46 ^{cd}	1.04 ± 0.14 ^{cd}	1.22 ± 0.23 ^{bc}	2.09 ± 0.38 ^a	1.05 ± 0.15 ^{cd}	1.11 ± 0.27 ^{cd}	1.24 ± 0.16 ^{abc}	0.67 ± 0.08 ^d
Galic acid	n.d.	1.04 ± 1.57	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Galic acid hexoside	n.d. ^b	n.d. ^b	1.53 ± 1.15 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	2.35 ± 0.37 ^a
Caffeic acid hexoside	3.36 ± 5.15	2.70 ± 4.27	n.d.	2.48 ± 2.45	n.d.	3.72 ± 3.09	1.02 ± 0.86	6.17 ± 2.73	0.50 ± 0.77
Coumaroyl hexoside	7.46 ± 1.54	10.8 ± 4.92	9.22 ± 5.81	22.1 ± 16.5	7.44 ± 0.96	7.37 ± 2.26	15.9 ± 5.78	5.23 ± 0.75	9.80 ± 1.44
Coumaric acid derivative	1.74 ± 0.14 ^{bc}	1.60 ± 0.09 ^c	1.03 ± 0.05 ^d	1.84 ± 0.11 ^{bc}	2.10 ± 0.22 ^b	3.86 ± 0.34 ^a	1.72 ± 0.14 ^c	2.09 ± 0.31 ^b	1.87 ± 0.20 ^{bc}
Vanillic acid	1.09 ± 0.28 ^a	1.05 ± 0.33 ^a	1.77 ± 0.40 ^a	0.89 ± 0.24 ^a	0.56 ± 0.18 ^a	0.29 ± 0.24 ^a	0.50 ± 0.19 ^a	n.d. ^b	1.81 ± 0.33 ^a
Vanillic acid hexoside	34.7 ± 6.95 ^{abc}	35.5 ± 10.4 ^{abc}	43.2 ± 5.59 ^{ab}	27.7 ± 3.92 ^{bcd}	22.5 ± 4.50 ^{cde}	15.1 ± 4.11 ^{de}	19.2 ± 3.52 ^{cde}	13.1 ± 4.05 ^e	63.6 ± 9.16 ^a
Ferulic acid hexoside	1.68 ± 1.22 ^{ab}	0.80 ± 0.85 ^{ab}	0.07 ± 0.09 ^d	4.07 ± 1.83 ^a	0.95 ± 0.30 ^{ab}	3.69 ± 1.60 ^a	3.62 ± 0.72 ^a	1.33 ± 0.20 ^{ab}	2.25 ± 0.64 ^a
Ferulic acid derivative	n.d.	n.d.	n.d.	0.05 ± 0.11	n.d.	n.d.	0.03 ± 0.05	n.d.	n.d.
Chlorogenic acid	110 ± 16.2 ^{bc}	101 ± 58.2 ^{bc}	46.2 ± 3.42 ^c	284 ± 70.9 ^a	143 ± 13.2 ^{ab}	165 ± 24.7 ^{ab}	177 ± 41.8 ^{ab}	6.68 ± 2.08 ^d	12.5 ± 3.79 ^d
Total phenolic acids	271 ± 58.9^{ab}	256 ± 61.5^{ab}	197 ± 24.3^b	434 ± 101^a	215 ± 14.1^b	209 ± 25.5^b	244 ± 41.9^{ab}	45.0 ± 11.4^c	148 ± 14.5^b
Phloridzin	182 ± 38.1 ^{ab}	151.1 ± 52.5 ^{ab}	311 ± 175 ^a	211 ± 32.1 ^a	32.8 ± 20.8 ^{cd}	79.5 ± 18.8 ^{abcd}	120 ± 101 ^{abc}	23.3 ± 14.2 ^d	48.8 ± 5.62 ^{bcd}
Phloretin xylosil glucoside	171 ± 19.4 ^b	142 ± 34.9 ^b	193 ± 87.3 ^b	653 ± 146 ^a	88.6 ± 23.2 ^{bc}	93.0 ± 10.6 ^{bc}	48.8 ± 28.6 ^c	46.8 ± 7.00 ^c	114 ± 10.8 ^b
Hydroxy phloretin xylosil glucoside	21.8 ± 13.1 ^{ab}	4.58 ± 1.14 ^{abc}	4.50 ± 2.02 ^{bc}	23.1 ± 9.18 ^a	2.39 ± 0.84 ^c	3.58 ± 0.96 ^{bc}	2.34 ± 1.29 ^c	1.35 ± 0.15 ^c	5.99 ± 4.51 ^{abc}
Total dihydrochalcone	375 ± 43.2^{abc}	298 ± 85.4^{bcd}	509 ± 260^{ab}	887 ± 172^a	124 ± 38.3^{de}	176 ± 18.7^{bcd}	172 ± 129^{cde}	71.5 ± 20.6^e	169 ± 19.5^{bcd}

For each row, values not connected by same letter are significantly different (one-way ANOVA, Tukey's test between all means, *p* < 0.05).

n.d.: not detected.

Table 4 in Supporting Information. Flavonoids concentration (mg/kg fresh apple) in different apple varieties (mean value ± standard deviation)(*n*=9).

Flavonoids (mg/kg flesh)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothee	Zhen Aztec Fuji	Granny Smith	Story
Catechin	1.87±0.23 ^a	1.17±0.89 ^{ab}	n.d. ^b	0.99±0.75 ^{ab}	11.9±1.45 ^a	7.10±1.00 ^a	6.48±1.00 ^a	14.6±3.59 ^a	4.10±0.65 ^a
Epicatechin	5.67±0.22 ^{cd}	3.65±0.46 ^d	7.00±2.09 ^c	4.56±0.48 ^{cd}	81.7±19.4 ^a	58.4±4.04 ^a	49.9±6.09 ^a	54.1±10.49 ^a	29.59±4.91 ^b
Dimer	11.99±1.02 ^c	6.96±1.09 ^d	11.5±1.84 ^c	8.12±0.81 ^d	86.1±6.12 ^a	84.4±4.10 ^a	76.4±7.53 ^a	90.4±17.12 ^a	50.99±5.80 ^b
Epigallocatechin	n.d. ^b	1.92±1.46 ^{ab}	1.11±0.05 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.30±0.45 ^{ab}	n.d. ^b
Trimer	2.39±0.16 ^c	1.95±0.19 ^c	2.40±0.29 ^c	2.09±0.20 ^c	15.3±2.19 ^a	15.4±2.06 ^a	14.3±1.62 ^a	17.0±3.63 ^a	7.65±1.05 ^b
Tetramer	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c	1.48±0.09 ^b	2.17±0.24 ^a	2.11±0.28 ^a	2.55±0.59 ^a	n.d. ^c
Total flavan-3-ols	21.9±0.96^c	15.6±3.69^c	22.0±3.82^c	15.8±2.00^c	197±25.2^a	167±6.82^a	149±9.15^a	179±27.2^a	92.33±10.90^b
Apigenin glucoside	0.01±0.01 ^{ab}	0.04±0.01 ^a	n.d. ^b	n.d. ^b	0.01±0.01 ^{ab}	n.d. ^b	n.d. ^b	n.d. ^b	0.01±0.01 ^{ab}
Luteolin glucoside	0.12±0.06 ^{ab}	0.14±0.06 ^a	0.13±0.02 ^a	n.d. ^c	n.d. ^c	0.06±0.01 ^{ab}	n.d. ^c	0.14±0.20 ^{bc}	0.05±0.01 ^{ab}
Total flavone	0.12±0.05^a	0.18±0.05^a	0.13±0.02^a	n.d.^b	0.01±0.01^{ab}	0.06±0.01^a	n.d.^b	0.14±0.20^{ab}	0.06±0.01^a
Dihydroquercetin	0.94±0.08 ^a	0.82±0.18 ^b	0.23±0.04 ^a	0.87±0.12 ^a	1.79±0.19 ^a	1.59±0.34 ^a	1.84±0.45 ^a	1.24±1.21 ^a	1.76±0.29 ^a
Dihydroquercetin rhamn.	n.d. ^b	0.33±0.25 ^a	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b
Quercetin arabinoside	2.96±0.69 ^a	3.01±3.34 ^a	0.49±0.32 ^{ab}	1.21±0.83 ^{ab}	0.29±0.20 ^b	1.39±0.28 ^{ab}	0.72±0.41 ^{ab}	0.48±0.18 ^{ab}	0.74±0.25 ^{ab}
Quercetin rhamnoside	5.35±0.62 ^{abcd}	5.54±2.22 ^{abc}	8.22±1.63 ^{ab}	3.15±0.14 ^{cdde}	2.46±0.36 ^{de}	10.1±3.85 ^a	1.50±0.53 ^e	4.31±2.07 ^{bcd}	4.77±1.07 ^{abcd}
Quercetin glycoside	1.54±0.56 ^a	1.96±1.75 ^a	0.55±0.29 ^a	1.59±1.25 ^a	n.d. ^b	0.41±0.14 ^a	0.33±0.54 ^a	0.59±0.28 ^a	0.31±0.26 ^a
diOHkaempferol	0.02±0.03 ^{bc}	n.d. ^d	0.03±0.04 ^c	n.d. ^d	4.00±1.29 ^a	3.17±1.02 ^a	1.70±1.32 ^a	1.82±2.69 ^{abc}	1.02±0.41 ^{ab}
Kaempferol rhamnoside	0.01±0.02 ^{ab}	0.33±0.55 ^{ab}	n.d. ^b	n.d. ^b	n.d. ^b	0.05±0.08 ^{ab}	n.d. ^b	0.46±0.55 ^a	0.03±0.07 ^{ab}
Kaempferol glucoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.75±0.37 ^a	n.d. ^b
Dihydrokaempferol glucoside	2.26±1.88 ^a	1.29±0.45 ^a	3.13±1.09 ^a	1.42±0.55 ^a	0.26±0.24 ^{ab}	n.d. ^c	0.02±0.05 ^{bc}	0.01±0.01 ^{bc}	0.58±0.31 ^a
Isorhamnetin glucoside	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c	n.d. ^c	1.12±0.24 ^a	n.d. ^c	0.16±0.22 ^b	n.d. ^c
Miricetin rhamnoside	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	n.d. ^b	0.99±0.76 ^a	n.d. ^b	n.d. ^b	n.d. ^b
Total flavonol	13.1±1.98^{ab}	13.0±6.70^{ab}	12.6±2.18^{ab}	8.24±2.19^b	8.80±1.65^{ab}	18.8±3.56^a	6.11±1.48^b	9.82±2.40^{ab}	9.21±2.13^{ab}
Eriodictyol hexoside	1.08±0.15 ^{ab}	0.91±0.38 ^{ab}	0.59±0.10 ^b	1.01±0.27 ^{ab}	0.79±0.12 ^{ab}	1.34±0.41 ^a	n.d. ^c	0.51±0.05 ^b	1.01±0.15 ^{ab}
Naringenin glucoside	0.59±0.26 ^{ab}	0.73±0.21 ^{ab}	0.39±0.10 ^b	0.55±0.14 ^{ab}	0.00±0.01 ^{ab}	0.01±0.02 ^a	n.d. ^c	0.05±0.06 ^b	0.02±0.03 ^{ab}
Total flavanone	1.68±0.28^a	1.64±0.55^a	0.98±0.17^{abc}	1.57±0.24^a	0.79±0.12^{bc}	1.35±0.41^{ab}	n.d.^d	0.56±0.09^c	1.03±0.15^{abc}
Flavonoids (mg/kg peel)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothee	Zhen Aztec Fuji	Granny Smith	Story
Catechin	7.70±1.17 ^{cd}	4.92±0.59 ^d	9.68±2.61 ^{bc}	5.16±0.57 ^d	22.55±4.67 ^a	11.1±1.57 ^{bc}	12.3±2.71 ^{bc}	12.02±1.69 ^{bc}	14.28±2.12 ^{ab}
Epicatechin	54.4±6.89 ^{de}	32.4±12.4 ^e	119±35.5 ^{bc}	30.9±2.41 ^e	298±77.5 ^a	173±17.8 ^{abc}	154±27.3 ^{abc}	97.9±35.2 ^{cd}	215.50±19.47 ^{ab}
Dimer	45.2±8.28 ^d	21.1±4.39 ^e	94.4±20.8 ^c	23.8±3.95 ^e	312±60.3 ^a	233±28.2 ^{ab}	202±11.5 ^{ab}	136±57.3 ^{bc}	200.30±30.58 ^{ab}
Epigallocatechin	n.d. ^b	6.23±2.39 ^a	2.28±1.73 ^{ab}	3.35±0.39 ^a	n.d. ^b	0.92±1.39 ^{ab}	n.d. ^b	3.58±0.52 ^a	1.00±1.50 ^{ab}
Trimer	9.42±1.32 ^d	5.73±0.75 ^d	18.85±5.22 ^c	6.27±0.49 ^d	62.8±11.3 ^a	41.9±6.95 ^{ab}	37.8±6.16 ^{ab}	37.1±8.25 ^b	33.24±3.63 ^b
Tetramer	n.d. ^c	n.d. ^c	3.66±0.33 ^b	n.d. ^c	6.26±0.84 ^a	6.06±0.72 ^a	5.65±0.51 ^a	5.18±0.17 ^a	5.21±0.51 ^a
Total flavan-3-ols	117±13.7^d	70.4±14.5^d	248±59.0^c	69.4±5.73^d	702±147^a	467±29.0^{ab}	412±38.5^{abc}	292±87.4^{bc}	469.52±53.44^{ab}
Apigenin glucoside	n.d. ^b	0.07±0.10 ^b	0.25±0.04 ^a	0.25±0.06 ^a	0.39±0.11 ^a	0.28±0.05 ^a	0.21±0.13 ^a	0.41±0.15 ^a	0.46±0.12 ^a
Luteolin glucoside	0.44±0.11 ^a	0.53±0.22 ^a	0.48±0.15 ^a	0.54±0.26 ^a	0.60±0.34 ^a	0.13±0.20 ^{ab}	n.d. ^b	0.75±0.62 ^{ab}	0.16±0.24 ^{ab}
Total flavone	0.44±0.11^{ab}	0.59±0.26^{ab}	0.73±0.17^{ab}	0.79±0.26^{ab}	0.99±0.43^a	0.42±0.20^{ab}	0.21±0.13^b	1.16±0.73^{ab}	0.62±0.25^{ab}
Dihydroquercetin	4.39±0.70 ^{bc}	4.33±1.08 ^c	5.04±1.23 ^{bc}	1.57±0.67 ^d	7.25±0.98 ^{abc}	5.20±0.79 ^{bc}	7.79±1.13 ^{ab}	6.39±1.41 ^{bc}	12.79±1.16 ^a

Dihydroquercetin rhamnoside	n.d.	0.42±0.62	n.d.						
Quercetin arabinoside	157±114	102±31.0	181±48.5	134±40.8	213±96.2	141±23.9	211±66.9	150±61.4	154.96±47.79
Quercetin rhamnoside	174±108 ^{ab}	149±50.8 ^{ab}	193±36.8 ^{ab}	45.5±11.9 ^a	170±75.3 ^{ab}	114±24.6 ^{bc}	109±54.0 ^{bc}	104±45.4 ^{bc}	416.72±101.97 ^a
Quercetin glycoside	149±106	156113	173±61.3	154±80.3	209±99.1	108±26.5	143±71.1	212±123.0	171.63±77.98
Quercetin-3-O-rutinoside	8.04±12.39	4.05±4.75	2.42±2.48	26.3±16.8	6.18±2.36	2.08±1.90	22.1±20.9	35.3±25.0	17.60±17.23
Quercetin diGlucoside	n.d. ^b	n.d. ^b	n.d. ^b	0.03±0.10 ^{ab}	1.06±0.29 ^a	0.37±0.54 ^{ab}	0.45±0.61 ^{ab}	3.83±2.72 ^a	1.09±0.67 ^a
Dihydroxykaempferol	0.55±0.43 ^{ab}	n.d. ^c	5.28±2.63 ^a	0.11±0.20 ^b	28.0±6.42 ^a	11.73±4.65 ^a	9.20±4.53 ^a	4.03±5.91 ^{ab}	18.58±2.90 ^a
Kaempferol rhamnoside	2.22±1.72 ^a	4.74±2.02 ^a	3.30±1.25 ^a	n.d. ^a	3.31±2.59 ^a	2.02±1.26 ^a	1.26±1.57 ^a	2.79±2.87 ^a	16.15±2.61 ^b
Kaempferol glucoside	n.d.	0.14±0.33	n.d.	n.d.	n.d.	n.d.	n.d.	0.68±0.72	n.d.
Dihydroxykaempferol glucoside	0.16±0.31 ^{ab}	n.d. ^b	3.82±5.03 ^a	n.d. ^b	0.35±0.54 ^{ab}	n.d. ^b	n.d. ^b	0.35±0.48 ^{ab}	0.26±0.26 ^{ab}
Kaempferol rutinoside	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.70±1.17	0.38±0.74	n.d.
Isorhamnetin glucoside	14.4±9.85	16.0±6.15	18.1±4.39	23.0±3.61	31.9±8.13	13.2±3.19	11.5±5.55	27.3±9.70	20.62±6.97
Myricetin rhamnoside	5.97±5.63	5.74±0.97	6.88±1.33	3.37±1.00	12.7±6.02	20.3±6.59	9.49±3.19	57.3±15.5	21.21±2.36
Myricetin glucoside	10.36±5.16	10.71±3.85	11.25±2.03	11.20±2.80	13.9±5.14	7.70±1.04	8.64±2.99	21.7±12.5	11.61±3.44
Total flavonol	526±357	453±176	603±122	399±129	697±255	425±62.6	534±191	626±267	863.21±187.12
Eriodictyol hexoside	6.90±0.77 ^a	6.30±1.29 ^a	5.49±0.74 ^a	6.47±1.38 ^a	1.56±0.23 ^b	2.20±0.71 ^b	1.55±0.13 ^b	1.99±0.42 ^b	2.56±0.90 ^b
Naringenin glucoside	7.11±2.05 ^a	4.40±1.51 ^{ab}	7.14±0.66 ^a	4.35±1.31 ^{ab}	2.21±0.44 ^{bc}	1.01±0.48 ^c	0.99±0.81 ^c	2.20±1.02 ^{bc}	6.76±0.80 ^a
Total flavanone	14.0±2.56^a	10.7±2.55^a	12.6±1.22^a	10.8±2.01^a	3.77±0.65^b	3.20±1.09^b	2.54±0.82^b	4.19±1.39^b	9.32±0.89^a

For each row, values not connected by same letter are significantly different (one-way ANOVA, Tukey's test between all means, $p < 0.05$).

n.d.: not detected.

Table 5 Supporting information. Triterpenes concentration in different apple varieties (mean value \pm standard deviation)($n=9$).

Triterpene (mg/kg flesh)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothie	Zhen Aztec Fuji	Granny Smith	Story
Betulinic acid	0.04 \pm 0.01	0.08 \pm 0.02	0.05 \pm 0.02	0.12 \pm 0.07	0.07 \pm 0.05	0.04 \pm 0.02	0.03 \pm 0.02	0.10 \pm 0.15	0.03 \pm 0.01
Oleanolic acid	n.d.	n.d.	n.d.	0.02 \pm 0.03	n.d.	0.00 \pm 0.01	n.d.	n.d.	n.d.
Ursolic acid	0.85 \pm 0.29	0.55 \pm 0.46	0.09 \pm 0.03	1.07 \pm 1.11	0.19 \pm 0.08	0.14 \pm 0.03	0.08 \pm 0.01	0.08 \pm 0.02	0.40 \pm 0.22
hydroxyursolic acid	0.18 \pm 0.08	0.22 \pm 0.05	0.07 \pm 0.02	0.50 \pm 0.41	0.04 \pm 0.02	0.05 \pm 0.00	0.03 \pm 0.03	0.01 \pm 0.01	0.75 \pm 0.54
Maslinic acid	0.15 \pm 0.11 ^a	0.06 \pm 0.02 ^a	0.03 \pm 0.01 ^a	0.38 \pm 0.29 ^{ab}	0.03 \pm 0.02 ^a	0.03 \pm 0.00 ^a	0.02 \pm 0.02 ^{ab}	n.d. ^b	0.23 \pm 0.13 ^a
Dihydroxyursan-28-oic	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Euscaphic acid	0.08 \pm 0.06 ^{ab}	0.11 \pm 0.04 ^{ab}	0.03 \pm 0.01 ^{ab}	0.56 \pm 0.46 ^a	0.06 \pm 0.03 ^{ab}	0.08 \pm 0.01 ^{ab}	0.04 \pm 0.03 ^{ab}	0.02 \pm 0.00 ^b	0.29 \pm 0.17 ^a
Coumaroyltormentic acid	n.d.	n.d.	n.d.	0.01 \pm 0.02	n.d.	n.d.	n.d.	n.d.	0.01 \pm 0.01
Total triterpenes	1.30 \pm 0.52	1.02 \pm 0.54	0.28 \pm 0.06	2.67 \pm 2.32	0.39 \pm 0.14	0.35 \pm 0.05	0.21 \pm 0.10	0.21 \pm 0.16	1.71 \pm 0.80
Triterpene (mg/kg peel)	107/06	117/06	119/06	RS-1	Brookfield Gala	Golden Smoothie	Zhen Aztec Fuji	Granny Smith	Story
Betulinic acid	22.5 \pm 11.3 ^{ab}	29.0 \pm 16.1 ^a	13.9 \pm 2.29 ^{ab}	19.1 \pm 7.85 ^{ab}	2.53 \pm 0.84 ^c	2.38 \pm 0.77 ^c	5.89 \pm 0.78 ^{bc}	19.6 \pm 6.68 ^{ab}	6.25 \pm 2.74 ^{bc}
Oleanolic acid	5.92 \pm 2.07	5.39 \pm 1.52	9.54 \pm 1.51	4.85 \pm 1.62	4.95 \pm 0.58	7.13 \pm 1.29	7.03 \pm 1.08	9.33 \pm 3.79	10.1 \pm 1.63
Ursolic acid	263 \pm 79.4 ^{ab}	178 \pm 9.71 ^{ab}	309 \pm 23.2 ^a	132 \pm 24.3 ^b	140 \pm 13.5 ^b	184 \pm 33.3 ^{ab}	214 \pm 37.8 ^{ab}	268 \pm 99.9 ^{ab}	326 \pm 41.9 ^a
Hydroxyursolic acid	71.7 \pm 21.3	48.9 \pm 16.0	93.1 \pm 29.2	43.8 \pm 7.63	45.1 \pm 4.42	42.7 \pm 6.14	75.2 \pm 26.8	56.5 \pm 20.5	83.0 \pm 11.7
Maslinic acid	24.1 \pm 5.51	15.4 \pm 6.51	29.6 \pm 5.56	14.1 \pm 1.38	12.5 \pm 2.52	17.3 \pm 3.86	22.6 \pm 10.6	14.2 \pm 6.44	27.7 \pm 5.49
Dihydroxyursan-28-oic	1.34 \pm 0.58 ^a	0.87 \pm 0.44 ^a	1.59 \pm 0.55 ^a	0.00 \pm 0.01 ^b	0.54 \pm 0.22 ^a	0.34 \pm 0.21 ^a	0.57 \pm 0.22 ^a	1.34 \pm 0.58 ^a	1.77 \pm 0.26 ^a
Euscaphic acid	127 \pm 27.2 ^a	44.2 \pm 23.0 ^{abc}	28.8 \pm 2.92 ^{bc}	45.7 \pm 9.82 ^{abc}	36.6 \pm 8.22 ^{abc}	14.1 \pm 3.27 ^{cd}	62.7 \pm 30.4 ^{ab}	9.18 \pm 6.36 ^d	105 \pm 10.9 ^a
Coumaroyltormentic acid	3.89 \pm 1.15 ^{bcd}	7.84 \pm 4.15 ^{bc}	10.7 \pm 3.06 ^{ab}	1.06 \pm 0.36 ^{ef}	4.85 \pm 0.86 ^{bcd}	0.74 \pm 0.19 ^t	3.32 \pm 1.74 ^{cde}	1.76 \pm 0.78 ^{def}	30.0 \pm 9.19 ^a
Total triterpenes	519 \pm 136^{ab}	330 \pm 75.0^{ab}	496 \pm 61.8^{ab}	261 \pm 50.9^b	247 \pm 26.6^b	269 \pm 47.9^b	391 \pm 105^{ab}	380 \pm 142^{ab}	590 \pm 73.7^a

For each row, values not connected by same letter are significantly different (one-way ANOVA, Tukey's test between all means, $p < 0.05$).

n.d.: not detected.