

# Transcriptional analysis of apple fruit proanthocyanidin biosynthesis

Rebecca A. Henry-Kirk, Tony K. McGhie, Christelle M. Andre, Roger P. Hellens

Andrew C. Allan

## Supplementary Material

**Table S1: Forward and Reverse primers for apple genes used in qPCR analysis**

Gene Identifier	Gene Name	Forward Primer 5' – 3'	Reverse Primer 5' – 3'
ES790093	MdPAL	CGAGGAGTGTGACAAGGTGTTCCA	AGGAATGCAGCATGTAAACCGTGAC
EB135197	MdC4H	GGACGTTTAGTCCAGAACTTCGAGCT	ACTTCATCACAATGGTGAATGCTTC
EB122629	Md4CL	CATAAACAGTGTCCCCAAGTCAGCAT	AGTGTTCTACAAGCCTTCCCGATAA
CN944824	MdCHS	GGAGACAACTGGAGAAGGACTGGAA	CGACATTGATACTGGTGTCTTCA
CN946541	MdCHI	GGGATAACCTCGCGGCCAAA	GCATCCATGCCGGAAGCTACAA
CN491664	MdF3H	TGGAAGCTTGTGAGGACTGGGGT	CTCCTCCGATGGCAAATCAAAGA
AF117268	MdDFR	GATAGGGTTTGAGTTCAAGTA	TCTCCTCAGCAGCCTCAGTTTTCT
AF117269	MdANS	TCTCCTCAGCAGCCTCAGTTTTCT	CAAAGCAGGCGGACAGGAGTAGC
EB137300	MdFLS	TCAGATGGAGATAATGAGCAATGGAAA	ATTAACGGGGTTCACAAGCTGTGG
AY830131	MdLAR1	TTGCAGTGGAAGGGCCTCATG	TGATCCTCCTCCTTTGCAGTAGCT
AY830132	MdLAR2	GATGTCAGGTGAATTTGCAGTGGGA	TGGAGACGTTCTCCTCATGCACT
EB125405	MdANR	TCGCTGGCTTATGATCCTCCTGTT	CCGTTTGCCAAACTCAGCAAATTA

**Table S2:** HPLC analysis for the identification of the polyphenolic compounds in tree ripe (Stage 5) apple skin and cortex from ‘Hetlina’, ‘Devonshire Quarrenden’ and ‘Royal Gala’.

Phenolic Compound (ug/g Fresh Frozen Tissue)	<i>Apple Sample</i>					
	Hetlina Skin	Hetlina Cortex	Devonshire Quarrenden Skin	Devonshire Quarrenden Cortex	Royal Gala Skin	Royal Gala Cortex
Catechin	108	29	154	23	123	22
Procyanidin B1	105	26	227	46	82	32
Epicatechin	1389	115	681	77	1049	87
Procyanidin B2	1164	98	334	85	499	75
Total procyanidin Oligomers	2616	158	619	178	1146	169
Total procyanidin Polymers	839	479	292	530	428	210
Chlorogenic Acid	1152	732	663	600	157	160
Total Hydroxycinnamic Acid Derivatives	121	48	122	41	52	22
Total Anthocyanins	120	0	143	0	167	0
Rutin	140	0	98	0	115	0
Total Quercetin Derivatives	5666	0	3966	0	3273	0
Phlorizin	196	30	350	22	91	8
Total Dihydrochalcone Derivatives	134	25	192	13	96	10

**Supplementary Figure S1:** Pie charts showing proportions of individual polyphenolic compounds that constitute the total polyphenolic amounts displayed in Figure 1b for (a) skin and (b) cortex for each cultivar; ‘Hetlina’, ‘Devonshire Quarrenden’ and ‘Royal Gala’.

