



Supplemental Figure 1. Meat grinder used for simulated mastication of grapes (Weston Heavy Duty Meat Cube Tenderizer, Southern Pines, NC, USA). Images illustrate outcomes of whole grapes processed by human mastication (A) and that derived from simulated mastication (B) of red seeded table grapes.

Supplemental Table 1. Content (mg/100g of grape fraction fw) of major phenolics in Concord and Niagara grape fractions (skin, seed, or pulp).^{1,2}

Compound Class	Compound	2018 Concord Grape (Vineyard 1)			2018 Niagara Grape (Vineyard 4)			
		Skins	Seeds	Pulp	Skin	Seeds	Pulp	
Anthocyanins	cyanidin	3-arabinoside	0.03 ± 0.01					
		3-glucoside	5.53 ± 1.71	0.03 ± 0.04				
		3-(6-p-coumaroyl-glucoside)	0.90 ± 0.26					
	peonidin	3-arabinoside	0.01 ± 0.01					
		3-glucoside	0.11 ± 0.04					
		3-(6-p-coumaroyl-glucoside)	0.07 ± 0.02					
	delphinidin	3-arabinoside	0.80 ± 0.35					
		3-glucoside	177.34 ± 77.03	0.50 ± 0.27				
		3-(6-acetyl glucoside)	7.36 ± 4.38					
	petunidin	3-arabinoside	0.02 ± 0.01					
		3-glucoside	4.73 ± 1.79	0.01 ± 0.01				
		3-(6-p-coumaroyl-glucoside)	0.40 ± 0.14					
malvidin	3-arabinoside	0.19 ± 0.04						
	3-glucoside	2.47 ± 0.80	0.08 ± 0.03					
	3-(6-p-coumaroyl-glucoside)	1.42 ± 0.44						
	Total Anthocyanins	201.37 ± 87.03	0.63 ± 0.35					
Phenolic Acids	coumaric acid	0.57 ± 0.22	1.46 ± 0.33	0.18 ± 0.01	0.62 ± 0.34	2.19 ± 0.29	0.18 ± 0.01	
	caftaric acid	0.34 ± 0.09	0.10 ± 0.02	0.03 ± 0.01	0.21 ± 0.07	0.09 ± 0.01	0.06 ± 0.01	
	p-coumaric acid	0.25 ± 0.05	0.27 ± 0.01	0.18 ± 0.01	0.17 ± 0.01	0.32 ± 0.01		
	gallic acid	0.04 ± 0.01	0.07 ± 0.01	0.05 ± 0.04	0.02 ± 0.01	0.48 ± 0.05	0.03 ± 0.01	
	caffeic acid	0.03 ± 0.01	0.03 ± 0.01	0.02 ± 0.01	0.02 ± 0.01	0.03 ± 0.01	0.02 ± 0.01	
	ferulic acid	0.04 ± 0.01	0.03 ± 0.01		0.03 ± 0.01	0.03 ± 0.01		
	dihydrocoumaric acid			0.20 ± 0.01				
	Total Phenolic Acids	1.05 ± 0.43	1.94 ± 0.38	0.65 ± 0.06	1.05 ± 0.43	3.13 ± 0.37	0.28 ± 0.02	
Stilbenoids	resveratrol	0.02 ± 0.01	0.03 ± 0.03					
	resveratrol-3-glucoside	0.01 ± 0.01	0.19 ± 0.03		0.01 ± 0.01	0.15 ± 0.01		
	Total Stilbenoids	0.03 ± 0.02	0.22 ± 0.06		0.01 ± 0.01	0.15 ± 0.01		
Flavonols	quercetin	0.02 ± 0.01	0.01 ± 0.01		0.01 ± 0.01	0.01 ± 0.01		
	myricetin	0.17 ± 0.08	0.02 ± 0.01			0.02 ± 0.01		
	kaempferol-3-glucoside	0.01 ± 0.01			0.02 ± 0.01			
	quercetin-3-glucoside	2.17 ± 0.27	0.41 ± 0.03	0.01 ± 0.01	0.59 ± 0.24	0.25 ± 0.02	0.01 ± 0.01	
	myricetin-3-glucoside	0.34 ± 0.15	0.01 ± 0.01			0.01 ± 0.01		
	kaempferol-3-rutinoside	0.65 ± 0.16						
	quercetin-3-rutinoside	12.15 ± 3.14	0.02 ± 0.01			0.06 ± 0.06		
	Total Flavonols	15.49 ± 3.80	0.47 ± 0.05	0.01 ± 0.01	0.62 ± 0.24	0.36 ± 0.09	0.01 ± 0.01	
Flavan-3-ols	catechin	0.12 ± 0.09	42.40 ± 5.62	0.23 ± 0.34	0.07 ± 0.05	138.35 ± 15.39	0.35 ± 0.40	
	epicatechin	0.07 ± 0.05	179.74 ± 20.89	0.71 ± 1.20		141.32 ± 11.21	0.54 ± 0.63	
	gallocatechin	0.02 ± 0.01	0.02 ± 0.01		0.01 ± 0.01	5.82 ± 0.41		
	epigallocatechin							
	Total Flavan-3-ols	0.21 ± 0.15	222.17 ± 26.53	0.94 ± 1.54	0.08 ± 0.06	285.48 ± 27.00	0.89 ± 1.03	
Total Phenolics		218.36 ± 91.37	225.43 ± 27.37	1.60 ± 1.61	1.76 ± 0.74	289.25 ± 27.53	1.18 ± 1.06	
DMAC (mg/100g)	Total Procyanidins	256.2 ± 5.2	11,891.7 ± 594.7	N/A	189.3 ± 28.8	9,546.5 ± 601.4	9.3 ± 0.0	
Hilic (mg/100g)	Procyanidins	Dimer	4.36 ± 0.30	836.71 ± 449.85	N/A	2.07 ± 0.66	1823.37 ± 36.85	0.09 ± 0.01
		Trimer	4.33 ± 0.48	3690.94 ± 246.63	N/A	6.45 ± 1.80	3092.29 ± 116.95	0.04 ± 0.01
		Tetramer	3.91 ± 1.39	1542.04 ± 315.68	N/A	7.65 ± 2.34	1047.76 ± 6.66	0.02 ± 0.01
		Pentamer	3.61 ± 1.05	1987.24 ± 548.65	N/A	11.09 ± 1.91	1128.00 ± 9.56	0.01 ± 0.01
		Hexamer	5.92 ± 1.41	3146.09 ± 878.62	N/A	30.49 ± 4.55	2114.77 ± 25.53	0.28 ± 0.11
		Heptamer	14.21 ± 2.78	8941.17 ± 4751.20	N/A	50.38 ± 7.63	4499.64 ± 19.96	0.25 ± 0.04
		Octamer	10.43 ± 1.36	12275.08 ± 4721.86	N/A	85.31 ± 18.53	6625.83 ± 1002.37	0.10 ± 0.10
		Nonamer	6.93 ± 4.30	4425.43 ± 1228.82	N/A	30.14 ± 9.79	2818.76 ± 120.97	0.10 ± 0.05
		Decamer	1.70 ± 0.02	860.39 ± 170.02	N/A	6.98 ± 2.83	341.45 ± 103.49	0.29 ± 0.17
		Hilic (mg/100g)	Total Procyanidins	55.39 ± 13.09	37,705.08 ± 13,311.33	N/A	229.55 ± 50.05	22,280.12 ± 1,436.97

¹Data represents Concord and Niagara grapes cultivated in 2018 from farms in the Grandview (WA, USA) region

²Data are expressed as mean ± standard deviation from n=3 independent assessments.

Supplemental Table 2. Phenolic content (mg/100g fw) in Concord grapes and juice from the 2018 harvest.^{1,2}

Compound Class	Compound	Concord Juice ¹	Concord Grape (Vineyard 1)	Concord Grape (Vineyard 2)	
Anthocyanins	cyanidin	3-arabinoside		0.05 ± 0.01	0.01 ± 0.01
		3-glucoside	0.42 ± 0.07	11.66 ± 1.51	2.84 ± 1.09
		3-(6-p-coumaroly-glucoside)	0.07 ± 0.01	1.56 ± 0.23	1.24 ± 0.35
	peonidin	3-arabinoside		0.02 ± 0.01	
		3-glucoside	0.01 ± 0.01	0.27 ± 0.03	0.04 ± 0.02
		3-(6-p-coumaroly-glucoside)	0.01 ± 0.01	0.11 ± 0.03	0.10 ± 0.07
	delphinidin	3-arabinoside	0.35 ± 0.05	0.72 ± 0.12	0.21 ± 0.14
		3-glucoside	0.97 ± 0.17	11.51 ± 1.90	2.18 ± 0.99
		3-(6-acetyl glucoside)		0.44 ± 0.05	0.28 ± 0.08
	petunidin	3-arabinoside		0.02 ± 0.01	0.01 ± 0.01
		3-glucoside	0.17 ± 0.05	5.95 ± 0.90	2.04 ± 0.96
		3-(6-p-coumaroly-glucoside)	0.02 ± 0.01	0.50 ± 0.09	0.58 ± 0.13
	malvidin	3-arabinoside		0.06 ± 0.04	0.07 ± 0.01
		3-glucoside	0.33 ± 0.03	1.19 ± 0.15	0.61 ± 0.14
		3-(6-p-coumaroly-glucoside)	0.18 ± 0.02	0.29 ± 0.05	0.28 ± 0.09
	Total Anthocyanins	2.52 ± 0.40	34.34 ± 5.12	10.48 ± 4.06	
Phenolic Acids	3,4-dihydroxycinnamic acid	0.02 ± 0.01			
	coutaric acid	0.17 ± 0.01	1.28 ± 0.11	1.03 ± 0.07	
	caftaric acid	0.92 ± 0.08	1.06 ± 0.08	0.46 ± 0.08	
	p-coumaric acid	0.43 ± 0.01	0.26 ± 0.01	0.30 ± 0.03	
	gallic acid	0.16 ± 0.01	0.10 ± 0.01	0.20 ± 0.04	
	caffeic acid	0.30 ± 0.02	0.03 ± 0.01	0.03 ± 0.01	
	ferulic acid	0.02 ± 0.01	0.03 ± 0.01	0.03 ± 0.01	
	dihydrocoumaric acid				
	Total Phenolic Acids	2.03 ± 0.13	2.75 ± 0.21	2.04 ± 0.22	
Stilbenoids	resveratrol	0.03 ± 0.01	0.02 ± 0.01		
	resveratrol-3-glucoside	0.05 ± 0.01	0.03 ± 0.01	0.01 ± 0.01	
	Total Stilbenoids	0.08 ± 0.01	0.05 ± 0.01	0.01 ± 0.01	
Flavonols	quercetin		0.01 ± 0.01	0.01 ± 0.001	
	myricetin	0.01 ± 0.01	0.08 ± 0.01	0.03 ± 0.01	
	kaempferol-3-glucoside		0.01 ± 0.01	0.01 ± 0.01	
	quercetin-3-glucoside	0.28 ± 0.02	1.53 ± 0.16	1.24 ± 0.76	
	myricetin-3-glucoside	0.03 ± 0.01	0.12 ± 0.02	0.06 ± 0.04	
	kaempferol-3-rutinoside		0.33 ± 0.03	0.20 ± 0.05	
	quercetin-3-rutinoside	0.09 ± 0.01	4.82 ± 0.57	4.16 ± 0.50	
	Total Flavonols	0.43 ± 0.04	6.90 ± 0.79	5.71 ± 1.36	
Flavan-3-ols	catechin	0.30 ± 0.01	1.63 ± 0.35	1.51 ± 0.37	
	epicatechin	0.40 ± 0.09	5.06 ± 0.78	2.15 ± 0.37	
	gallo catechin	0.02 ± 0.01			
	epigallocatechin	0.03 ± 0.01			
	Total Flavan-3-ols	0.75 ± 0.11	6.70 ± 1.13	3.67 ± 1.12	
Total Phenolics		5.81 ± 0.69	50.74 ± 7.6	21.91 ± 6.77	
DMAC (mg/100g)	Total Procyanidins	119.9 ± 3.7	376.0 ± 13.07	605.5 ± 71.2	
Hilic (mg/100g)	Procyanidins	Dimer	21.07 ± 5.83	40.11 ± 4.49	50.96 ± 5.54
		Trimer	29.67 ± 5.21	50.66 ± 1.60	73.10 ± 2.07
		Tetramer	11.00 ± 0.60	23.12 ± 2.45	31.11 ± 2.85
		Pentamer	6.00 ± 0.25	31.78 ± 1.04	38.12 ± 3.88
		Hexamer	15.50 ± 3.03	63.82 ± 4.36	84.38 ± 9.57
		Heptamer	11.93 ± 1.51	44.49 ± 15.77	100.83 ± 20.64
		Octamer	25.67 ± 5.43	153.20 ± 51.76	261.40 ± 84.52
		Nonamer	8.97 ± 0.46	56.58 ± 18.40	88.76 ± 13.26
		Decamer	1.93 ± 1.93	8.33 ± 3.03	9.87 ± 4.20
Hilic (mg/100g)	Total Procyanidins	131.74 ± 24.25	472.09 ± 102.9	738.53 ± 146.53	

¹Data represents Concord juice from grapes cultivated in 2018 from farms in the Grandview (WA, USA) region

²Data are expressed as mean ± standard deviation from n=3 independent assessments.

Supplemental Table 3. Phenolic content (mg/100g fw) in Niagara grapes and juice from the 2018 harvest.^{1,2}

Compound Class	Compound	Niagara Juice SO ₂ ¹	Niagara Juice ¹	Niagara Grape (Vineyard 3)	Niagara Grape (Vineyard 4)
Phenolic Acids	3,4-dihydroxycinnamic acid	0.18 ± 0.09	0.09 ± 0.01		
	coumaric acid	0.07 ± 0.04	0.27 ± 0.02	0.55 ± 0.07	0.51 ± 0.06
	caftaric acid	0.67 ± 0.35	2.11 ± 0.24	0.36 ± 0.03	0.30 ± 0.05
	p-coumaric acid	1.58 ± 0.81	0.67 ± 0.05	0.17 ± 0.01	0.19 ± 0.01
	gallic acid	0.67 ± 0.34	0.84 ± 0.07	0.34 ± 0.14	0.25 ± 0.08
	caffeic acid	3.67 ± 1.84	1.76 ± 0.14	0.02 ± 0.01	0.02 ± 0.01
	ferulic acid	0.14 ± 0.07	0.09 ± 0.01	0.02 ± 0.01	0.02 ± 0.01
	dihydrocoumaric acid				
	Total Phenolic Acids	6.99 ± 3.54	5.83 ± 0.54	1.46 ± 0.25	1.30 ± 0.20
Stilbenoids	resveratrol	0.05 ± 0.01	0.05 ± 0.01		
	resveratrol-3-glucoside	0.06 ± 0.03	0.06 ± 0.01	0.01 ± 0.01	0.01 ± 0.01
	Total Stilbenoids	0.11 ± 0.04	0.11 ± 0.01	0.01 ± 0.01	0.01 ± 0.01
Flavonols	quercetin	0.19 ± 0.10	0.03 ± 0.01	0.01 ± 0.01	0.01 ± 0.01
	myricetin			0.01 ± 0.01	0.01 ± 0.01
	kaempferol-3-glucoside	0.02 ± 0.01	0.01 ± 0.01	0.03 ± 0.01	
	quercetin-3-glucoside	0.43 ± 0.23	0.63 ± 0.04	0.47 ± 0.05	0.12 ± 0.01
	myricetin-3-glucoside				
	kaempferol-3-rutinoside				
	quercetin-3-rutinoside				
	Total Flavonols	0.65 ± 0.34	0.68 ± 0.05	0.52 ± 0.05	0.14 ± 0.01
Flavan-3-ols	catechin	0.80 ± 0.40	0.77 ± 0.15	2.25 ± 0.59	1.94 ± 0.58
	epicatechin	2.22 ± 1.14	2.03 ± 0.45	6.50 ± 0.67	1.45 ± 0.45
	gallocatechin	0.01 ± 0.01	0.01 ± 0.01	0.02 ± 0.01	0.01 ± 0.01
	epigallocatechin	0.02 ± 0.01	0.02 ± 0.01	0.01 ± 0.01	
	Total Flavan-3-ols	3.05 ± 1.56	2.82 ± 0.61	8.77 ± 1.25	3.40 ± 1.04
Total Phenolics		10.80 ± 5.48	9.44 ± 1.21	10.76 ± 1.56	4.85 ± 1.26
DMAC (mg/100g)	Total Procyanidins	18.4 ± 0.4	13.7 ± 0.5	772.5 ± 67.8	269.1 ± 10.7
Hilic (mg/100g) Procyanidins	Dimer	5.54 ± 1.63	6.41 ± 0.99	59.02 ± 10.97	24.98 ± 8.39
	Trimer	27.81 ± 1.63	20.24 ± 2.76	102.55 ± 19.50	59.77 ± 8.52
	Tetramer	2.30 ± 0.52	2.96 ± 0.35	36.49 ± 5.46	32.46 ± 6.67
	Pentamer	4.53 ± 0.85	2.71 ± 0.34	47.77 ± 7.80	35.43 ± 10.13
	Hexamer	2.50 ± 0.52	1.79 ± 0.36	99.11 ± 21.14	64.64 ± 16.49
	Heptamer	1.39 ± 0.29	1.87 ± 0.28	104.00 ± 36.97	128.30 ± 79.36
	Octamer	12.68 ± 2.74	7.02 ± 1.84	205.20 ± 80.61	127.06 ± 55.00
	Nonamer	2.06 ± 0.89	1.24 ± 0.44	107.27 ± 27.41	65.19 ± 21.39
	Decamer	0.28 ± 0.11	0.26 ± 0.15	14.82 ± 6.71	7.07 ± 1.14
Hilic (mg/100g)	Total Procyanidins	59.09 ± 9.18	44.50 ± 7.51	776.23 ± 216.57	544.90 ± 207.09

¹Data represents Niagara juice from grapes cultivated in 2018 in the Grandview (MA, USA) region

²Data are expressed as mean ± standard deviation from n=3 independent assessments.

Supplemental Table 4. Phenolic content (mg/100g fw) in four commercial table grape varieties.^{1,2}

Compound Class	Compound	Thompson Seedless	Black Seedless	Red Seedless	Red Seeded	
Anthocyanins	cyanidin	3-arabinoside				
		3-glucoside		0.06 ± 0.03	2.70 ± 1.44	0.40 ± 0.03
		3-(6-p-coumaroyl-glucoside)		0.01 ± 0.01	0.03 ± 0.01	0.01 ± 0.01
	peonidin	3-arabinoside				
		3-glucoside		0.25 ± 0.06	0.42 ± 0.10	0.37 ± 0.02
		3-(6-p-coumaroyl-glucoside)		0.06 ± 0.03	0.06 ± 0.02	0.09 ± 0.01
	delphinidin	3-arabinoside			0.26 ± 0.01	
		3-glucoside			0.35 ± 0.11	0.13 ± 0.01
		3-(6-acetyl glucoside)				
	petunidin	3-arabinoside				
		3-glucoside		0.94 ± 0.15	0.88 ± 0.91	0.02 ± 0.01
		3-(6-p-coumaroyl-glucoside)		0.05 ± 0.01		
	malvidin	3-arabinoside		0.08 ± 0.01		
		3-glucoside		3.73 ± 0.42	1.87 ± 0.50	0.21 ± 0.02
		3-(6-p-coumaroyl-glucoside)		0.83 ± 0.11	1.37 ± 0.35	0.24 ± 0.02
Total Anthocyanins			6.00 ± 0.82	7.97 ± 3.44	1.49 ± 0.12	
Phenolic Acids	3,4-dihydroxycinnamic acid					
		coumaric acid	0.19 ± 0.01	0.20 ± 0.01	0.25 ± 0.02	0.20 ± 0.01
		caftaric acid	0.01 ± 0.02	0.04 ± 0.03	0.07 ± 0.01	0.03 ± 0.01
		p-coumaric acid	0.17 ± 0.01	0.14 ± 0.10		
		gallic acid	0.02 ± 0.01	0.03 ± 0.01	0.01 ± 0.01	0.01 ± 0.01
		caffeic acid	0.02 ± 0.01	0.01 ± 0.01		
		ferulic acid		0.02 ± 0.01	0.03 ± 0.01	0.02 ± 0.01
		dihydrocoumaric acid				
	Total Phenolic Acids		0.41 ± 0.05	0.44 ± 0.16	0.36 ± 0.05	0.26 ± 0.04
	Stilbenoids		resveratrol	0.02 ± 0.01	0.19 ± 0.02	0.01 ± 0.01
		resveratrol-3-glucoside		0.04 ± 0.01		
Total Stilbenoids		0.02 ± 0.01	0.23 ± 0.03	0.01 ± 0.01	0.03 ± 0.01	
Flavonols		quercetin	0.01 ± 0.01	0.01 ± 0.01	0.02 ± 0.01	0.01 ± 0.01
		myricetin		0.02 ± 0.01	0.03 ± 0.01	
		kaempferol-3-glucoside	0.02 ± 0.01		0.11 ± 0.02	
		quercetin-3-glucoside	0.66 ± 0.09	0.37 ± 0.05	2.57 ± 0.41	0.78 ± 0.03
		myricetin-3-glucoside		0.04 ± 0.01	0.05 ± 0.01	0.04 ± 0.01
		kaempferol-3-rutinoside			0.03 ± 0.01	0.02 ± 0.01
		quercetin-3-rutinoside		0.05 ± 0.01	0.05 ± 0.01	0.02 ± 0.01
Total Flavonols		0.68 ± 0.10	0.50 ± 0.09	2.85 ± 0.47	0.88 ± 0.07	
Flavan-3-ols		catechin	0.12 ± 0.03	0.21 ± 0.04	0.20 ± 0.04	1.26 ± 0.08
		epicatechin	0.07 ± 0.01	0.13 ± 0.06	0.03 ± 0.01	0.64 ± 0.03
		gallocatechin	0.05 ± 0.01	0.11 ± 0.01		
		epigallocatechin			0.06 ± 0.02	0.03 ± 0.01
	Total Flavan-3-ols		0.24 ± 0.04	0.44 ± 0.11	0.23 ± 0.07	1.94 ± 0.12
Total Phenolics		1.35 ± 0.20	7.61 ± 1.21	11.42 ± 4.04	4.60 ± 0.36	
DMAC (mg/100g)	Procyanidins	32.8 ± 4.2	61.6 ± 6.3	60.3 ± 4.2	146.5 ± 21.1	
Hilic (mg/100g)	Procyanidins	Dimer	4.74 ± 0.23	2.71 ± 0.45	2.69 ± 0.59	14.01 ± 5.38
		Trimer	3.63 ± 0.46	3.42 ± 1.16	3.61 ± 1.52	27.56 ± 6.98
		Tetramer	1.70 ± 0.44	1.29 ± 0.35	3.04 ± 1.55	11.23 ± 2.22
		Pentamer	1.50 ± 0.40	1.79 ± 1.07	1.65 ± 0.25	13.81 ± 4.39
		Hexamer	4.01 ± 1.10	2.76 ± 0.61	4.23 ± 1.28	27.44 ± 9.65
		Heptamer	4.57 ± 2.72	5.78 ± 2.85	13.06 ± 10.13	51.41 ± 28.59
		Octamer	5.41 ± 0.81	4.20 ± 2.42	9.35 ± 5.15	58.02 ± 15.19
		Nonamer	1.14 ± 0.53	3.29 ± 1.42	2.19 ± 0.84	34.20 ± 16.70
		Decamer	0.11 ± 0.09	0.44 ± 0.35	1.25 ± 0.86	3.71 ± 1.72
		Hilic (mg/100g)		Total Procyanidins	26.70 ± 6.78	25.68 ± 10.68

¹Data represents Table grapes cultivated in 2018 obtained from local markets in Kannapolis, NC.²Data are expressed as mean ± standard deviation from n=3 independent assessments.

Supplemental Table 5. Bioaccessibility of individual phenolic compounds from Concord grapes and juices from 2018 harvest. ^{1,2,3}

Compound Class	Compound	Concord Juice	Concord Grape (Vineyard 1)	Concord Grape (Vineyard 2)
cyanidin	3-arabinoside		0.02 ± 0.01 (28-47%)	
	3-glucoside	0.28 ± 0.03 (56-75%)	5.00 ± 0.85 (37-52%)	0.99 ± 0.25 (27-59%)
	3-(6-p-coumaroly-glucoside)	0.01 ± 0.01 (9-12%)	0.16 ± 0.05 (7-14%)	0.11 ± 0.03 (6-17%)
peonidin	3-arabinoside		0.01 ± 0.01 (25-76%)	
	3-glucoside		0.14 ± 0.02 (41-65%)	0.03 ± 0.03 (26-113%)
	3-(6-p-coumaroly-glucoside)		0.02 ± 0.01 (10-33%)	0.01 ± 0.01 (7-31%)
Anthocyanins	delphinidin	3-arabinoside	0.24 ± 0.05 (48-86%)	0.02 ± 0.01 (2-4%)
	3-glucoside	1.61 ± 0.15 (125-208%)	0.19 ± 0.26 (0-4%)	0.04 ± 0.01 (1-3%)
	3-(6-acetyl glucoside)		0.07 ± 0.05 (8-31%)	0.04 ± 0.01 (11-25%)
petunidin	3-arabinoside			
	3-glucoside	0.16 ± 0.03 (81-103%)	0.75 ± 0.80 (4-29%)	0.17 ± 0.08 (4-13%)
	3-(6-p-coumaroly-glucoside)		0.03 ± 0.02 (3-12%)	0.02 ± 0.01 (3-5%)
malvidin	3-arabinoside		0.05 ± 0.04 (88-90%)	0.08 ± 0.05 (41-211%)
	3-glucoside	0.44 ± 0.05 (110-153%)	1.21 ± 0.48 (56-139%)	0.52 ± 0.35 (24-190%)
	3-(6-p-coumaroly-glucoside)	0.06 ± 0.01 (23-43%)	0.06 ± 0.03 (11-35%)	0.04 ± 0.01 (11-35%)
Total Anthocyanins		2.81 ± 0.32 (86-135%)	7.74 ± 2.07 (16-33%)	2.07 ± 0.59 (14-39%)
Phenolic Acids	3,4-dihydroxycinnamic acid	0.02 ± 0.01 (58-108%)		
	coumaric acid	0.01 ± 0.01 (4-6%)	0.10 ± 0.01 (7-9%)	0.12 ± 0.03 (9-10%)
	caftaric acid	0.01 ± 0.01 (1-2%)	0.01 ± 0.01 (1%)	0.01 ± 0.01 (2-3%)
	p-coumaric acid	1.13 ± 0.14 (235-293%)	0.56 ± 0.41 (264-364%)	0.07 ± 0.06 (40-70%)
	gallic acid		0.01 ± 0.01 (9-11%)	0.01 ± 0.01 (4-6%)
	caffeic acid	0.35 ± 0.01 (115-121%)	0.34 ± 0.05 (1069-1648%)	0.04 ± 0.01 (145-209%)
	ferulic acid	0.02 ± 0.01 (116-118%)	0.03 ± 0.01 (104-132%)	0.02 ± 0.01 (92-129%)
	dihydrocoumaric acid			
Total Phenolic Acids		1.54 ± 0.17 (70-85%)	1.33 ± 0.17 (44-52%)	0.27 ± 0.09 (9-17%)
Stilbenoids	resveratrol	0.01 ± 0.01 (22-69%)		
	resveratrol-3-glucoside	0.03 ± 0.01 (56-60%)		
	Total Stilbenoids	0.04 ± 0.01 (44-63%)		
Flavonols	quercetin		0.01 ± 0.01 (47-56%)	0.01 ± 0.01 (45-74%)
	myricetin		0.01 ± 0.01 (11-12%)	
	kaempferol-3-glucoside			0.01 ± 0.01 (43-58%)
	quercetin-3-glucoside	0.14 ± 0.01 (19-23%)	0.33 ± 0.05 (19-28%)	0.19 ± 0.08 (21-49%)
	myricetin-3-glucoside	0.03 ± 0.01 (81-92%)	0.05 ± 0.01 (30-65%)	
	kaempferol-3-rutinoside		0.03 ± 0.01 (5-10%)	
	quercetin-3-rutinoside		0.03 ± 0.03 (0-1%)	
Total Flavonols		0.17 ± 0.01 (36-43%)	0.46 ± 0.11 (6-8%)	0.21 ± 0.09 (2-5%)
Flavan-3-ols	catechin	0.24 ± 0.03 (70-89%)	0.01 ± 0.01 (1-2%)	0.02 ± 0.02 (1-2%)
	epicatechin	0.36 ± 0.04 (79-103%)	0.05 ± 0.04 (1-2%)	0.01 ± 0.01 (1-3%)
	gallocatechin	0.02 ± 0.01 (71-115%)		
	epigallocatechin	0.02 ± 0.01 (44-70%)		
	Total Flavan-3-ols	0.64 ± 0.08 (75-95%)	0.05 ± 0.05 (0-1%)	0.03 ± 0.03 (0-2%)
Total Phenolics		5.20 ± 0.59	9.58 ± 2.40	2.58 ± 0.80

¹Data are expressed as mean ± standard deviation from n=3 digestion experiments.

²Absolute bioaccessibilities are expressed as mg/100g fw

³Values in parenthesis indicate the range of relative bioaccessibility (%)

Supplemental Table 6. Bioaccessibility of individual phenolic compounds from Niagara grapes and juices from 2018 harvest. ^{1,2,3}

Compound Class	Compound	Niagara Juice SO ₂	Niagara Juice	Niagara Grape (Vineyard 3)	Niagara Grape (Vineyard 4)
Phenolic Acids	3,4-dihydroxycinnamic acid	0.12 ± 0.05 (53-77%)	0.09 ± 0.01 (86-105%)		
	coutaric acid		0.02 ± 0.01 (7-9%)	0.10 ± 0.01 (50-70%)	0.23 ± 0.20 (22-31%)
	caftaric acid		0.03 ± 0.01 (1-2%)	0.01 ± 0.01 (9-14%)	0.04 ± 0.01 (3-6%)
	p-coumaric acid	1.07 ± 0.57 (48-85%)	0.62 ± 0.02 (88-100%)	0.16 ± 0.06 (127-131%)	0.15 ± 0.13 (53-55%)
	gallic acid			0.05 ± 0.01 (4-8%)	0.02 ± 0.01 (3-4%)
	caffeic acid	2.25 ± 0.89 (55-82%)	1.68 ± 0.11 (87-108%)	0.05 ± 0.01 (330-485%)	0.09 ± 0.01 (145-192%)
	ferulic acid	0.10 ± 0.05 (57-84%)	0.09 ± 0.01 (91-104%)	0.03 ± 0.01 (197-265%)	0.05 ± 0.01 (97-121%)
	dihydrocoumaric acid				
	Total Phenolic Acids	3.54 ± 1.56 (42-66%)	2.53 ± 0.16 (39-48%)	0.36 ± 0.07 (21-32%)	0.57 ± 0.35 (31-67%)
Stilbenoids	resveratrol	0.01 ± 0.01 (21-45%)	0.01 ± 0.01 (12-42%)		
	resveratrol-3-glucoside	0.02 ± 0.01 (21-59%)	0.04 ± 0.01 (58-71%)		
	Total Stilbenoids	0.03 ± 0.01 (25-53%)	0.05 ± 0.01 (38-52%)		
Flavonols	quercetin	0.01 ± 0.01 (3-8%)		0.01 ± 0.01 (95-135%)	0.01 ± 0.01 (55-61%)
	myricetin				
	kaempferol-3-glucoside	0.01 ± 0.01 (31-64%)	0.01 ± 0.01 (100-121%)	0.01 ± 0.01 (86-299%)	0.05 ± 0.04 (302-925%)
	quercetin-3-glucoside	0.16 ± 0.10 (7-16%)	0.24 ± 0.02 (37-43%)	0.33 ± 0.09 (71-175%)	0.51 ± 0.24 (95-224%)
	myricetin-3-glucoside			0.01 ± 0.01 (138-157%)	
	kaempferol-3-rutinoside				
	quercetin-3-rutinoside				
	Total Flavonols	0.18 ± 0.11 (22-34%)	0.25 ± 0.03 (37-43%)	0.40 ± 0.11 (64-104%)	0.57 ± 0.27 (254-585%)
Flavan-3-ols	catechin	0.53 ± 0.24 (58-85%)	0.89 ± 0.09 (87-139%)	0.01 ± 0.01 (0-1%)	0.01 ± 0.01 (0-2%)
	epicatechin	1.34 ± 0.77 (45-72%)	1.35 ± 0.08 (54-84%)	0.03 ± 0.01 (0-1%)	0.02 ± 0.04 (0-1%)
	gallocatechin	0.01 ± 0.01 (62-107%)			
	epigallocatechin	0.03 ± 0.01 (102-159%)	0.03 ± 0.01 (117-167%)		
	Total Flavan-3-ols	1.91 ± 1.03 (48-76%)	2.27 ± 0.18 (63-101%)	0.04 ± 0.02 (0-1%)	0.04 ± 0.06 (0-2%)
Total Phenolics		5.66 ± 2.71	5.10 ± 0.38	0.80 ± 0.20	1.18 ± 0.68

¹Data are expressed as mean ± standard deviation from n=3 digestion experiments.

²Absolute bioaccessibilities are expressed as mg/100g fw

³Values in parenthesis indicate the range of relative bioaccessibility (%)

Supplemental Table 7. Bioaccessibility of individual phenolic compounds from table grapes. ^{1,2,3}

Compound Class	Compound	Green Table	Black Table	Red Seedless	Red Seeded	
Anthocyanins	cyanidin	3-arabinoside				
		3-glucoside		0.02 ± 0.01 (22-49%)	1.38 ± 0.41 (38-71%)	0.02 ± 0.01 (3-9%)
		3-(6-p-coumaroyl-glucoside)				
	peonidin	3-arabinoside				
		3-glucoside		0.10 ± 0.03 (31-52%)	0.30 ± 0.03 (49-89%)	0.23 ± 0.12 (28-88%)
		3-(6-p-coumaroyl-glucoside)		0.01 ± 0.01 (14-17%)		0.01 ± 0.01 (4-16%)
	delphinidin	3-arabinoside				
		3-glucoside				
		3-(6-acetyl glucoside)				
	petunidin	3-arabinoside				
		3-glucoside		0.25 ± 0.17 (7-34%)	0.30 ± 0.21 (25-61%)	
		3-(6-p-coumaroyl-glucoside)				
malvidin	3-arabinoside		0.06 ± 0.01 (72-82%)			
	3-glucoside		3.67 ± 0.45 (98-128%)	1.88 ± 0.20 (79-124%)	0.33 ± 0.14 (87-215%)	
	3-(6-p-coumaroyl-glucoside)		0.19 ± 0.09 (12-36%)	0.16 ± 0.01 (8-15%)	0.03 ± 0.02 (3-18%)	
Total Anthocyanins			4.31 ± 0.76 (63-81%)	4.03 ± 0.87 (56-67%)	0.63 ± 0.31 (2-49%)	
Phenolic Acids	3,4-dihydroxycinnamic acid					
	coumaric acid	0.10 ± 0.01 (51-53%)	0.10 ± 0.01 (47-53%)	0.02 ± 0.02 (1-18%)		
	caftaric acid	0.01 ± 0.01 (39-42%)	0.01 ± 0.01 (14-20%)			
	p-coumaric acid	0.14 ± 0.03 (69-96%)	0.23 ± 0.08 (91-147%)			
	gallic acid	0.01 ± 0.01 (45-60%)	0.01 ± 0.01 (37-47%)			
	caffeic acid	0.01 ± 0.01 (56-96%)	0.21 ± 0.07 (911-1448%)			
	ferulic acid		0.01 ± 0.01 (64-76%)	0.03 ± 0.01 (81-156%)	0.06 ± 0.01 (231-329%)	
	dihydrocoumaric acid					
Total Phenolic Acids		0.27 ± 0.04 (44-62%)	0.57 ± 0.17 (39-142%)	0.05 ± 0.03 (7-26%)	0.06 ± 0.01 (231-329%)	
Stilbenoids	resveratrol			0.02 ± 0.01 (6-15%)		
	resveratrol-3-glucoside					
Total Stilbenoids			0.02 ± 0.01 (6-15%)			
Flavonols	quercetin			0.01 ± 0.01 (54-66%)		
	myricetin			0.01 ± 0.01 (25-28%)	0.01 ± 0.01 (11-27%)	
	kaempferol-3-glucoside	0.01 ± 0.01 (22-172%)			0.09 ± 0.04 (42-114%)	0.01 ± 0.01 (4-138%)
	quercetin-3-glucoside	0.36 ± 0.29 (25-118%)	0.38 ± 0.19 (62-136%)	0.76 ± 0.22 (21-37%)	0.14 ± 0.07 (13-27%)	
	myricetin-3-glucoside		0.06 ± 0.02 (89-166%)	0.01 ± 0.01 (12-37%)		
	kaempferol-3-rutinoside			0.02 ± 0.01 (34-115%)		
	quercetin-3-rutinoside			0.07 ± 0.03 (92-231%)	0.05 ± 0.03 (112-463%)	
Total Flavonols		0.38 ± 0.30 (20-116%)	0.46 ± 0.21 (50-153%)	0.97 ± 0.31 (23-44%)	0.20 ± 0.11 (15-30%)	
Flavan-3-ols	catechin		0.01 ± 0.01 (4-54%)		0.02 ± 0.01 (1-2%)	
	epicatechin		0.01 ± 0.01 (18-20%)	0.04 ± 0.01 (10-67%)	0.01 ± 0.01 (26-30%)	0.03 ± 0.03 (1-11%)
	gallocatechin			0.01 ± 0.01 (2-9%)		
	epigallocatechin					
Total Flavan-3-ols		0.02 ± 0.01 (4-35%)	0.05 ± 0.02 (8-33%)	0.01 ± 0.01 (26-30%)	0.05 ± 0.04 (2-4%)	
Total Phenolics		0.67 ± 0.35	5.41 ± 1.17	5.06 ± 1.22	0.94 ± 0.47	

¹Data are expressed as mean ± standard deviation from n=3 digestion experiments.

²Absolute bioaccessibilities are expressed as mg/100g fw

³Values in parenthesis indicate the range of relative bioaccessibility (%)