



# Potential of raspberry flower petals as a rich source of bioactive flavan-3-ol derivatives revealed by polyphenolic profiling

**Supplementary data 1.** Statistical processing data for the analysis results shown in Figure 2

**Table S1.** Statistical results comparing fractions of each flower and petals (PE) in each analysis result in Figure 2.

	Part	Mean ± SD	p Value <sup>1</sup> (vs. PE)	
			Student's <i>t</i> test	ANOVA
Total polyphenol	RE	2.6 ± 0.10	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	1.8 ± 0.20	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PI	1.7 ± 0.13	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	6.7 ± 0.62	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	3.7 ± 0.26		
Total proanthocyanidin	RE	0.90 ± 0.23	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	0.17 ± 0.029	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PI	0.49 ± 0.074	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	3.4 ± 0.17	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	2.2 ± 0.057		
Quantity of VC	RE	62.6 ± 7.3	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	60.6 ± 3.7	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PI	75.4 ± 6.1	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	84.5 ± 5.2	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	95.6 ± 2.6		
Total glucose	RE	25.5 ± 0.71	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	25.7 ± 0.30	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PI	25.9 ± 0.94	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	29.0 ± 0.60	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	56.0 ± 2.5		

<sup>1</sup> *p* Value: \*\*\**p* < 0.001.

**Supplementary data 2.** Statistical results of data obtained from Figure 5 and Table 2

**Table S2.** Statistical results comparing fractions of each flower and petals (PE) for the amounts of compounds shown in Figure 5 and Table 2.

	Part	Mean ± SD	p Value <sup>1</sup> (vs. PE)	
			Student's <i>t</i> test	ANOVA
(+)–Catechin (1)	RE	0.13 ± 0.0042	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	0.13 ± 0.0035	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PI	0.22 ± 0.0064	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	0.14 ± 0.0057	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	0.83 ± 0.010		
(–)–Epicatechin (2)	RE	0.064 ± 0.014	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	0.079 ± 0.0066	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PI	0.056 ± 0.010	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	0.15 ± 0.011	0.0072 *	0.0070 *
	PE			

	PE	0.19 ± 0.033		
	RE	0.44 ± 0.30	N.S. <sup>2</sup>	N.S. <sup>2</sup>
	SE	0.25 ± 0.018	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
Procyanidin B4 (3)	PI	0.29 ± 0.031	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	0.42 ± 0.022	N.S. <sup>2</sup>	N.S. <sup>2</sup>
	PE	0.40 ± 0.032		
	RE	0.19 ± 0.0038	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	0.12 ± 0.0039	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
Procyanidin C3 (4)	PI	0.13 ± 0.0047	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	0.11 ± 0.0068	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	0.15 ± 0.0043		
	RE	0.022 ± 0.00036	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	SE	0.025 ± 0.00045	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
(-)-Epicatechin-3,5-di-	PI	0.021 ± 0.00055	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
O-gallate (7)	ST	0.026 ± 0.00044	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	0.079 ± 2.5 × 10 <sup>-7</sup>		

<sup>1</sup>*p* Value: \*\*\**p* < 0.001, \**p* < 0.01, <sup>2</sup>N.S.: non-significant.

### Supplementary data 3. Statistical results of data obtained from Figure 6

**Table S3.** Statistical results comparing fractions of each flower and petals (PE) in the bioactivity test results shown in Figure 6.

	Part	Mean ± SD	<i>p</i> Value <sup>1</sup> (vs. PE)	
			Student's <i>t</i> test	ANOVA
	RE	43.2 ± 0.72	N.S.	N.S.
DPPH Radical	SE	31.4 ± 0.83	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
Scavenging Activity	PI	35.0 ± 1.2	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	42.6 ± 0.35	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	PE	44.1 ± 0.59		
	RE	30.4 ± 1.6	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
ABTS Radical	SE	13.6 ± 0.42	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
Scavenging Activity	PI	21.4 ± 0.68	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
	ST	49.3 ± 0.75	N.S. <sup>2</sup>	N.S. <sup>2</sup>
	PE	49.7 ± 0.067		
	RE	46.5 ± 0.80	N.S. <sup>2</sup>	N.S. <sup>2</sup>
	SE	47.2 ± 0.58	N.S. <sup>2</sup>	N.S. <sup>2</sup>
Antioxidant Activity	PI	45.5 ± 0.75	0.0017**	0.0035**
	ST	47.4 ± 0.25	N.S. <sup>2</sup>	N.S. <sup>2</sup>
	PE	46.9 ± 0.46		
	RE	58.9 ± 3.1	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
Inhibitory Activity of	SE	40.5 ± 5.6	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
HeLa S3 cell	PI	61.3 ± 5.0	*** <i>p</i> < 0.001	*** <i>p</i> < 0.001
proliferation	ST	93.2 ± 1.6	0.0031 **	0.0014 **
	PE	96.0 ± 0.28		

<sup>1</sup>*p* Value: \*\*\**p* < 0.001, \*\**p* < 0.005, <sup>2</sup>N.S.: non-significant.