

**Blueberry anthocyanin supplementation shows favorable trends in
glycemic control in type 2 diabetes patients: a pilot study**

Xindi Hu,^{‡a} Lujing Xu^{‡a}, Ying Li,^a Xingyu Zhao,^{a,b} Yakun Xing,^{a,b} Jin Feng,^a Jiawei

Zheng,^{a,b} Cheng Xue,^c Wuyang Huang^{*a} and Shan Lu^{*c}

^a *Institute of Agro-Product Processing, Jiangsu Academy of Agricultural Sciences, Nanjing, 210014, PR China. E-mail: wuyanghuang@hotmail.com*

^b *School of Food and Biological Engineering, Jiangsu University, Zhenjiang, 212013, PR China*

^c *Department of Gerontoendocrinology, The First Affiliated Hospital of Nanjing Medical University, Nanjing, 210029, PR China. E-mail: lushan_sd@njmu.edu.cn (S. Lu).*

Table S1 Quantitative results of blueberry anthocyanin extracts by HPLC

Compound	Retention time (min)	Peak	Peak	Relative	Relative	Content (g/100g)
		area (mAU* min)	height (mAU)	peak area (%)	peak height (%)	
Delphinidin-3- <i>O</i> -galactoside	10.050	44.886	169.718	11.350	15.390	5.149
Delphinidin-3- <i>O</i> -glucoside	12.230	15.526	52.751	3.930	4.780	1.781
Cyanidin-3- <i>O</i> -galactoside	14.280	6.022	26.599	1.520	2.410	0.691
Delphinidin-3- <i>O</i> -arabinoside	14.640	34.616	105.912	8.750	9.600	3.971
Cyanidin-3- <i>O</i> -glucoside	17.320	5.672	18.042	1.430	1.640	0.651
Petunidin-3- <i>O</i> -galactoside	18.913	38.956	112.282	9.850	10.180	4.469
Cyanidin-3- <i>O</i> -arabinoside	19.513	4.771	14.110	1.210	1.280	0.547
Petunidin-3- <i>O</i> -glucoside	22.077	19.377	52.774	4.900	4.780	2.223
Peonidin-3- <i>O</i> -galactoside	24.373	2.702	8.532	0.680	0.770	0.310
Petunidin-3- <i>O</i> -arabinoside	24.907	25.318	65.169	6.400	5.910	2.904
Peonidin-3- <i>O</i> -glucoside	28.257	3.180	9.047	0.800	0.820	0.365
Malvidin-3- <i>O</i> -galactoside	28.873	89.078	212.405	22.530	19.260	10.219
Peonidin-3- <i>O</i> -arabinoside	30.670	1.451	3.643	0.370	0.330	0.166
Malvidin-3- <i>O</i> -glucoside	32.427	38.579	88.358	9.760	8.010	4.426
Malvidin-3- <i>O</i> -arabinoside	35.513	58.310	129.698	14.740	11.760	6.689
Total anthocyanin		388.444	1069.040	100.000	100.000	44.560

Table S2 Glycometabolism-related and other biochemical characteristics of diabetic participants at baseline

Characteristics	BAE-B	CON-B	<i>P</i> -Value
Glycometabolism-related			
Glucose (mmol/L)	6.82 ± 1.88	5.64 ± 1.85	0.245
Glucose (2 h, mmol/L)	14.60 ± 4.71	14.09 ± 2.67	0.821
Insulin (mU/mL)	5.04 ± 3.79	5.80 ± 6.45	1.000
Insulin (2 h, mU/mL)	32.76 ± 11.96	32.32 ± 15.68	0.955
C-P (nmol/L)	1.65 ± 0.97	1.02 ± 0.71	0.212
C-P (2 h, nmol/L)	6.11 ± 1.91	5.12 ± 1.56	0.331
HbA1c (%)	8.66 ± 1.56	7.66 ± 1.74	0.448
HOMA-IR	1.57 ± 1.03	1.21 ± 0.78	0.492
Others			
SBP (mmHg)	140.50 ± 29.77	129.71 ± 11.44	0.602
DBP (mmHg)	71.38 ± 11.59	64.43 ± 3.51	0.287
CHOL (mmol/L)	4.25 ± 0.88	4.41 ± 1.02	0.753
TG (mmol/L)	0.89 ± 0.13	1.20 ± 0.65	0.147
ALT (U/L)	24.06 ± 5.02	18.30 ± 6.12	0.182
AST (U/L)	21.85 ± 3.31	19.87 ± 4.57	0.350
LDH (U/L)	160.50 ± 32.98	174.57 ± 34.63	0.296
UR (μmol/L)	4.93 ± 0.91	4.97 ± 1.07	0.939
CR (μmol/L)	84.00 ± 14.32	78.29 ± 15.93	0.477

BAE-B: BAE intervention group at baseline, CON-B: control group at baseline. Data are presented as mean ± standard deviation (SD, n = 7-8). C-P, C-Peptide; HbA1C, glycated hemoglobin; HOMA-IR, homeostasis model assessment for insulin resistance; SBP, systolic blood pressure; DBP, diastolic blood pressure; CHOL, total cholesterol; TG, triglycerides; ALT, alanine aminotransferase; AST, aspartate aminotransferase; LDH, lactate dehydrogenase; UR, urea; CR, creatinine. Statistical analysis was performed using independent-samples *t*-test or MannWhitney test.

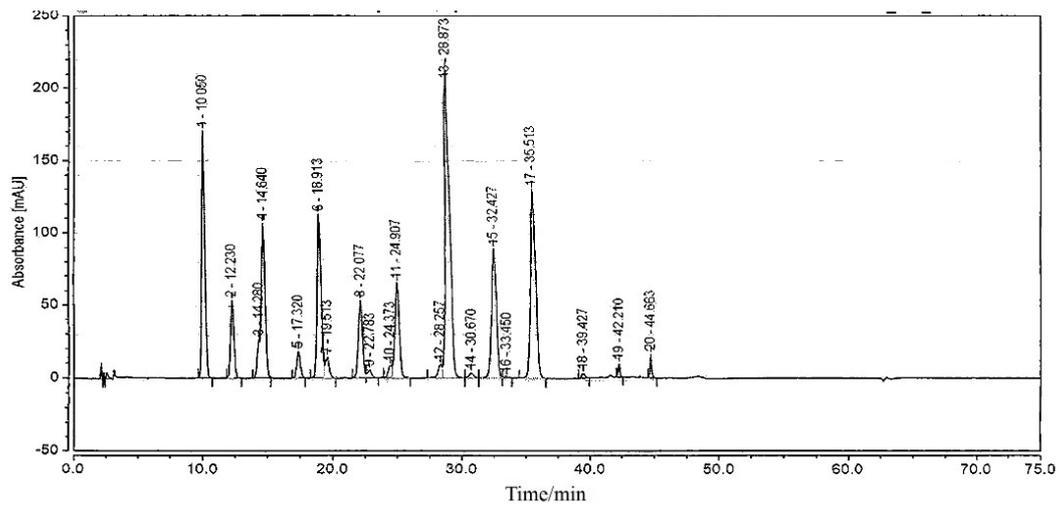


Fig. S1 HPLC chromatography of blueberry anthocyanin extracts.

Fig. S2 (A) Rarefaction and (B) Shannon curves of all groups. (C) The number of OTUs analyzed by Venn diagram in BAE intervention groups. (D) Chao 1 and (E) PD_whole_tree indices of all groups. (F) Cladogram generated from linear discriminant analysis effect size (LEfSe). Each circle's size is proportional to the taxon's abundance. Metastats analyses between BAE-A1 and BAE-B groups at (G) phylum and (H) genus levels. Metastats analyses between BAE-A3 and BAE-B groups at (I) phylum and (J) genus levels (n = 5-8). BAE-B: BAE intervention group at baseline, BAE-A1: BAE intervention group after 1-month intervention, BAE-A3: BAE intervention group after 3-month intervention, BAE-A6: BAE intervention group after 6-month intervention, CON-B: control group at baseline, CON-A6: control group with no intervention for 6-month.