

Beneficial effects of polyphenols from aronia berries on life-style related diseases

○Takuya Yamane^{1,2}, Miyuki Kozuka³, Momoko Imai^{1,4}, Satoshi Handa¹, Naoki Harada¹, Shigeo Takenaka¹, Ryoichi Yamaji¹, Tatsuji Sakamoto¹, Tetsuo Ishida⁵, Hiroshi Inui¹, Takenori Nakagaki², Yoshihisa Nakano¹
¹Ctr. for Res. Development Bioresources, Osaka Prefecture Univ., Japan, ²Inst. of Food Sci., Nakagaki Consulting Engineer and Co., Ltd, Japan, ³Dept of Health Nutr., Faculty of Human Sci., Hokkaido Bunkyo Univ., Japan, ⁴Dept of Food Nutr. Mgmt. Studies, Faculty of Human Development, Soai Univ., Japan, ⁵Dept of Chem., Faculty of Sci., Univ. of the Ryukyus, Japan E-mail address : tyt29194@osakafu-u.ac.jp

Abstract

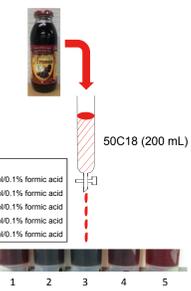
Aronia berries and their derivatives have beneficial effects on lifestyle-related diseases. Drinking of aronia juice reduced the blood glucose levels of type 2 diabetes and obesity model KKA^y mice. Cyanidin 3,5-diglucoside, a metabolite of the berries, inhibited dipeptidyl peptidase IV (DPP IV) activity. However, the mechanisms of the beneficial effects are only partly elucidated. In this study, to find bioactive polyphenols in aronia juice, polyphenols were isolated from the juice and their health effects were examined. Aronia juice contained various polyphenols that inhibited α -glucosidase, DPP IV, hydroxymethylglutaryl-CoA (HMG-CoA) reductase and lipid accumulation, respectively. Cyanidin 3,5-diglucoside showed an anti-diabetic effect but no anti-obesity effect. The effect of HMG-CoA reductase inhibiting polyphenols on cholesterol levels of obesity model mice is under investigation.

Aronia melanocarpa

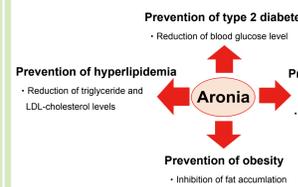


Black-purple fruit belonging to the family Rosaceae native to North America
 Widely produced in Russia, Poland and Bulgaria
 Growing in Hokkaido and Tohoku in Japan

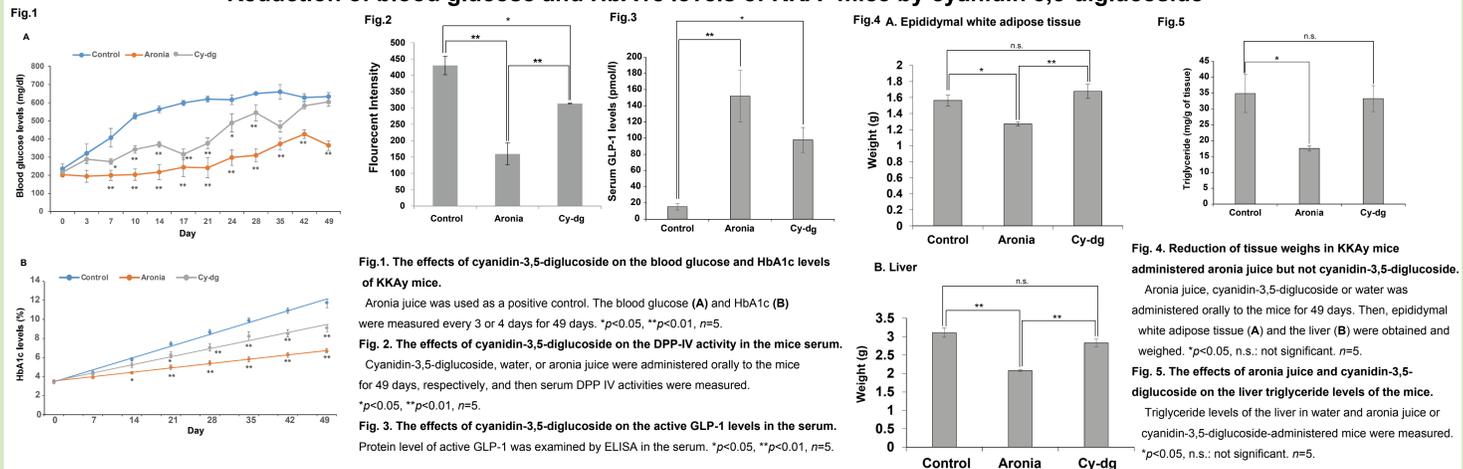
Fractionation of aronia juice



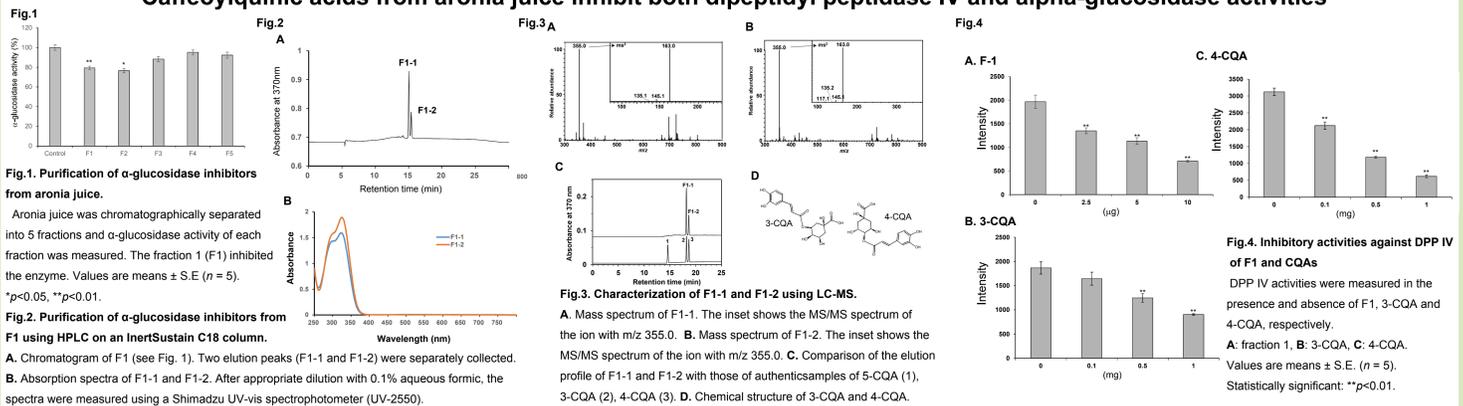
Beneficial effects of aronia berries on health



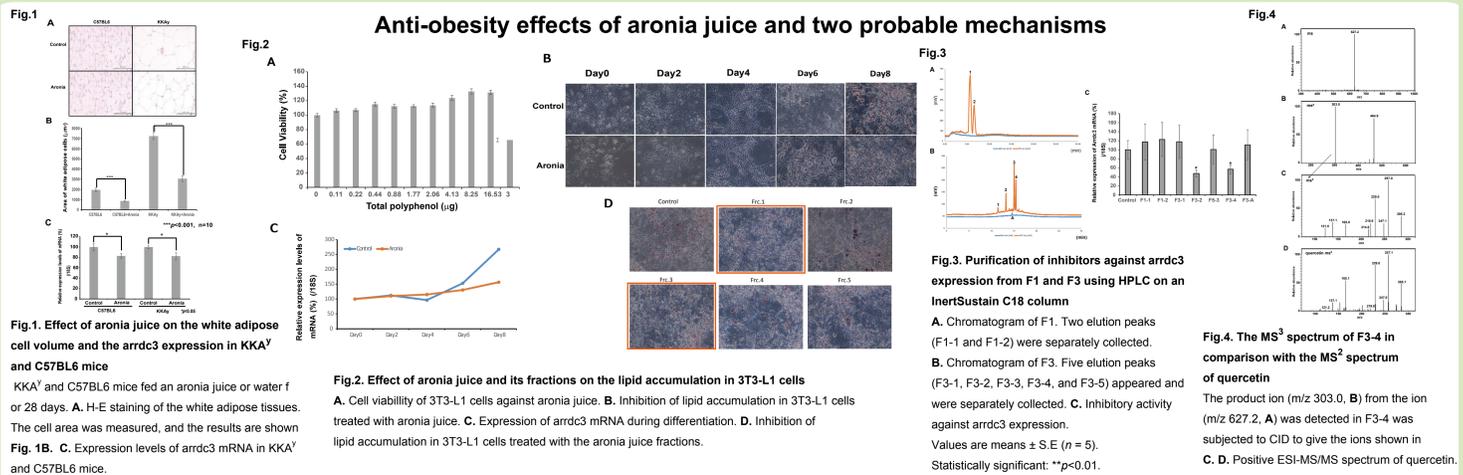
Reduction of blood glucose and HbA1c levels of KKA^y mice by cyanidin 3,5-diglucoside



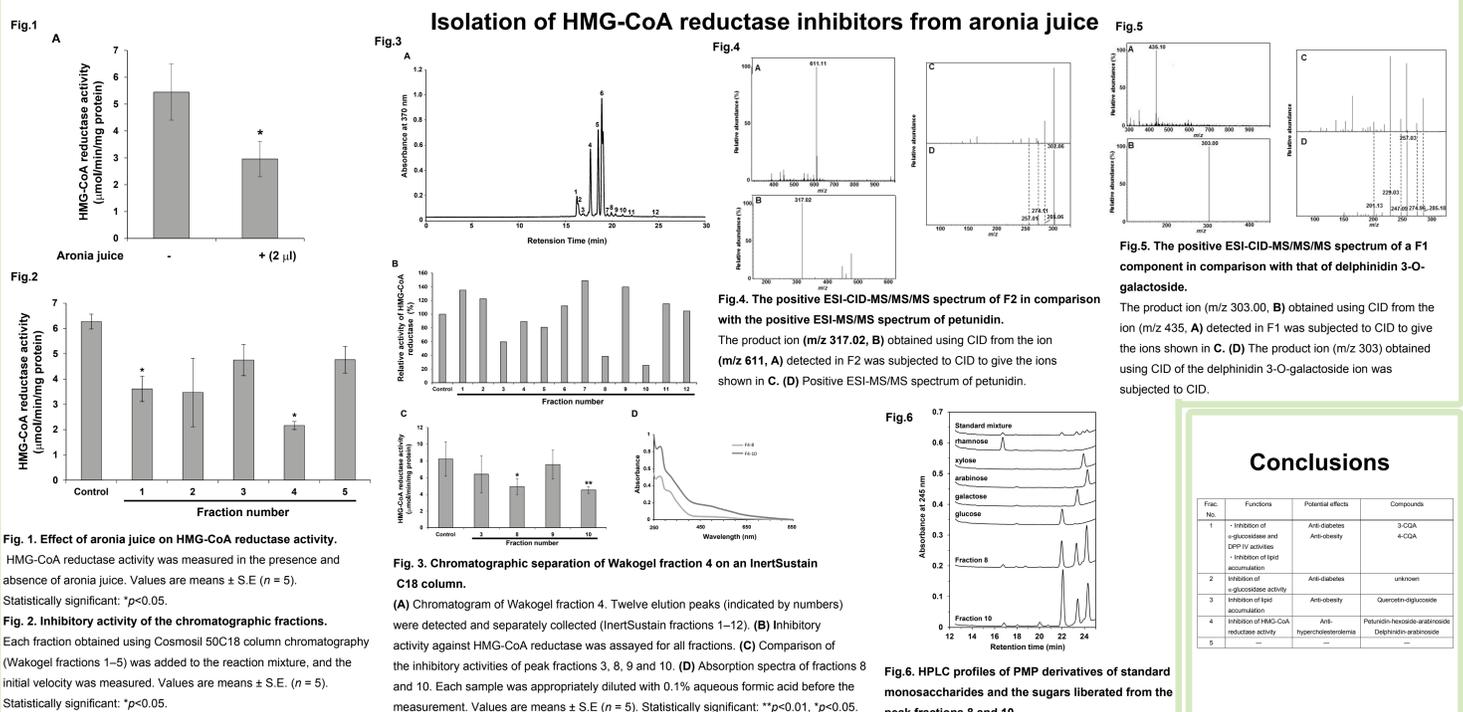
Caffeoylquinic acids from aronia juice inhibit both dipeptidyl peptidase IV and alpha-glucosidase activities



Anti-obesity effects of aronia juice and two probable mechanisms



Isolation of HMG-CoA reductase inhibitors from aronia juice



Conclusions

Frac. No.	Functions	Potential effects	Compounds
1	Inhibition of α -glucosidase and DPP IV activities Inhibition of lipid accumulation	Anti-diabetes Anti-obesity	3-CQA 4-CQA
2	Inhibition of α -glucosidase activity	Anti-diabetes	unknown
3	Inhibition of lipid accumulation	Anti-obesity	Quercetin-diglucoside
4	Inhibition of HMG-CoA reductase activity	Anti-hypercholesterolemia	Petunidin-hexose-arabinoside Delphinidin-arabinoside
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