

Anthocyanin supplementation improves serum LDL – and HDL – cholesterol concentrations associated with the inhibition of cholesterol ester transfer protein in dyslipidemic subjects

ABSTRACT

Background: Anthocyanins have been shown to exert benefits on the lipid profile in many animal models. Whether these molecules have similar beneficial effects in humans is currently unknown.

Objective: The objective was to investigate the effects of berry-derived anthocyanin on the serum lipid profile in dyslipidemic patients.

Design: A total of 120 dyslipidemic subjects (age 40-60 y) were given 160mg anthocyanins twice daily or placebo for 12 wk in a double-blind, randomized, placebo-controlled trial.

Results: Anthocyanin consumption increased HDL- cholesterol concentrations (13.7% and 2.8 % in the anthocyanin and placebo groups, respectively; $P < 0.001$) and decreased LDL- cholesterol concentration (13.6% and -0.6% in the anthocyanin and placebo groups, respectively; $P < 0.001$). The cellular cholesterol efflux to serum increased more in the anthocyanin group than in the placebo group (20.0% and 0.2%, respectively; $P < 0.001$). Anthocyanin supplementation decreased the mass and activity of plasma cholesterol ester transfer protein (CETP) (10.4% and 6.3% in the anthocyanin group and -3.5% and 1.1% in the placebo group, respectively; $P < 0.001$). In the anthocyanin group, the change in HDL cholesterol was negatively correlated with the change in CETP activity, ($r_x = - 0.330$). The change in LDL cholesterol was positively correlated with the change in CETP mass ($r_x = 0.354$). The change in cellular cholesterol efflux to serum was positively correlated with the change in HDL cholesterol ($r_x = 0.485$). In vitro, cyanidin 3-*O*- β -glucosides dose-dependently lowered CETP activity in human HepG2 cells.

Conclusions: Anthocyanin supplementation in humans improves LDL- and HDL- cholesterol concentrations and enhances the cholesterol efflux to serum. These benefits may be due to the inhibition of CETP.

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