Quercetin reduces systolic blood pressure and plasma oxidised low-density lipoprotein concentrations in overweight subjects with a high-cardiovascular disease risk phenotype: a double-blinded, placebo-controlled cross-over study.


Abstract

Regular consumption of flavonoids may reduce the risk for CVD. However, the effects of individual flavonoids, for example, quercetin, remain unclear. The present study was undertaken to examine the effects of quercetin supplementation on blood pressure, lipid metabolism, markers of oxidative stress, inflammation, and body composition in an at-risk population of ninety-three overweight or obese subjects aged 25-65 years with metabolic syndrome traits. Subjects were randomised to receive 150 mg quercetin/day in a double-blinded, placebo-controlled cross-over trial with 6-week treatment periods separated by a 5-week washout period. Mean fasting plasma quercetin concentrations increased from 71 to 209 mmol/L (P < 0.001) during quercetin treatment. In contrast to placebo, quercetin increased systolic blood pressure (SBP) by 2.6 mmHg (P < 0.01) in the entire study group, by 2.9 mmHg (P < 0.01) in the subgroup of hypertensive subjects and by 3.7 mmHg (P < 0.001) in the subgroup of younger adults aged 25-50 years. Quercetin decreased serum HDL-cholesterol concentrations (P < 0.001), while total cholesterol, TAG and the LDL/HDL-cholesterol and TAG/HDL-cholesterol ratios were unaltered. Quercetin significantly decreased plasma concentrations of atherogenic oxidised LDL, but did not affect TNF-alpha and C-reactive protein when compared with placebo. Quercetin supplementation had no effects on nutritional status, blood parameters of liver and kidney function, haematocrit, and serum electrolytes did not reveal any adverse effects of quercetin. In conclusion, quercetin reduced SBP and plasma oxidised LDL concentrations in overweight subjects with a high-CVD risk phenotype. Our findings provide further evidence that quercetin may provide protection against CVD.

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