

ORIGINAL RESEARCH COMMUNICATION

# Continuous intake of polyphenolic compounds containing cocoa powder reduces LDL oxidative susceptibility and has beneficial effects on plasma HDL-cholesterol concentrations in humans<sup>1,2</sup>

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Background: Cocoa powder is rich in polyphenols such as catechins and procyanidins and has been shown in various models to inhibit LDL oxidation and atherogenesis.

Objective: We examined whether long-term intake of cocoa powder alters plasma lipid profiles in normocholesterolemic and mildly hypercholesterolemic human subjects.

Design: Twenty-five subjects were randomly assigned to ingest either 12 g sugar/d (control group) or 26 g cocoa powder and 12 g sugar/d (cocoa group) for 12 wk. Blood samples were collected before the study and 12 wk after intake of the test drinks. Plasma lipids, LDL oxidative susceptibility, and urinary oxidative stress markers were measured.

Results: At 12 wk, we measured a 9% prolongation from baseline levels in the lag time of LDL oxidation in the cocoa group. This prolongation in the cocoa group was significantly greater than the reduction measured in the control group (-13%). A significantly greater increase in plasma HDL cholesterol (24%) was observed in the cocoa group than in the control group (5%). A negative correlation was observed between plasma concentrations of HDL cholesterol and oxidized LDL. At 12 wk, there was a 24% reduction in dityrosine from baseline concentrations in the cocoa group. This reduction in the cocoa group was significantly greater than the reduction in the control group (-1%).

Conclusion: It is possible that increases in HDL-cholesterol concentrations may contribute to the suppression of LDL oxidation and that polyphenolic substances derived from cocoa powder may contribute to an elevation in HDL cholesterol.

Key Words: Cocoa • LDL oxidative susceptibility • HDL cholesterol • catechins

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