Absorption of Cholesterol Oxidation Products from Ordinary Foodstuff in Humans

Abstract:

Background: Information on the absorption of cholesterol oxidation products (COP) from ordinary foodstuff in humans is scarce.

Methods: Five healthy young men were offered a salami- and Parmesan-containing meal naturally rich in COP. Plasma and lipoprotein COP concentrations were measured over the following 9 h.

Results: The mean plasma free (nonesterified) COP concentration showed its maximal increase 3 and 5 h after meal consumption. In contrast, the raise in plasma total COP concentration began 6 h after the meal with a maximum at 8 h and was statistically significant for 7α- and 7β-hydroxycholesterol and 7-ketocholesterol. The increase in plasma total cholesterol concentration was comparable to that of total COP.

Comparing the COP composition of the chylomicrons and the test meal, cholestanetriol, 7-ketocholesterol, and to a lesser extent cholesterol-α-epoxide were underrepresented in the chylomicrons as was the opposite for 7β-hydroxycholesterol. In very-low-density lipoprotein, a steady increase in the COP:cholesterol ratio was observed from 6 h on.

Conclusion: COP from ordinary foodstuff were absorbed in the human intestinal tract but differences in the bioavailability of the single COP compounds were found.

Stichworte: Cholesterol oxidationproducts; absorption; Chylomicrons; Oxysterols