Original Article


Effects of different fractions of whey protein on postprandial lipid and hormone responses in type 2 diabetes

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Abstract

Background/Objectives:

Exacerbated postprandial lipid responses are associated with an increased cardiovascular risk. Dietary proteins influence postprandial lipemia differently, and whey protein has a preferential lipid-lowering effect. We compared the effects of different whey protein fractions on postprandial lipid and hormone responses added to a high-fat meal in type 2 diabetic subjects.

Subjects/Methods:

A total of 12 type 2 diabetic subjects ingested four isocaloric test meals in randomized order. The test meals contained 100g of butter and 45g of carbohydrate in combination with 45g of whey isolate (iso-meal), whey hydrolysate (hydro-meal), α-lactalbumin enhanced whey (lac-meal) or caseinoglycomacropeptide enhanced whey (CGMP-meal). Plasma concentrations of triglyceride, retinyl palmitate, free fatty acid, insulin, glucose, glucagon, glucagon-like peptide 1 and glucose-dependent insulinotropic peptide were measured before and at regular intervals until 8-h postprandially.

Results:

We found no statistical significant differences between meals on our primary variable triglyceride. The retinyl palmitate response was higher after the hydro-meal than after the iso- and lac-meal in the chylomicron-rich fraction (P=0.008) while no significant differences were found in the chylomicron-poor fraction. The hydro- and iso-meal produced a higher insulin response compared with the lac- and CGMP-meal (P<0.001). Otherwise no significant differences in the hormone responses were found in the incremental area under the curve over the 480-min period.

Conclusions:
A supplement of four different whey protein fractions to a fat-rich meal had similar effects on postprandial triglyceride responses in type 2 diabetic subjects. Whey isolate and whey hydrolysate caused a higher insulin response.

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