Metabolic responses of healthy or prediabetic adults to bovine whey protein and sodium caseinate do not differ.

Abstract:
Casein is considered a slowly digestible protein compared with whey protein, and this may cause differences in hormone responses and the kinetics of delivering amino acids into the circulation. We investigated whether postprandial plasma hormone and metabolite responses were different when bovine casein or whey protein was co-administered with carbohydrates in healthy and prediabetic adults. White healthy male adults (n = 15) and white, well-defined male and female prediabetic adults (n = 15) received test drinks randomly on 3 different occasions at least 2 d apart which contained 50 g of maltodextrin19 (MD19) alone or in combination with 50 g of whey protein isolate (WPI) or 50 g of sodium caseinate (SC). Blood samples were collected over a 240-min time period and were analyzed for hormone profiles and defined metabolites. No evidence was found that gastric emptying was different between the 2 protein drinks. Both proteins increased peak plasma insulin concentrations in prediabetic persons by 96% compared with MD19 (each, P < 0.05), which was accompanied by a reduction of peak venous blood glucose by 21% (each, P < 0.0001) without a difference between the 2 proteins. Peak plasma glucagon concentrations increased by 101% in both groups after the protein drinks (P < 0.05). The WPI drink also increased peak plasma...
glucose-dependent insulinotropic polypeptide concentrations in healthy volunteers by 56% (P< 0.01). Differences in plasma metabolite concentrations in volunteers could be attributed exclusively to the differences in the amino acid composition of the 2 proteins ingested. The WPI and the SC drinks similarly reduced postprandial glucose excursions when ingested with carbohydrates in healthy and prediabetic volunteers. Under our experimental conditions, however, no evidence was found that gastrointestinal processing of the 2 protein varieties differed substantially. This trial was registered at clinicaltrials.gov as DRKS00005682.