Effects of 1 and 3 g cinnamon on gastric emptying, satiety, and postprandial blood glucose, insulin, glucose-dependent insulinotropic polypeptide, glucagon-like peptide 1, and ghrelin concentrations in healthy subjects

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Background: A previous study of healthy subjects showed that intake of 6 g cinnamon with rice pudding reduced postprandial blood glucose and the gastric emptying rate (GER) without affecting satiety.

Objective: The objective was to study the effect of 1 and 3 g cinnamon on GER, postprandial blood glucose, plasma concentrations of insulin and incretin hormones [glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide 1 (GLP-1)], the ghrelin response, and satiety in healthy subjects.

Design: GER was measured by using real-time ultrasonography after ingestion of rice pudding with and without 1 or 3 g cinnamon. Fifteen healthy subjects were assessed in a crossover trial.

Results: The addition of 1 or 3 g cinnamon had no significant effect on GER, satiety, glucose, GIP, or the ghrelin response. The insulin response at 60 min and the area under the curve (AUC) at 120 min were significantly lower after ingestion of rice pudding with 3 g cinnamon (P = 0.05 and P = 0.036, respectively, after Bonferroni correction). The change in GLP-1 response (DeltaAUC) and the change in the maximum concentration (DeltaCmax) were both significantly higher after ingestion of rice pudding with 3 g cinnamon (P = 0.0082 and P = 0.0138, respectively, after Bonferroni correction).

Conclusions: Ingestion of 3 g cinnamon reduced postprandial serum insulin and increased GLP-1 concentrations without significantly affecting blood glucose, GIP, the ghrelin concentration, satiety, or GER in healthy subjects. The results indicate a relation between the amount of cinnamon consumed and the decrease in insulin concentration.