

## Cooking attenuates the ability of high amylose meals to reduce plasma insulin concentrations in rats

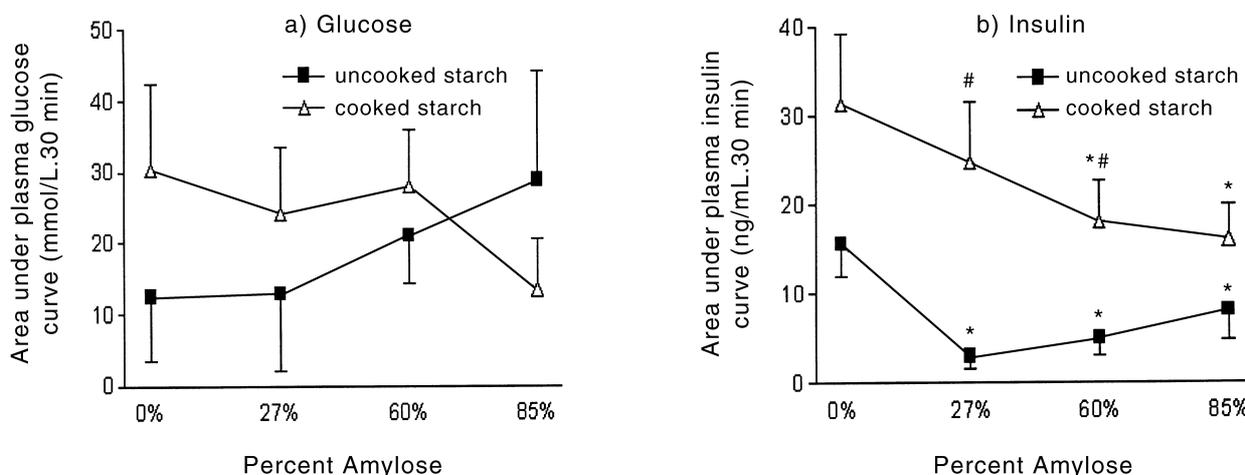
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Post-prandial glycemic control is important in the prevention and therapy of Type 2 diabetes and related diseases. A high amylose content in the starch component of the diet is considered beneficial, however the evidence is largely obtained for raw starch and little is known about the dose-response relationship and the effects of cooking. The aim of the present study was to define the dose-response curve for post-prandial glycemic and insulinemic excursions following meals of different amylose content and to compare the dose-response curves for meals containing cooked and uncooked starches. Following an overnight fast, rats ingested a meal and blood was sampled over the following 2 hours. The meal was given at 1.0 g carbohydrate/kg body weight with an amylose content of 0, 27, 60 or 85% of the starch. In rats fed the uncooked starch diets, glucose incremental area under the curve (AUC) (figure a) did not differ between groups ( $P = 0.31$ ), whereas insulin AUC (figure b) was higher for the 0% amylose meal than all other meals ( $P < 0.05$ ). For rats fed cooked starch diets, glucose AUC (figure a) did not differ between groups, whereas insulin AUC (figure b) was higher in the 0% amylose group than the 60% and 85% amylose groups ( $P < 0.05$ ) but did not differ from the 27% amylose group.



n = 7 for each point

\*Represents a significant difference from the 0% amylose group in the same category (ie cooked or uncooked)

#Represents a significant difference from the uncooked starch of the same amylose concentration

These results suggest that even a relatively small proportion of uncooked amylose starch (27%) is sufficient to achieve a maximal attenuating effect on post-prandial plasma insulin concentrations as compared to amylopectin (0% amylose) starch. Following cooking, however, a much higher proportion of amylose (at least 60%) is needed to achieve a maximally beneficial effect on post-prandial plasma insulin concentrations.