

FULL TEXT LINKS



Randomized Controlled Trial Eur J Clin Nutr. 2005 Sep;59(9):983-8.

doi: 10.1038/sj.ejcn.1602197.

Vinegar supplementation lowers glucose and insulin responses and increases satiety after a bread meal in healthy subjects

E Ostman¹, Y Granfeldt, L Persson, I Björck

Affiliations

Affiliation

¹ Applied Nutrition and Food Chemistry, Department of Food Technology, Engineering and Nutrition, Lund University, Lund, Sweden. Elin.Ostman@inl.ith.se

PMID: 16015276 DOI: [10.1038/sj.ejcn.1602197](https://doi.org/10.1038/sj.ejcn.1602197)

Abstract

Objective: To investigate the potential of acetic acid supplementation as a means of lowering the glycaemic index (GI) of a bread meal, and to evaluate the possible dose-response effect on postprandial glycaemia, insulinaemia and satiety.

Subjects and setting: In all, 12 healthy volunteers participated and the tests were performed at Applied Nutrition and Food Chemistry, Lund University, Sweden.

Intervention: Three levels of vinegar (18, 23 and 28 mmol acetic acid) were served with a portion of white wheat bread containing 50 g available carbohydrates as breakfast in randomized order after an overnight fast. Bread served without vinegar was used as a reference meal. Blood samples were taken during 120 min for analysis of glucose and insulin. Satiety was measured with a subjective rating scale.

Results: A significant dose-response relation was seen at 30 min for blood glucose and serum insulin responses; the higher the acetic acid level, the lower the metabolic responses. Furthermore, the rating of satiety was directly related to the acetic acid level. Compared with the reference meal, the highest level of vinegar significantly lowered the blood glucose response at 30 and 45 min, the insulin response at 15 and 30 min as well as increased the satiety score at 30, 90 and 120 min postprandially. The low and intermediate levels of vinegar also lowered the 30 min glucose and the 15 min insulin responses significantly compared with the reference meal. When GI and II (insulinaemic indices) were calculated using the 90 min incremental area, a significant lowering was found for the highest amount of acetic acid, although the corresponding values calculated at 120 min did not differ from the reference meal.

Conclusion: Supplementation of a meal based on white wheat bread with vinegar reduced postprandial responses of blood glucose and insulin, and increased the subjective rating of satiety. There was an inverse dose-response relation between the level of acetic acid and glucose and insulin responses and a linear dose-response relation between acetic acid and satiety rating. The results indicate an interesting potential of fermented and pickled products containing acetic acid.

Related information

[MedGen](#)