An investigation into the effects of non-nutritive sweeteners on food intake, satiety and blood glucose levels among healthy adults: A randomised crossover trial

Synopsis

There is an increasing evidence of the potential detrimental effects of non-nutritive sweeteners (NNS) on obesity and diabetes. Mechanisms such as an increase in postprandial glucose and insulin levels, energy and food intake have been suggested. Stevioside is one of the least studied NNS and has been linked to an increased energy intake ((Tey, 2016). The aim of this study is to investigate the effects of stevioside on postprandial glucose levels, food intake and satiety among healthy adults.

To main objectives are to determine the effect of Stevioside on:

- AUC for glucose
- Postprandial glucose levels
- Satiety (calculated via VAS scores)
- Ad-libitum lunch intake
- Daily food intake

Twenty-three volunteers with normal weight (BMI between 18-24.9 Kg/m²) will take part in a randomised clinical crossover trial where they will be administered either a sugar solution (65g of glucose), a solution containing Stevioside (1g) or water on 3 different occasions followed by an ad-libitum lunch. For each intervention, the participant will be asked to be available at 9am and from 12pm to 2:30pm.

Anthropometric measures will be collected at the start of each intervention (weight and WC). Volunteers will be required to rate their hunger, desire to eat, fullness and satisfaction on 100-mm visual analogue scales (VAS) with words anchored at each end, expressing the most positive and negative rating over a 150-minute period. Blood tests (for the measurement of glucose) will be collected at baseline and at 30 min-intervals after meal termination for 2 h. Area under the curve (AUC) for glucose will be calculated. The proposed research is an ongoing project that has been initiated at Liverpool Hope University as part of undergraduate research projects.

Pre requisite or particular skill set needed

Students need to have expertise in performing blood glucose measurement using a Finger Stick (training will be provided at Hope).
Reading materials


Metabolism and Appetite. Revista de investigacion clinica; organo del Hospital de Enfermedades de la Nutricion, 69(3), p.129.


