



## Fat saturation has no effect on glycaemic or satiety response to a high GI carbohydrate meal in healthy women

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Elevated dietary intake of processed, high glycaemic index (GI) carbohydrates is associated with an increased risk of developing chronic diseases such as type 2 diabetes, cardiovascular disease, obesity and cancer<sup>(1,2)</sup>. The postprandial glycaemic response (GR) to carbohydrate-rich foods is determined by several factors including the digestibility of the starch, fibre content, and processing techniques<sup>(3)</sup>. The addition of fat to a high GI food, such as white bread, is known to lower the postprandial GR<sup>(4)</sup>. The effect of *fat type* on postprandial response however is not clear. The purpose of this study was to determine whether a difference exists in the glycaemic and satiety responses to white bread meals following the addition of a saturated fat-rich source (butter), monounsaturated fat-rich source (olive oil), or polyunsaturated fat-rich source (sunflower oil) in healthy females.

In a three-way cross over design, female subjects ( $n = 9$ ) were randomised to the order in which they received the three test meals, each providing 50 g available carbohydrate. Blood glucose concentration and subjective satiety ratings were collected and used to determine the 2-hour blood glucose response and 3-hour satiety response to each meal. In addition, the glycaemic profile, a measure of postprandial blood glucose trajectory, was calculated.

There was no significant difference ( $P > 0.05$ ) between total incremental area under the GR curve (iAUC) following each test meal ( $113.0 \pm 9.6$ ,  $150.2 \pm 24.6$ ,  $126.3 \pm 16.9$  for butter, olive oil and sunflower oil meals respectively) using repeated measures ANOVA. After analysing the segmental iAUC for each meal it was found that olive oil induced a significantly higher GR than the other test fat sources for both 0–90 minute and 0–120 minute segments ( $P = 0.002$  for both 0–90 and 0–120 minutes compared to butter, and  $P = 0.022$  for both 0–90 and 0–120 minutes compared to sunflower oil). There was no significant difference observed between the glycaemic profile in response to each meal ( $92.0 \pm 3.3$ ,  $78.7 \pm 8.9$ ,  $98.7 \pm 10.2$  min/mmol/L,  $P = 0.188$  for butter, olive oil and sunflower oil respectively). Analysis of Visual Analogue Scales (VAS) highlighted that there were no significant differences ( $P > 0.05$ ) for subjective ratings of hunger and fullness between the different meal conditions.

In conclusion these findings suggest that there is no benefit in using unsaturated fats over saturated fats in lowering the glycaemic response or increasing postprandial satiety to a high GI food in healthy women.

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