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Abstract

Investigation of the Postprandial Glycaemic Response to White Bread and Wholemeal Bread Consumption among Healthy Young Adults †

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Background and Objectives: Wholemeal bread is regarded as healthier than white bread due to its higher fibre contents and other nutrients, including phytochemicals and essential minerals, and is recommended to be included in the healthy diet over white bread [1]. This study aimed to investigate the difference in the postprandial glycemic response to commonly consumed white bread and wholemeal bread in the UK in normal weight and healthy young adults. Methods: Designed as an acute randomized cross-over trial, 20 participants (10 white Caucasians and 10 Chinese, 20–31 y, BMI 18.5–24.6 kg/m^2) were given two slices of wholemeal (fibre 6.7 g) and white bread (fibre 2.7 g) alongside 150 mL of pure orange juice and 10 g of butter on separate visits randomly (minimum of a 48-h interval) after fasting for 12 h. The blood glucose concentration was measured at time 0 (fasting), 30 min, 60 min, 90 min and 120 min postprandially through multiple finger pricks using a Biosen blood glucose analyser. The difference in the area under the curve (AUC) and the peak value (PV) between different bread intakes were analysed through a paired *t*-test and between groups (genders, ethnicities) using two-way repeated measures ANOVA. Results: Characteristics of the participants were as follows: age: 23.15 ± 3.3 y; body mass index (BMI): 21.0 ± 2.2 kg/m^2; body fat composition: 19.9 ± 6.3%. The AUCs were significantly reduced after wholemeal bread meal consumption compared with white bread meal consumption (631.9 ± 66.8 mmol·min/L vs. 655.8 ± 56.6 mmol·min/L, $p = 0.027$). The AUCs were significantly less in females compared with males after both instances of bread meal consumption (white bread: female 630.2 ± 54.7 mmol·min/L, male 676.7 ± 51.2 mmol·min/L; wholemeal bread: female 593.7 ± 49.7 mmol·min/L, male 663.0 ± 64.2 mmol·min/L, $p = 0.024$). There was no significant difference in the PVs between the genders. No difference in either the AUCs or PVs was observed between ethnic groups, though Chinese participants had significant lower fasting blood glucose levels than their counterparts. Discussion: The wholemeal bread did deliver a beneficial effect for the postprandial glycaemic response compared with white bread consumption. Female participants show significant lower postprandial glycaemic response than males regardless of white or whole meal bread consumption.

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Reference

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