

Comparison of postprandial glycaemic response following wholemeal bread meal consumption between healthy young adults with Asian and Caucasian ethnicities

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Elevated postprandial glycaemic response has been associated with a high risk of Type-2 diabetes (T2D)⁽¹⁾. Dietary fibre can attenuate the postprandial glycaemic response and increase insulin sensitivity⁽²⁾. Wholemeal bread has been considered a healthy food due to its high fibre content⁽³⁾. This study aimed to compare the postprandial glycaemic response after wholemeal bread meal consumption among healthy young adults of Asian and Caucasian ethnicities.

Twenty healthy young adults (10 Asians, 10 white Caucasians; age: 23.2 ± 3.3 years; BMI: 20.9 ± 2.2 kg/m²) were provided with two slices of wholemeal bread (88 g, fibre 6.0g) with seedless strawberry jam (15g), butter (10g) and 150 ml of pure orange juice after fasting for 12 hours. Participants were asked to consume breakfast within 10 minutes and kept sedentary without any eating and drinking (apart from water) during the study period. Finger-prick capillary blood samples were collected on 0 (before meal), 30, 60, 90, and 120 min. Blood glucose concentration were measured using Diagnostics Biosen Blood Glucose/Lactate Analyser (EKF Diagnostics, Cardiff). The participant information of age, gender, ethnicity, body weight and height, and fat composition measured by Tanita MC-980MA PLUS (Tanita Company, Tokyo) were collected. The difference in the postprandial area under the curves (AUCs) and peak values (PVs) between genders and ethnic groups were analysed using the Independent T-test (two-sided). The significant level was set at $P \leq 0.05$.

The glucose concentration of males at each time point was consistently higher than that of females. There was a significant difference in the glucose concentration between males and females at 30 mins (6.94 mmol/L vs 5.86 mmol/L, $P = 0.010$) and at 60 minutes (5.86 mmol/L vs 5.05 mmol/L, $P = 0.027$). However, no significant difference between male and female glucose concentration at remaining time points was observed. Significant differences were observed in the AUCs between males and females (671.71 mmol*min/L vs 591.76 mmol*min/L, $P = 0.004$). Significant differences were also observed in the PVs between females and males (7.03 mmol*min/L vs 5.91 mmol*min/L, $P = 0.007$). No significant differences were found in the glucose concentration at each time point among ethnicities. No significant differences were seen in the AUC or PVs in the ethnicities of participants.

Our study indicates that female participants have lower postprandial glycaemic response than their counterparts after consumption of wholemeal bread.

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References

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