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

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Postprandial glycaemic response is the net balance of the rate of exogenous glucose released from food, the endogenous glucose production, and the total glucose uptake by tissue⁽¹⁾. High postprandial glycaemic response is associated with an increased risk of type 2 diabetes⁽²⁾. White bread is a traditional staple food commonly consumed in many countries around the world, such as UK, Australia⁽³⁾ and Japan⁽⁴⁾. The aim of this study is to compare the postprandial glycaemic response following consumption of white bread in healthy young adults with Asian and white Caucasian ethnicities.

Twenty participants (10 Asians and 10 Caucasians, 10 males and 10 females, Aged between 18 and 35 years, with BMI between 18.5 and 25 kg/m²) participated in this study. The participant information of age, gender and ethnicity were collected, and their body weight, height and fat composition were measured by Tanita MC-980MA PLUS (Tanita Company, Tokyo). Finger-prick capillary samples were collected at 0 (before meal), 30, 60, 90 and 120mins after ingestion of two slices of white bread (100 g, fibre 2.4g) with seedless strawberry jam (15g), butter (10g) and 150 ml of pure orange juice. Blood glucose concentrations were measured using Diagnostics Biosen Blood Glucose/Lactate Analyser (EKF Diagnostics, Cardiff). Participants were advised to fasting overnight (12 hours) before visit and keep sedentary without any eating and drinking (apart from water) during the study period. Differences in postprandial glucose peak values (PVs) and area under the curves (AUCs) were evaluated between Asians and white Caucasians or between genders using the independent T-test. A p-value of ≤ 0.05 as was set up as a significant level.

Males' postprandial glucose concentration is consistently higher than that of females at 30, 60, 90 and 120mins after consumption of the white bread. However, no significance was found in the glucose concentration at each time point between gender and ethnicity. There was no significant difference in PVs and AUCs between genders (PV: 6.38 ± 0.82 mmol/L vs 6.98 ± 0.84 mmol/L, $P = 0.90$; AUC: 633.33 ± 52.38 mmol*min/L vs 685.37 ± 54.48 mmol*min/L, $P = 0.38$) and ethnicities (PV: 6.48 ± 0.91 mmol/L vs 6.88 ± 0.81 mmol/L, $P = 0.53$; AUC: 656.46 ± 53.10 mmol*min/L vs 662.24 ± 66.20 mmol*min/L, $P = 0.76$).

The present study indicates there might be no difference in postprandial blood glucose response between males and females, Asian and Caucasian after consumption of white bread.

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References

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