

The effect of low glycemic index bread eaten with different fillings on blood glucose response in healthy individuals

ABSTRACT

White and whole meal breads have been classified as high glycemic index (GI) foods which in turn produce the greatest rise in blood glucose. One of the commercial bread products in Malaysia known as Brown breads (BB) has been recently marketed as a healthy choice for diabetics due to its low GI value. This study was conducted to examine the effect of BB when eaten with different fillings on blood glucose response among healthy individuals and to describe the influences of these fillings in reducing blood glucose response. Five test meals using BB (BB eaten with baked beans, BB eaten with vegetable, BB eaten with apple, BB eaten with roast chicken and BB eaten with seaweeds) had been prepared for this study. Postprandial blood glucose response was determined for each test meal and reference food (glucose) that contained 50 g carbohydrate respectively. A total of 21 healthy subjects were recruited by advertisement to participate. Only 20 subjects (15 males, 5 females, Mean + SD Age : 24.4 + 3.7 years; BMI 23.4 + 3.0 kgm⁻²) completed this study. After an overnight fast, subjects consumed BB eaten with fillings according to the assigned group given and three repeated tests of reference food (glucose). Fasting capillary blood glucose samples were taken at time 0 and at 15, 30, 45, 60, 90 and 120 min respectively after the meal began. The blood glucose response was obtained by calculating the incremental area under the curve (AUC). Blood glucose response after consuming reference food (251.8 + 12.1 mmol.min/L) was significantly higher than all the test meals ($p < 0.05$). Among the test meals, BB eaten with baked beans produced the highest rise in blood glucose (97.0 + 16.9 mmol.min/L) whereas BB eaten with seaweeds demonstrated the lowest response in blood glucose (33.3 + 6.5 mmol.min/L) and the difference was statistically significant ($p < 0.05$). The postprandial blood glucose response after ingestion of BB when eaten with vegetable was 73.3 + 19.1 mmol.min/L followed by BB eaten with apple (58.9 + 12.2 mmol.min/L) and BB eaten with roast chicken (56.5 + 10.1 mmol.min/L). Generally, BB when eaten with fillings produced a slow rise in blood glucose response than the reference food. Combining this BB with fillings had the effect of reducing the postprandial blood glucose further.

Keyword: Blood glucose response; Whole grain bread; Glycemic index