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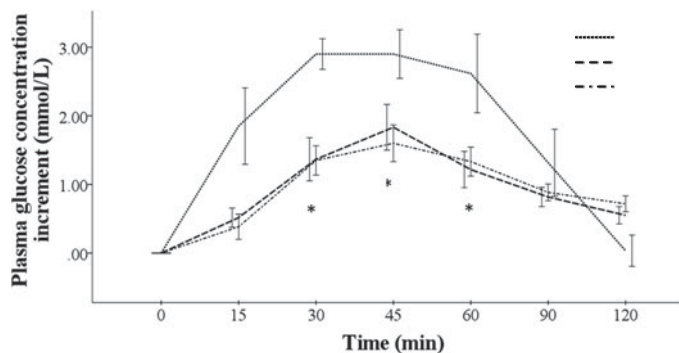
## Can sourdough bread enriched with soluble fibre help to improve glycaemic control?

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Long-term consumption of high-glycaemic index (GI) foods has been linked to increased risk of insulin resistance, type 2 diabetes, cardio-vascular disease and certain forms of cancer<sup>(1,2)</sup>. There is emerging evidence that low-GI diets result in lower blood glucose, HbA1c concentrations and increased insulin sensitivity<sup>(3)</sup>. Sourdough bread is an underutilised low-medium-GI food which may help to reduce the risk of these health ramifications<sup>(4)</sup>, although its fibre content is low if bread is made from white flour. The aim of the present study was to assess the glycaemic effects of fibre-enriched (FE) sourdough bread containing a mixture of soluble fibres (xanthan gum, gum Arabic and pectin).

In a crossover design study six volunteers (mean age 36 years, BMI 25, sd 2.9) were recruited and asked to ingest: 1) 50 g glucose dissolved in 250 g water, 2) sample of control sourdough bread and 3) sample of FE sourdough bread (with 10% soluble fibres based on flour added to the sourdough). The samples of bread contained 50 g available carbohydrates. Capillary blood samples were obtained using standard 7-point protocol<sup>(5)</sup> and analysed using glucose oxidase method (Analox Instruments, London, UK). The GI was calculated based on incremental area under the curve (iAUC) of glycaemic response.



Key: Error bars represent SE. Results analysed using Kruskal-Wallis test & Mann-Whitney U-test with Bonferroni correction as *post-hoc* procedure. Asterisk denotes statistical significance ( $p < 0.05$ ).

Glucose XG/GA/Pectin Control	Incremental area under the glycaemic response curve (min · mmol·L)	
	Mean	SE
Sourdough with XG/GA/Pectin	122.79 <sup>a</sup>	15.61
Control sourdough	134.04 <sup>a</sup>	18.52
Glucose	218.66 <sup>b</sup>	31.94

Key: Differences of the values with different superscripts are statistically significant (00)

Results show that peak glucose plasma concentration occurred at 30 minutes after consumption for glucose and 45 minutes for both sourdough breads. Statistical analysis did not reveal significant differences in iAUC measured for control sourdough bread and sourdough bread with the mixture of soluble fibres ( $p = 0.749$ ). However, iAUC generated by glucose standard was significantly higher ( $p = 0.013$ ) than both the control and FE sourdough breads. The GI was 52.6 for FE sourdough bread and 53.2 for the control sourdough, categorising them as medium-GI foods.

These findings indicate that the ingestion of both FE and control sourdough bread both led to lower glucose concentrations compared with the glucose standard. However, the addition of 10% soluble fibre did not lead to significant reductions in plasma glucose concentrations when compared with the sourdough control. It is possible that high levels of soluble fibres need to be integrated within the bread to yield significant physiological benefits. Larger and longer trials are now needed.

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