EFFECT ON GLYCAEMIC RESPONSE OF ADDITION OF DIETARY FIBRE TO MUFFINS

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High fibre diets or foods, particularly those high in soluble fibre, may have favourable effects on the glycaemic response (Anderson and Akanji 1991). One commonly used source of soluble fibre is oat bran, but its effect on glycaemic response (GR) has not been widely studied. The aim of this study was to investigate any effects on GR of the addition of palatable amounts of two different unprocessed brans (wheat and oat) to muffins.

The study was conducted on 15 healthy non-diabetic volunteers (8M, 7F, age 27.7 ± 9.1 years, Body Mass Index 24.4 ± 3.5 kg/m^2). Each volunteer was studied on five occasions. On the first occasion volunteers consumed one large plain muffin (no bran, 1.5 g fibre per muffin), and on subsequent occasions consumed one each of the following muffins in random order: plain (repeated); high oat bran (HOB, 25 g of oat bran per muffin); high wheat bran (HWB, 25 g of wheat bran per muffin); and low wheat bran (LWB, 7.5 g of wheat bran per muffin). All muffins were consumed within a 15 minute period for breakfast with 15 g of low joule jam and 250 ml of water. The muffins were designed to be similar in composition, each providing about 1330 kJ, 13 g of protein, 8 g of fat, and 51 g of available carbohydrate (45% from sugars). After a 12 hour overnight fast, capillary blood samples were obtained by finger prick twice before and once at 20 minute intervals for two hours after the start of the meal. Blood glucose levels were measured using an Acutrend meter. Glycaemic responses were calculated from the area under the BG curves using the pre-meal (fasting) BG as the baseline (incremental method, INCR), and the lowest BG as the baseline (absolute method, ABSOL).

The results for fasting BG (FBG), peak post-prandial BG and GR (in mmol/h) for each of the five treatments (mean ± SD) are given in the Table. Paired students t-test comparisons showed no statistically significant ($P<0.05$) differences between any of the treatments.

Muffin consumed	BG (mmol/l)		GR (INCR)		GR (ABSOL)	
	FBG	Peak	1st hour	2nd hour	1st hour	2nd hour
Plain (first)	4.93 ± 0.64	7.67 ± 0.97	85 ± 37	29 ± 22	126 ± 34	43 ± 26
Plain	4.92 ± 0.43	7.34 ± 0.58	74 ± 23	12 ± 18	111 ± 26	30 ± 20
HOB	4.72 ± 0.58	7.15 ± 0.77	80 ± 36	21 ± 26	109 ± 34	41 ± 21
LWB	4.87 ± 0.47	7.27 ± 0.79	75 ± 33	17 ± 22	111 ± 29	35 ± 19
HWB	4.92 ± 0.42	7.32 ± 0.48	71 ± 21	10 ± 13	118 ± 30	40 ± 18

The results of this study provide no evidence that addition of as much as 25 g of oat bran reduces the glycaemic response to the consumption of one large muffin.

ANDERSON, J.W. and AKANJI, A.O. (1991). Diabetes Care 14: 1126.

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