

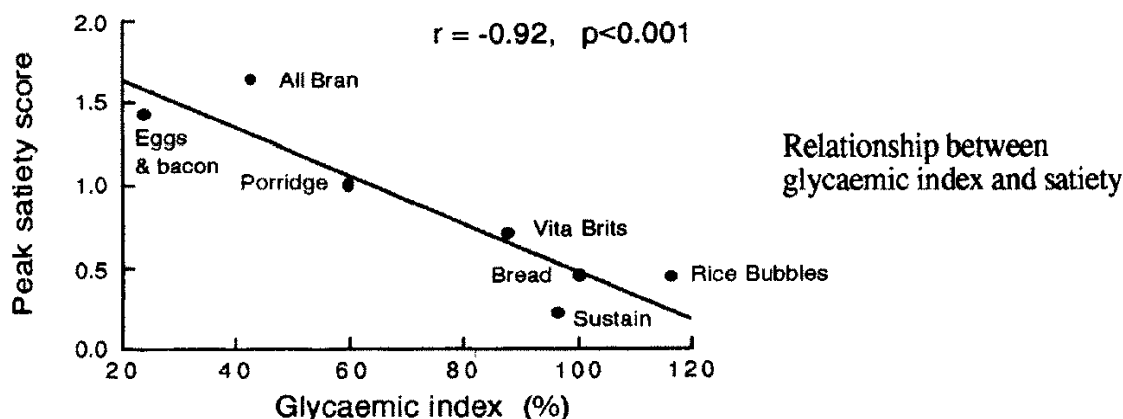
## PLASMA GLUCOSE CORRELATES INVERSELY WITH SATIETY AND CCK

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The role of carbohydrates in stimulating cholecystokinin (CCK) and the effect of plasma glucose in producing satiety are not clearly understood. The aim of this study was to test the hypothesis that the magnitude of the plasma glucose/insulin response to carbohydrate-rich foods is inversely related to the CCK response and to subjective satiety.

Seven healthy, male volunteers consumed equal carbohydrate portions (0.5 g / kg body weight) of six test meals (Rice Bubbles™, Sustain™, Vita-Brits™, All-Bran™, porridge and white bread) in random order after an overnight fast. A seventh meal of egg and bacon meal was consumed as a non-carbohydrate control providing 0.5 g protein / kg body weight. Serum CCK, plasma glucose, plasma insulin and subjective satiety (by visual analogue scale from -3 to 3) were assessed over 3h and quantified using the glycaemic index, insulin index, peak satiety score and area under the incremental curve (AUC). CCK was analysed by radioimmunoassay using a broad spectrum antiserum (#5135) which detects gastrin and CCK equally and then subtracting the value for gastrin determined separately using a gastrin-specific antiserum (Hansky and Soveny, 1982).

The observed glycaemic indices (mean  $\pm$  SE) ranged from  $42.5 \pm 2.6$  for All-Bran to  $116.2 \pm 11.4$  for Rice Bubbles, using white bread as the standard (GI = 100). Peak satiety scores ranged from  $0.21 \pm 0.4$  for Sustain to  $1.64 \pm 0.4$  for All-Bran. Significant inverse relationships were observed between the peak satiety score and both the glycaemic and insulin index of the seven meals ( $r = -0.92$ ,  $P < 0.001$  and  $r = -0.93$ ,  $P < 0.001$ , respectively, see figure).



Similarly the CCK response (AUC) varied inversely with both the AUC plasma glucose and the AUC insulin response ( $r = -0.93$ ,  $P < 0.001$  and  $r = -0.95$ ,  $P < 0.001$  respectively).

The results suggest that glycaemic and insulin responses to carbohydrate-containing foods are related in an inverse manner to CCK responses and with subjective ratings of satiety. As far as we are aware this is the first time that these relationships have been demonstrated.

HANSKY, J. and SOVENY, C. (1982). In: 'Techniques in the life sciences'. Part 2, p.1, ed.D.A.Titchen. (Elsevier Scientific Publishers: Ireland).

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