

PLASMA GLUCOSE AND INSULIN RESPONSES TO MIXED MEALS

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Although the glycaemic responses to many single foods have been determined (Jenkins et al. 1984) it is not known whether these values can be used to predict the glycaemic responses to a mixed meal. Our aim was to determine the plasma glucose and insulin responses to six different meals consisting of equal amounts of fat, protein and carbohydrate and compare the results with the values predicted by the individual foods.

The test meals were of six ethnic origins, each containing 50 g of carbohydrate - Indian (lentil and cauliflower curry with rice), Italian (spaghetti bolognese), Greek (lentil stew with bread roll), Chinese (stir-fried vegetables and chicken with rice), Western (meat and vegetables with mashed potatoes) and Lebanese (sandwich of unleavened bread, hommous, falafel and tabouleh). Each test meal provided 1700 kJ with approximately 50% of energy as carbohydrate, 17% as protein and 35% as fat as determined by food tables. The study was performed on eight healthy volunteers of body mass index (mean \pm S.E.) 22.3 ± 0.8 . After an overnight fast, they were fed the test meal at about 0900 hours and fingerprick blood samples taken at intervals over 3 h and analyzed for glucose and insulin.

It was found that the Greek meal gave a significantly lower (P 0.05) glycaemic index (mean \pm SE, 50 ± 7) and the Western meal a significantly higher (P 0.05) glycaemic index (90 ± 19) than the other meals (Kramer ranked data test). The Italian, Chinese, Indian and Lebanese meals which gave intermediate responses (64 ± 5 , 72 ± 11 , 69 ± 11 and 72 ± 9 respectively) did not differ significantly from each other. The insulin responses were found to parallel the glycaemic responses ($r=0.89$, P 0.01). The variation in responses between individuals was also significant (P 0.05).

A good correlation was found between the observed glycaemic index values for the meals and the predicted glycaemic indices calculated from the glycaemic indices of the component foods. ($r = 0.79$, P 0.05).

These results suggest that the glycaemic index approach may be useful in planning diets for individuals with diabetes mellitus where the reduction of post-prandial hyperglycaemia is an important treatment goal.

JENKINS, D.J.A., WOLEVER, T.M.S., JENKINS, A.L., JOSSE, R.G. and WONG, G.S. (1984). Lancet 2:388.

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