A SATIETY INDEX OF COMMON FOODS

S.H.A. HOLT, J.C. BRAND MILLER, P. PETOCZ* and E. FARMAKALIDIS**

A number of studies have shown that macronutrients differ in their capacity to satisfy hunger but there have as yet been no large-scale systematic comparisions. Kilojoule counter tables used by the weight conscious do not necessarily reflect the physiological effects of foods. The aim of this study was to produce a validated satiety index of common foods.

Isoenergetic 1000 kJ (240 kcal) serves of 43 foods were fed to groups of 11-13 subjects. Satiety ratings were obtained every 15 min over 120 min after which subjects were free to eat ad libitum from a standard range of foods and drinks. A satiety index (SI) score was calculated by dividing the area under the satiety response curve (AUC) for the test food by the group mean AUC for white bread and multiplying by 100. Thus, bread had an SI score of 100 and the SI scores of the other foods were expressed as a percentage of bread.

There were significant differences in satiety both within and between the six categories. The highest SI score was produced by boiled potatoes (323± 51) which was seven-fold higher than the lowest SI score of the croissant (47±17). Most foods (76%) had an SI score greater than or equal to white bread. Food intake (kJ) immediately after 120 min correlated negatively with both the mean ($r = -0.37$, $P<0.05$, $n = 43$) and individual satiety AUC responses thereby supporting the subjective satiety ratings. SI scores correlated positively with the serving weight of the foods ($r = 0.68$, $P<0.001$, $n = 43$) and negatively with palatability ratings ($r = -0.59$, $P<0.001$, $n = 43$). Protein, fibre, and water contents of the test foods correlated positively with SI scores ($r = 0.37$, $P<0.05$, $n = 43$, $r = 0.46$, $P<0.01$, and $r = 0.66$, $P<0.001$, respectively) whereas fat content was negatively associated ($r = -0.35$, $P<0.05$).

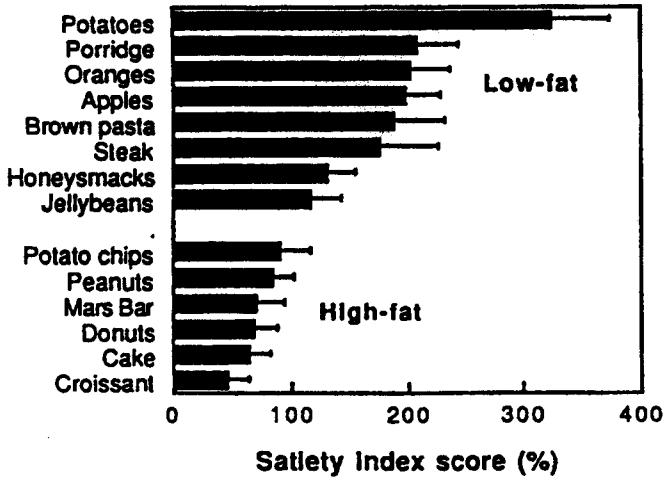

Figure. Fat content correlated negatively with SI scores.

The results show that isoenergetic serves of different foods differ greatly in their satiating capacities. This is relevant to the treatment and prevention of overweight and obesity and confirms the importance of reducing fat intakes.

Human Nutrition Unit, University of Sydney, New South Wales 2006
*School of Mathematics, University of Technology Sydney, Broadway, New South Wales 2007
**Kellogg (Australia) Pty Ltd, 41-51 Wentworth Avenue, Pagewood, New South Wales 2019