

EDITORIAL

THE GLYCAEMIC INDEX

Since the early 1980s when the glycaemic index (GI) concept was introduced to the scientific world, it has been a topic of constant debate. A systematic classification of food according to their glycaemic responses is achieved through applying the GI, which refers to the physiological effects of food on blood glucose levels.^{1,2} Most health professionals welcomed this concept, since any tool that can aid patients (especially people with diabetes mellitus) with blood glucose control is worth exploring.

Clinical trials have shown positive results with the introduction of the GI diet. Improvements in metabolic control (a decrease in glycosylated haemoglobin values and reductions in cholesterol and triglyceride levels) were reported by a number of studies.^{3,4} Although the duration of these trials was fairly short (maximum 3 months), the overall trends support the inclusion of the GI in the management of patients with diabetes mellitus.

Based on the above results, some health organisations, like the Dietitians Association of Australia, endorse the GI approach. The American Dietetic Association (ADA), however, does not approve of the GI diet. The main reasons for the ADA's decision revolves around the fact that there are so many variables affecting the outcome and determination of GI values. These variables include physiological factors like the reference food used in determining the GI values (both glucose and white bread have been used); the composition (carbohydrate and fat content) of the preceding meal; and the individual subjects exercise level. The GI values obtained in healthy subjects may also differ from those obtained in patients with diabetes mellitus, and there is also a difference in the values obtained between patients with insulin-dependent and non-insulin-dependent diabetes mellitus.⁵ Physical food-related factors, which influence starch digestion and glucose absorption, can also play an important role.³⁻⁶ All these variables affect the GI values of individual foods. Whether these differences are of sufficient magnitude to result in different blood glucose responses has still to be determined.

From a patient's perspective, the GI diet is also considered complex and difficult to follow. Many of the prudent dietary guidelines are ignored if the GI diet is strictly applied. For example, wholewheat bread, which has always been advocated to exert positive effects on blood glucose, has a high GI and as such is not recommended. Full cream milk, which owing to its high fat content has been excluded from a healthy diet, has a low GI and is therefore allowed. Carrots, pumpkin (high GI) and spinach (intermediate GI) should be avoided because of

their high GI values, but they are excellent sources of vitamins A and C.^{4,5}

In the article by Mbhenyane *et al.* (p. 88 this issue), the addition of sugar to porridge resulted in varying effects on the GI values of the combined meal. Mabella with sugar has a lower GI (GI 106) than mabella without sugar (GI 124). However, mealie meal porridge with sugar has a higher GI (GI 123) than mealie meal porridge without sugar (GI 117). Although these differences did not reach significance, the conflicting message that is portrayed is enough to confuse the general user.

Irrespective of the above debate, some agreement exists as to GI classifications. The most widely used classification categorises foods into a high (GI > 70); intermediate (GI 55-70) or low GI (GI < 55) category. Most of these GI tables exclude values for indigenous South African foods and dishes, further complicating the applicability of the GI diet to African patients. The article by Mbhenyane *et al.* addresses this very important aspect. The GI value of 10 commonly consumed indigenous foods was determined and is discussed. The authors conclude that traditional eating patterns seem to result in lowering the GI of staple foods. However, various other factors need to be investigated, such as the long-term physiological effects of the African diet, the chemical composition of these foods and the physiological responses to fermented products.

I tend to agree with the approach that the GI concept should not be used in isolation when planning diets. The current macronutrient recommendations for people with diabetes should rather be used as the basis and the GI principles can be used when providing patients with adequate food choices.

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1. Jenkins DJA, Wolever TMS, Taylor RH, *et al.* Glycemic index of foods: a physiological basis for carbohydrate exchange. *Am J Clin Nutr* 1981; **34**: 362-366.
2. Wolever TMS, Jenkins DJA, Jenkins AL, *et al.* The glycemic index: methodology and clinical implications. *Am J Clin Nutr* 1991; **54**: 846-854.
3. Dietitians Association of Australia review paper. Glycaemic index in diabetes management. *Aust J Nutr Diet* 1997; **54**: 57-63.
4. Visser ME, Aginsky J. The glycaemic index: a useful concept in the dietary management of people with diabetes mellitus? *Update* 2000; **XV**: 62-67.
5. Vorster HH, Venter CS, Silvis N. The glycaemic index of foods: a critical evaluation. *South African Journal of Food Science and Nutrition* 1990; **2**: 13-17.
6. Foster-Powell K, Brand Miller J. International tables of glycaemic index. *Am J Clin Nutr* 1995; **62**: 871S-893S.
7. Wolever TMS. The glycaemic index: flogging a dead horse? *Diabetes Care* 1997; **20**: 452-456.