The glycemic index at 20 y\textsuperscript{1,2}

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In 1981 Jenkins et al (1) published an article in this Journal proposing the glycemic index (GI) as a physiologic basis for classifying carbohydrate-containing foods. According to this system, individual foods are assigned values according to how fast they are digested and absorbed during the postprandial period. Because there is essentially no rate limitation in the digestion of polysaccharide into glucose, starchy foods (ie, so-called complex carbohydrates) do not necessarily have a lower GI than do simple sugars (2). In general, refined grain products and potatoes have a high GI, legumes and unprocessed grains have a moderate GI, and nonstarchy fruit and vegetables have a low GI (3). The GI is formally defined as the incremental area under the blood glucose curve after the consumption of 50 g carbohydrate from a test food divided by the area under the curve after eating a similar amount of a control food, generally white bread or glucose (4). Because the GI is measured in individual foods, one area of discussion has been the ability to predict glycemic responses to mixed meals from the GIs of the constituent foods (5, 6). A related concept, glycemic load (GL), was proposed as a method to characterize the glycemic effect of diets differing in macronutrient composition (7). The GL is defined as the weighted mean of the dietary GI multiplied by the percentage of total energy from carbohydrate (7, 8).

During the past 20 y, >100 scientific studies have examined the application of the GI or GL to diabetes mellitus, obesity, cardiovascular disease, behavioral disorders, and physical performance (8–10). Several popular nutrition books, with combined sales of several million copies, advocate the consumption of low-GI and low-GL diets (11–13). Moreover, use of the GI has been endorsed by the FAO/WHO (14) and numerous other international health-related organizations.

However, there is by no means a consensus regarding the utility of the GI to human health and nutrition. Many clinicians and researchers, especially in the United States, have questioned the relevance and practicality of the GI (15, 16). The topic has sparked controversy in a variety of national scientific settings, including meetings held by the Department of Agriculture (17) and the National Academy of Sciences (18). At present, neither the American Diabetes Association (19), the American Heart Association (20), nor the American Dietetic Association (21) recognizes a role for GI in disease prevention or treatment.

The purpose of this symposium was to conduct a vigorous debate regarding the role of GI in human health, with 4 shorter articles presenting the pro argument from different perspectives, and one longer rebuttal article. We begin with a historical overview of the GI concept by Jenkins et al (22). Next, Willett et al (23) explore the physiologic mechanisms by which GI may affect risk and management of diabetes mellitus. Brand-Miller et al (24) examine the data relating GI to the regulation of appetite and obesity. Subsequently, Leeds (25) describes studies linking GI to cardiovascular disease. Finally, Pi-Sunyer (26) provides a critical analysis and argues that insufficient evidence exists to justify public health recommendations incorporating the GI. On one point all authors agree: There is a need for prospective, long-term clinical trials of low-GI and low-GL diets in the prevention and treatment of relevant diseases.

REFERENCES


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