

# International Tables of Glycemic Index and Glycemic Load Values: 2008

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**OBJECTIVE**— To systematically tabulate published and unpublished sources of reliable glycemic index (GI) values.

**RESEARCH DESIGN AND METHODS**— A literature search identified 205 articles published between 1981 and 2007. Unpublished data were also included where the data quality could be verified. The data were separated into two lists: the first representing more precise data derived from testing healthy subjects and the second primarily from individuals with impaired glucose metabolism.

**RESULTS**— The tables, which are available in the online-only appendix, list the GI of over 2,480 individual food items. Dairy products, legumes, and fruits were found to have a low GI. Breads, breakfast cereals, and rice, including whole grain, were available in both high and low GI versions. The correlation coefficient for 20 staple foods tested in both healthy and diabetic subjects was  $r = 0.94$  ( $P < 0.001$ ).

**CONCLUSIONS**— These tables improve the quality and quantity of GI data available for research and clinical practice.

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The relevance of dietary glycemic index (GI) and glycemic load (GL) is debated. While the World Health Organization (1), the American Diabetes Association (2), Diabetes UK (3), and the Canadian Diabetes Association (4) give qualified support for the concept, many health professionals still consider GI and GL complex and too variable for use in clinical practice (5). The availability of reliable tables of GI is critical for continuing research and resolution of the controversy. New data have become available since previous tables were published in 2002 (6). Our aim was to systematically tabulate published and unpublished sources of reliable GI values, with derivation of the GL.

**RESEARCH DESIGN AND METHODS**— We conducted a literature search of MEDLINE from January

1981 through December 2007 using the terms “glyc(a)emic index” and “glyc(a)emic load.” We restricted the search to human studies published in English using standardized methodology. We performed a manual search of relevant citations and contacted experts in the field. Unpublished values from our laboratory and elsewhere were included. Values listed in previous tables (6,7) were not automatically entered but reviewed first. Final data were divided into two lists. Values derived from groups of eight or more healthy subjects were included in the first list. Data derived from testing individuals with diabetes or impaired glucose metabolism, from studies using too few subjects ( $n \leq 5$ ), or showing wide variability ( $SEM > 15$ ) were included in the second list. Some foods were tested in only six or seven normal subjects but otherwise appeared reliable and were included in the

first list. Two columns of GI values were created because both glucose and white bread continue to be used as reference foods. The conversion factor 100/70 or 70/100 was used to convert from one scale to the other. In instances where other reference foods (e.g., rice) were used, this was accepted provided the conversion factor to the glucose scale had been established. To avoid confusion, the glucose scale is recommended for final reporting. GL values were calculated as the product of the amount of available carbohydrate in a specified serving size and the GI value (using glucose as the reference food), divided by 100. Carbohydrate content was obtained from the reference paper or food composition tables (8). The relationship between GI values determined in normal subjects versus diabetic subjects was tested by linear regression. Common foods ( $n = 20$ ), including white bread, cornflakes, rice, oranges, corn, apple juice, sucrose, and milk were used for this analysis.

**RESULTS**— Tables A1 and A2 (available in an online appendix at <http://dx.doi.org/10.2337/dc08-1239>) list 2,487 separate entries, citing 205 separate studies. Table A1, representing reliable data derived from subjects with normal glucose tolerance, contains 1,879 individual entries (75% of the total). Table A2 contains 608 entries, of which 491 values were determined in individuals with diabetes or impaired glucose metabolism (20% of the total). The correlation coefficient for 20 foods tested in both normal and diabetic subjects was  $r = 0.94$  ( $P < 0.001$ ; line of best fit  $y = 0.9x + 9.7$  where  $x$  is the value in normal subjects). Table A2 also lists 60 values derived from groups of five or fewer subjects and 57 values displaying wide variability ( $SEM > 15$ ). A summary table (Table 1) comprising values for 62 common foods appears below. More reliable values are available for many foods, including carrots (GI = 39) and bananas (GI = 51).

**CONCLUSIONS**— The 2008 edition of tables of GI and GL has doubled the amount of data available for research and other applications. Most varieties of legumes, pasta, fruits, and dairy products are

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The values listed in Table A2 may be helpful in the absence of other data.

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