Glycemic Index Research Report #2409

For Hermanbrot Pty Ltd.

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Sydney University's

Glycemic Index Research Service (SUGiRS)

School of Life and Environmental Sciences

Charles Perkins Centre, D17

The University of Sydney, NSW, 2006

AUSTRALIA

Results

Average glycemic response curves for the reference food and the high protein bun

The average 2-hour plasma glucose response curves for the 25-gram available carbohydrate portions of the reference food and the Hermanbrot Complete Protein Bun are shown in Figure 2 below. The reference food (glucose solution) produced a rapid initial rise in plasma glucose to a high peak concentration at 30 minutes and the greater overall glycemic response. The Complete Protein Bun produced a low plateau-shaped peak plasma glucose response between 30 – 45 minutes, followed by a steady decline in glycemia between 45 – 120 minutes. The plasma glucose response curve produced by the test product remained above the baseline concentration throughout the second hour of the experimental period.

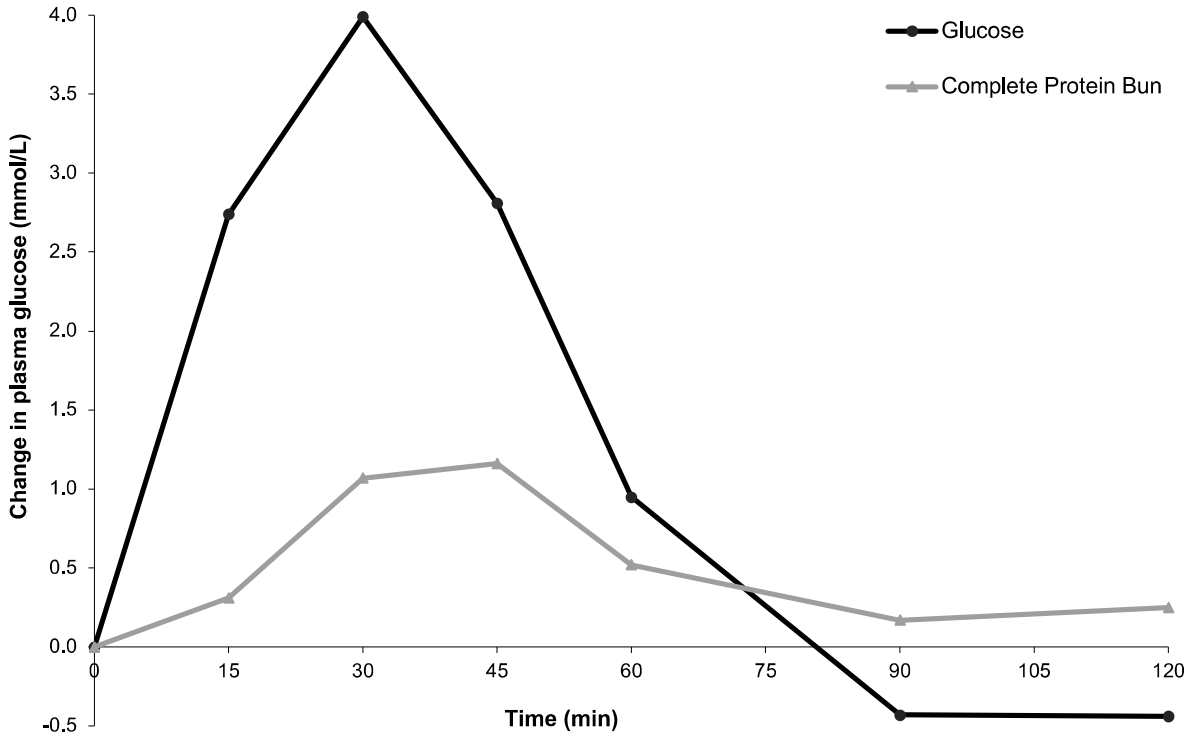

Figure 2. The average plasma glucose response curves for the equal available carbohydrate portions of the reference food and test product, shown as the change in plasma glucose from the fasting baseline level. Data are the mean of 16 participants' responses (10 participants' data for the Bread version and 6 participants' data for the Bun version of the formulation).

The foods' glycemic index values

The differences in the glycemic responses produced by the reference food and the test products are more clearly reflected by their GI values than their plasma glucose response curves. The GI methodology helps to manage both day-to-day and person-to-person variability. Variation between responses to the same food is normal and is due to several factors, such as different rates at which the participants ingested the food, differences in the participants' carbohydrate metabolism, and lifestyle and genetic factors. The group mean coefficient of variation (CV) for the iAUC values for the three repeated reference food sessions was 17%. The CV for the duplicate glucose concentration readings from the samples collected at the fasting timepoints was 0.86%. These CV results both met the requirements of <30% and <3.6%, respectively, as stipulated in the standardised GI testing methodology (9, 10).

It is standard scientific practice that if any individual participant's GI value for a particular food is either greater than the group mean (average) value plus two standard deviations or less than the group mean value minus two standard deviations then that value is classified as an outlier and is removed from the dataset. No outlier GI values were observed amongst the 16 participants' individual responses for the test product when the data were combined together for the testing conducted in 2021 (Complete Protein Bread) and 2024 (Complete Protein Bun). Therefore, the final pooled GI value for the Complete Protein Bun includes all 16 participants' GI results. The mean ± standard error of the mean (SEM) GI values for the test product and reference food are listed in Table 2 and illustrated in Figure 3.

Table 2. The mean ± SEM GI values for the test product and the reference food.

Test Food	GI value	GI Category
Hermanbrot Complete Protein Bun	38* ± 3	Low GI
Reference food (glucose sugar)	100 ± 0	High GI

* GI value is the average of a total of 16 participants' GI results: 10 participants' data for the Complete Protein Bread tested in 2021 and 6 participants' data for the Complete Protein Bun tested in 2024.

Conclusions

Using glucose as the reference food (GI = 100), foods with a GI value less than 55 are currently considered to be low-GI foods (14). Foods with a GI value between 56-69 are medium- or moderate-GI foods, and foods with a GI value of 70 or more are high-GI foods. The pooled GI value for the Hermanbrot Complete Protein formulation (Bread tested in 2021 and Bun tested in 2024) was 38, which places this product within the low GI category. The GI value observed for the Complete Protein Bun is only valid if the ingredients, nutritional composition, and processing methods remain the same. Any changes made to the formulation can influence the GI, and therefore any modified product may need to be retested.

GI values are measured using portions of foods and drinks that contain either 25 or 50 grams of digestible carbohydrate, but these may not be similar to the amounts of these products typically consumed by people in normal environments. It is possible to calculate a glycemic load (GL) value for any sized portion of a carbohydrate-containing food, as long as you know its GI value. The GL value for a food or drink is calculated by multiplying the amount of available carbohydrate in the portion of the food or drink by its GI value and then dividing by 100.

Similar to GI values, GL values are useful for helping people identify which types and amounts of foods will produce relatively lower blood glucose responses after consumption. A standard serve (ie. 1 bun/ 60 grams approximate weight) of the Complete Protein Bun contains a total of 6.0 grams of digestible carbohydrate. Therefore, the GL of an average serve of the bun is (6.0 x 38)/100 = 2. Currently, the consensus is that GL values of 10 or less are low GL; GL values between 11 – 19 are medium GL values; and GL values of 20 or more are high GL values (14).

Sydney University's Glycemic Index Research Service

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The GI values of foods must be tested scientifically. At this stage, only a few research groups around the world currently provide a legitimate testing service. The University of Sydney has been at the forefront of glycemic index research for over a decade and has determined GI values for more than 4000 foods. In 1999, the Human Nutrition Unit established a commercial GI testing unit called 'Sydney University's Glycemic Index Research Service' (SUGiRS) to meet the increasing demand for GI research by local and international food manufacturers and pharmaceutical companies.

Fiona Atkinson and Professor Jennie Brand-Miller are co-authors of *The International Tables of Glycemic Index* published by the scientific journal, *The American Journal of Clinical Nutrition*, in 2021. Previous editions of the International Tables (published in 1995, 2002 and 2008) have proven to be an important reference for health professionals when planning therapeutic diets for people with diabetes. Jennie Brand-Miller's books, *The GI Factor* and related pocketbooks on diabetes, heart disease and weight reduction, are aimed at lay people and health professionals, and have sold more than 150,000 copies in Australia since 1996. A British edition of *The GI Factor* was released in 1997 and a North American edition (*The Glucose Revolution*) was released in July 1999. Each edition of the book includes tables listing the GI values of more than 350 different foods, many of which were tested at the University' of Sydney. The glycemic index been discussed in several best-selling books and in magazine articles in relation to a range of health topics such as diabetes, breast cancer and weight control. Publications such as these and ongoing research promoting the healthy nature of low-GI foods have generated an increasing demand for GI research.