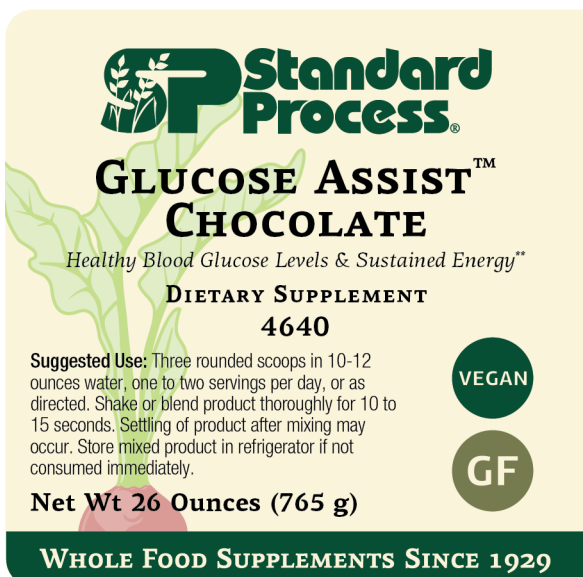


Blood glucose is one of the major sources of energy for the body, especially the brain and muscles.<sup>1,2</sup> When carbohydrates are consumed, they are broken down into glucose, resulting in an increase in blood glucose levels. Circulating glucose triggers the actions of insulin which allow for its uptake into cells where it can then be used as energy. Maintaining healthy blood glucose levels is critical for metabolic health and wellness, including preventing or delaying long-term health issues.

The glycemic index (GI) is a measure used to assess the effects of foods on blood glucose levels. A low GI indicates the carbohydrates contained in that food are more slowly digested, absorbed, and metabolized. Therefore, they cause a lower and more gradual rise in blood glucose levels. In contrast, high GI carbohydrates (GI >70) — such as white rice or cake — cause a rapid increase in blood glucose levels. Low GI foods, including nuts and some vegetables (GI <55), tend to contain more complex carbohydrates and indigestible carbohydrates like dietary fiber and resistant starches.<sup>3,4</sup> Consumption of low GI carbohydrates may be beneficial to improving and maintaining glycemic control.<sup>5</sup> Food items that produce a slow rise in blood glucose levels are of special interest, given the rising prevalence of diabetes and obesity.<sup>6</sup>

## OBJECTIVE

To determine whether Glucose Assist™ Chocolate<sup>†</sup> supports a reduction of post-meal glycemic response in healthy individuals.



**Standard Process**  
**GLUCOSE ASSIST™ CHOCOLATE**  
*Healthy Blood Glucose Levels & Sustained Energy\*\**  
**DIETARY SUPPLEMENT 4640**  
**Suggested Use:** Three rounded scoops in 10-12 ounces water, one to two servings per day, or as directed. Shake or blend product thoroughly for 10 to 15 seconds. Settling of product after mixing may occur. Store mixed product in refrigerator if not consumed immediately.  
**Net Wt 26 Ounces (765 g)**  
**WHOLE FOOD SUPPLEMENTS SINCE 1929**

Supplement Facts		
Serving Size: 3 rounded scoops (approx. 51 g) Servings per Container: 15		
	Amount per Serving	%Daily Value
Calories	200	
Total Fat	6 g	8%*
Total Carbohydrate	25 g	9%*
Dietary Fiber	5 g	18%*
Protein	15 g	30%*
Thiamin	0.1 mg	8%
Folate	60 mcg DFE	15%
Vitamin B12	1.2 mcg	50%
Biotin	7 mcg	23%
Choline	70 mg	13%
Calcium	20 mg	2%
Iron	4 mg	22%
Phosphorus	250 mg	20%
Magnesium	75 mg	18%
Zinc	2.2 mg	20%
Selenium	14 mcg	25%
Copper	0.4 mg	44%
Manganese	0.9 mg	39%
Molybdenum	40 mcg	89%
Sodium	180 mg	8%
Potassium	400 mg	9%
Protein Blend	21 g	†
Organic pea protein, organic oat flour, organic pumpkin seed protein, organic buckwheat flour, L-leucine, L-isoleucine, L-valine, and DL-methionine.	22 g	†
Proprietary Blend	22 g	†
Amylopectin (from waxy maize), green banana flour, organic sesame seed protein, golden chlorella, medium chain triglycerides, sunflower oil, allulose, and tapioca fiber.		

Other Ingredients: Organic cocoa powder (processed with alkali), organic acacia fiber, stevia extract, monk fruit extract, and natural flavor.  
Contains: Sesame.  
**Warning:** If pregnant or nursing, or have any health condition, consult with your health care professional before using this product. Keep out of reach of children.  
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1200 West Royal Lee Drive  
Palmira, WI 53156  
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**†Percent Daily Values are based on a 2,000 calorie diet.  
† Daily Value not established.**

**\*\*This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

†Study utilized an earlier version of Glucose Assist. The reformulated Glucose Assist has the same functional ingredients and is expected to have similar effects on blood glucose. Ingredient changes were made to improve flavor and introduce a strain of oats uniquely grown by Standard Process.

## METHODS

This was a randomized, controlled, double-blind, cross-over study where 8 non-diabetic (HbA1c < 6.5), otherwise healthy adults (ages 18-65) with BMI from 18.5 to 35 kg/m<sup>2</sup> consumed 1 of 4 test formulas in each arm of the trial in a random order, completing all 4 treatments in a 2-week timespan. The test formulas are shown in Table 1. Blood glucose was monitored continuously for the 2-week time span using Freestyle Libre Pro sensors from Abbott Diabetes Care. After an overnight fast, participants consumed their assigned treatment (time=0) and finished it within 5 minutes. An oral glucose tolerance test was monitored from 0-180 minutes after consumption.

Table 1.

Treatment	Contents	Amount of CHO	Description
OGTT-Control	Glucose Reference Control <sup>^</sup>	24.78 g	Equivalent to one serving of GA for assessment of glycemic response (GR) via OGTT
OGTT-GA	Glucose Assist™ Chocolate <sup>†</sup>	24.78 g	One serving of GA for assessment of GR via OGTT
GI-Control	Glucose Reference Control <sup>^</sup>	50 g	To calculate GI via AUC of OGTT
GI-GA	Glucose Assist™ Chocolate <sup>†</sup>	50 g	To calculate GI via AUC of OGTT

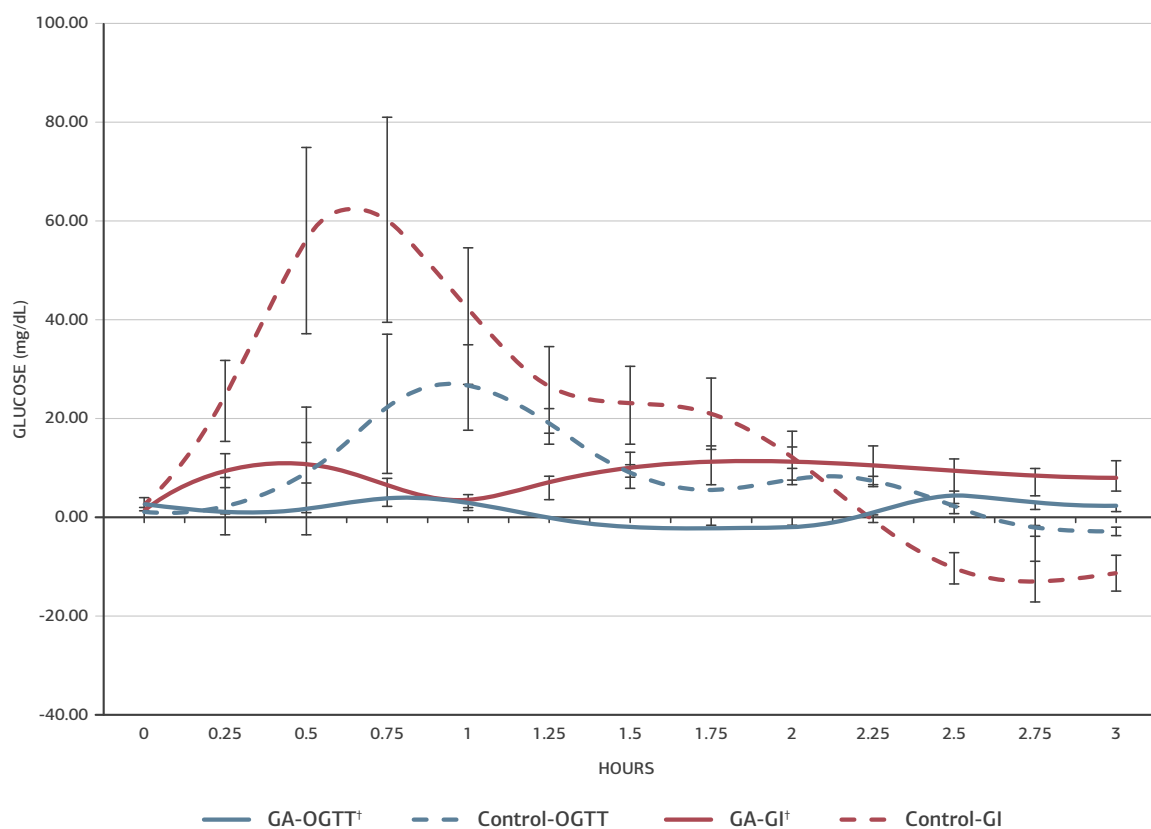
## ANALYSIS

Data from participants (n=8) were normalized to fasting blood glucose levels and compiled to generate plots of Comparative Oral Glucose Tolerance Test (Figure 1) and Glycemic index (Figure 2). The incremental area under the curve (iAUC) based on 50g of carbohydrate consumption is used to calculate the glycemic index of a particular item.

## RESULTS

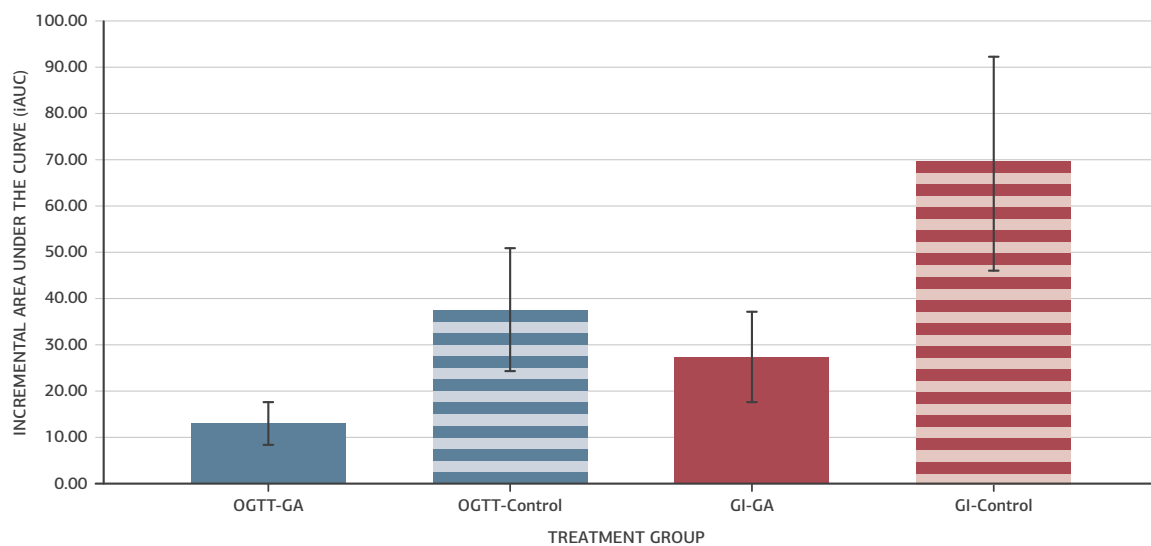
Consumption of Glucose Assist™ Chocolate<sup>†</sup> resulted in a blunted, more optimized glycemic response in healthy individuals when compared to a high glycemic reference glucose control formula (p=0.003) (Figure 1). Consumption of Glucose Assist™ Chocolate<sup>†</sup> also notably did not result in “peaks and valleys” in blood glucose when compared to the consumption of the glucose reference control. Based on iAUC calculations, Glucose Assist™ Chocolate<sup>†</sup> was shown to have a glycemic index of 27.4. Reduction in blood glucose response was observed with the consumption of Glucose Assist™ Chocolate<sup>†</sup>, which is a combination of low GI carbohydrates and a blend of plant-based proteins, compared to control.

<sup>^</sup>Glucose Reference Control was a standardized dextrose beverage: 24.78g of sugar (OGTT-Control) or 50g of sugar (GI-Control)



**Figure 1.** Normalized blood glucose levels in non-diabetic, otherwise healthy adults (n=8) in response to consumption of Glucose Assist™ Chocolate† (GA-OGTT and GA-GI) compared to controls (Control-OGTT and Control-GI).

## Glycemic Index (GI)



**Figure 2.** Glycemic index, calculated from the Incremental Area Under the Curve (iAUC) of glucose response to consuming GA formula† and reference control 50g of net carbohydrate (in red).

# TASTE & TOLERANCE

An additional taste and tolerance test revealed Glucose Assist™ — both chocolate and vanilla† — was well tolerated by a set of healthy individuals (n=18) for ten consecutive days, with no reported adverse events.

# CONCLUSION

Consumption of Glucose Assist™ Chocolate† in otherwise healthy individuals resulted in a reduction in post-meal glycemic response. This suggests that combining low glycemic index carbohydrates with a plant-based whole food protein blend (organic oat flour, pea protein, pumpkin seed protein, and buckwheat flour) might help minimize acute blood glucose spikes. It may also help with steady blood glucose management in healthy individuals whose blood sugar levels are already within a normal range.

# REFERENCES

1. Diepenbroek, C., Serlie, M.J., Fliers, E., Kalsbeek, A. & la Fleur, S.E. Brain areas and pathways in the regulation of glucose metabolism. *BioFactors* (Oxford, England) 39, 505-513 (2013).

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# APPENDIX

The new reformulated Glucose Assist™ has the same functional ingredients and improved vitamin profile (added B vitamins) and is expected to have similar effects on blood glucose as shown in the referenced clinical study.



## GLUCOSE ASSIST™ CHOCOLATE

Healthy Blood Glucose Levels & Sustained Energy\*\*

**DIETARY SUPPLEMENT**

**4640**

**Suggested Use:** Three rounded scoops in 10-12 ounces water, one to two servings per day, or as directed. Shake or blend product thoroughly for 10 to 15 seconds. Settling of product after mixing may occur. Store mixed product in refrigerator if not consumed immediately.

**Net Wt 1.65 lbs (750 g)**

**WHOLE FOOD SUPPLEMENTS SINCE 1929**

**VEGAN**

**GF**

**Warning:** If pregnant or nursing, or have any health condition, consult with your health care professional before using this product. Keep out of reach of children.

Supplement Facts			
Serving Size: 3 rounded scoops (approx. 50 g)			
Servings per Container: 15			
Amount per Serving	%DV†	Amount per Serving	%DV
Calories	200	Magnesium	60 mg 14%
Total Fat	3 g 4%	Zinc	2.2 mg 22%
Saturated Fat	1 g 2%	Selenium	14 mcg 25%
Total Carbohydrate	25 g 9%	Copper	0.3 mg 33%
Dietary Fiber	5 g 18%	Manganese	0.9 mg 39%
Total Sugars	<1 g †	Molybdenum	55 mcg 122%
Protein	16 g 27%	Sodium	170 mg 7%
Thiamin	0.4 mg 33%	Potassium	300 mg 6%
Riboflavin	0.4 mg 31%	Protein Blend	25 g †
Niacin	6.5 mg 41%	Organic pea protein, organic oat flour, organic pumpkin seed protein, organic buckwheat flour, L-leucine, L-isoleucine, L-valine, and DL-methionine.	
Vitamin B6	0.5 mg 29%	Proprietary Blend	19 g †
Folate (36 mcg folic acid)	60 mcg DFE 15%	Amylopectin (from waxy maize), green banana flour, allulose, organic rice protein, tapioca fiber, golden chlorella, and organic quinoa sprouts.	
Vitamin B12	1 mcg 42%		
Biotin	60 mcg 200%		
Pantothenic acid	2.5 mg 50%		
Choline	70 mg 13%		
Iron	4 mg 22%		
Phosphorus	210 mg 17%		

†Percent Daily Values (DV) are based on a 2,000 calorie diet.  
†Daily Value not established.

Other Ingredients: Organic cocoa powder (processed with alkali), natural flavor, stevia extract, monk fruit extract, and acacia fiber.

**\*\*This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

Standard Process Inc.  
1200 West Royal Lee Drive  
Palmyra, WI 53156

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