

## BACKGROUND

- Nutrition is a key component of a diabetes management plan, and postprandial blood glucose levels are a major determinant in achieving overall glycemic targets.
- Among those with type 2 diabetes (T2D), hyperglycemia is most common following breakfast, making this meal a key target for dietary intervention.
- Oral nutritional supplements (ONS) are often consumed as a mini meal or snack to help fill nutritional gaps; understanding the postprandial blood glucose response after consuming ONS is important when selecting an appropriate ONS for people with T2D.

## OBJECTIVE

- To compare the postprandial blood glucose response when individuals with T2D consumed a diabetes-specific ONS (DS-ONS) or a standard ONS (ST-ONS) for breakfast.

## METHODS

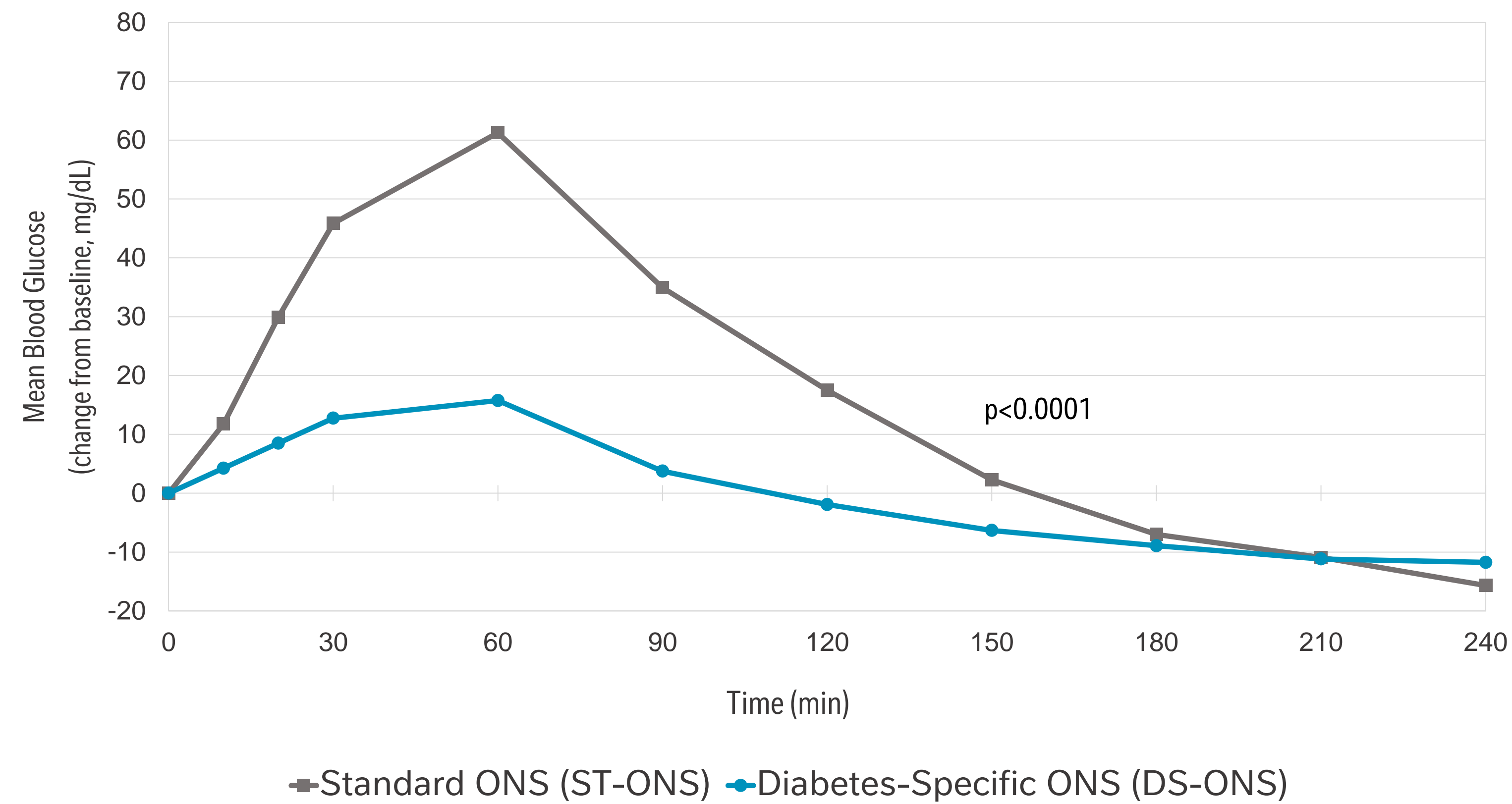
- Randomized, controlled, crossover trial in adults with T2D (HbA1c<9%).
- All participants consumed isocaloric amounts of both DS-ONS (BOOST Glucose Control® Nutritional Drink) and ST-ONS on separate study days (**Table 1**).
- Blood glucose and serum insulin values were measured at baseline and 10, 20, 30, 60, 90, 120, 150, 180, 210 and 240 minutes and used to calculate area under the curve (AUC).
- Group differences for AUC for blood glucose, insulin, and insulinogenic index were assessed using a random-effects model to account for the cross-over design.

## RESULTS

- Sixteen participants enrolled and 15 completed the study, with one withdrawn due to COVID-19 protocols. Data for 3 participants were removed due to outlier values, leaving 12 included in analysis (**Table 2**).
- Mean blood glucose values were significantly reduced for 2 hours following consumption of DS-ONS compared to ST-ONS, leading to a significantly lower overall AUC for blood glucose ( $p<0.0001$ ) and 26% reduction in peak postprandial blood glucose (DS-ONS:  $136\pm 20$  mg/dL vs. ST-ONS:  $184\pm 34$  mg/dL,  $p<0.0001$ ) (**Figure 1 and Table 3**).
- No significant differences were observed in insulin concentrations or insulinogenic index between the two products.

# Diabetes Specific ONS led to a blunted postprandial glucose response & a 26% reduction in peak blood glucose levels compared to a standard ONS

Figure 1. Mean Blood Glucose Levels Change from Baseline over 4 Hours



## CONCLUSIONS

- DS-ONS led to a blunted rise in postprandial blood glucose levels over a 4-hour period and produced lower blood glucose peaks compared to ST-ONS.
- Incorporating a specially formulated DS-ONS into a balanced diet can be a useful tool in helping to achieve nutritional and glycemic goals as part of an overall diabetes management plan.

Table 1. Macronutrient Profile of ONS studied

	Standard ONS (ST-ONS)	Diabetes-Specific ONS (DS-ONS)
Volume, mL	188	237
Calories	190	190
Protein, g	8 (17% TE)	16 (33% TE)
Carbohydrate, g	33 (68% TE)	16 (34% TE)
Sugars, g	16	4
Fiber, g	0	3
Fat, g	3 (15% TE)	7 (33% TE)

TE=total energy

Table 2. Demographics (N=12)

	Mean ± SD
Age, years	64 ± 9
BMI	27.6 ± 5.7
	n (%)
Gender	Male 10 (83)
Race/Ethnicity	Asian 2 (17)
	Hispanic / Latinx 3 (25)
	White 7 (58)

Table 3. Postprandial Glucose and Insulin Responses for both ONS

	Standard ONS (ST-ONS)	Diabetes-Specific ONS (DS-ONS)
Glucose AUC <sub>0-240 min</sub> , mg/dL	4038±3085	<b>-59±2509*</b>
Glucose Cmax, mg/dL	184±34	<b>136±20*</b>
Insulin AUC <sub>0-240 min</sub> , μIU/mL	1379±2610	309±1536
Insulin AUC <sub>0-30 min</sub> , μIU/mL	285±381	115±188
Insulin Cmax, μIU/mL	37±30	26±23
Insulinogenic Index, μIU/mmol	12.9±18.8	4.0±37.1

Values are mean ± standard deviation; \* $p<0.0001$  between groups