Two previous trials found statistically and clinically significant reductions in HbA1c among overweight and obese subjects with type 2 diabetes who were treated with a commercially-available portion controlled low glycemic index meal plan (Nutrisystem®) in conjunction with lifestyle counseling sessions.17-18 Although HbA1c is the primary predictor of complications,15,16 mean of glucose values (mg/dL) and standard deviation of glucose values were not significant between the two diet periods. 

Method

Participants

Overweight and obese individuals (BMI ≥ 27 kg/m²), aged 18-65 years, with type 2 diabetes were eligible to participate. Exclusion criteria included use of insulin or warfarin, weight change ≥5% in the previous 3 months, binge eating disorder, pregnancy or lactation, allergies to soy or peanuts, and regular use of acetaminophen (due to interference with the glucose monitoring device). Twelve participants were randomized to receive first either the portion controlled diet or their usual diet. Two participants who were assigned to receive the portion controlled diet first refused to return to their usual diet during the second test period and were excluded from analyses. Characteristics of the final sample of 10 participants (6 women, 4 men) are shown in Table 1.

Results, continued

Discussion

- Glycemic variability as measured by the standard deviation and interquartile range of CGM values was significantly reduced during consumption of UD, compared with PCD.
- Mean blood glucose and the percentage of readings in the hyperglycemic (>180 mg/dL) range were also significantly lower when participants consumed the PCD. These effects were demonstrated at 2 weeks, suggesting that the reductions in glycemic variability, mean glucose, and hyperglycemia can be achieved before significant weight loss. Additionally, the demonstration that additional improvements can be achieved in persons with generally good glycemic control (HbA1c ~6.8%) is noteworthy.
- A limitation of the study is the lack of nutritional equivalence of the two diet periods. The PCD provided significantly fewer calories, more protein and fiber, and less fat than participants' usual diets. Thus, the mechanisms of the effects cannot be identified.
- Strengths of the study include the large volume of glucose data obtained during each of the test diet periods and the use of a cross-over design to limit inter-individual variability.
- These findings, combined with previous research, demonstrate that the PCD is associated with reductions in HbA1c as well as glycemic variability, which are independent risk factors for diabetes-related complications.