

No Change in Oral Glucose Tolerance Tests as a Result of Ten Weeks of Consumption of Various Fructose Containing Sugars or Glucose

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Introduction

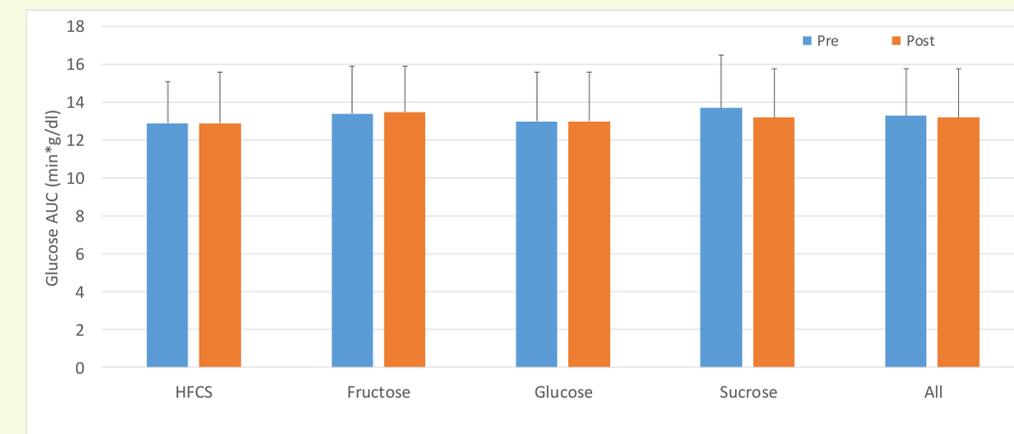
- Fructose is metabolized differently than other monosaccharides.
- Research in recent years has focused on fructose's potential to induce impairments in glucose metabolism and insulin resistance.
- However, studies that have shown such an effect have used experimental models that are drastically different than how fructose is typically consumed by humans – either using amounts far in excess of even the highest consumers and/or supplying it in isolation from other sugars or macronutrients.
- Therefore, a more real world investigation of how fructose is typically consumed is needed.

Methods

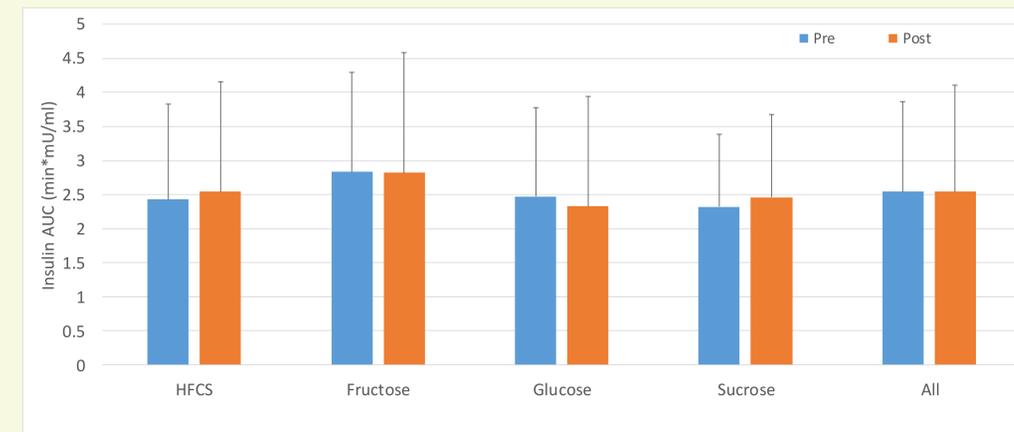
- This ten week study included one hundred thirty-six weight-stable individuals (no change in weight >3% for 3 months) who were either normal weight or overweight, normotensive, normoglycemic and with no other overt health problems.
- Individuals were required to consume sugar-sweetened low-fat milk every day for ten weeks as part of their usual diet.
- The added sugar in the milk represented the 50th percentile for sugar consumption in the United States:
 - Fructose - added fructose providing 9% of calories required for weight maintenance
 - Glucose - added glucose providing 9% of calories required for weight maintenance
 - HFCS - added HFCS providing 18% of calories required for weight maintenance
 - Sucrose - added sucrose providing 18% of calories required for weight maintenance.
- Energy intake required for weight maintenance was estimated from the Mifflin St Joer prediction including an individualized activity factor based on responses to a physical activity questionnaire.
- Other than milk consumption participants followed no structured dietary program. They were counseled on how to account for the calories in the sweetened milk, but were told to continue to eat to the same level of fullness as prior to enrollment.
- Three-day food diaries and NDSR were used to evaluate dietary intake at baseline and after ten-weeks.
- Subjects and research staff were blinded to which sugar was consumed.

Results

There was a small but significant increase in weight in the entire cohort (162.2 ± 27.3 vs 164.1 ± 28.1 lbs, $p < 0.001$), but no effect of the type of sugar consumed.



Time $p > 0.05$
Interaction $p > 0.05$



Time $p > 0.05$
Interaction $p > 0.05$

Discussion & Conclusion

These data suggest that chronic consumption of fructose when consumed in amounts typical in the American diet does not impair glucose tolerance regardless of the source of that fructose, or whether or not it is combined with glucose.



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