No Increase In Plasma Uric Acid Or Blood Pressure Following Ten Weeks Of Fructose Containing Sugar Consumption

Joshua Lowndes, James Rippe
Rippe Lifestyle Institute, Celebration, FL

Introduction

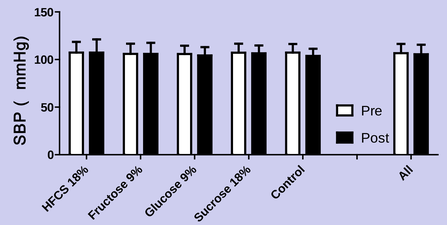
•Hyperuricemia may be promoted by consumption of very high doses of fructose, which in turn may increase blood pressure.
•This relationship has been clearly shown in rodent models, but has been observed while using doses of pure fructose high enough that make them inapplicable to human diets.
•The impact of fructose as commonly consumed by humans – in conjunction with other sugars and nutrients and in much lower amounts – has yet to be well defined.
•The objective of this study was to examine the effects on blood pressure and uric acid of daily consumption of the sugars commonly consumed in the American diet (sucrose and HFCS) and at levels typically consumed (50th percentile for population consumption levels).

Methods

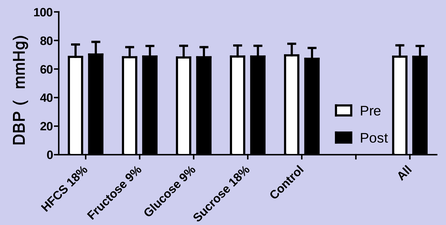
- All participants (n=156) were apparently healthy and weight stable prior to enrollment (no change in weight >3% over the past three months;
  - mean age 34.4 ± 11.1 years).
- Participants consumed sweetened or unsweetened low fat milk in amounts such that the added sugar contributed a target percentage of energy required for weight maintenance: fructose 9% (50th percentile of fructose consumption in the US), glucose 9%, high fructose corn syrup 18%, sucrose 18%; and an unsweetened milk control consumed such that milk contributed 18% of the weight-maintenance calories over a 10 week period.
- The energy intake required for weight maintenance was estimated for each participant using the Mifflin St Jeor equation and an appropriate activity factor determined by 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.
- Fasting blood pressure and a blood sample for the measurement of uric acid was obtained prior to and after the 10-week intervention.
- In addition, a subset (n=78) had two overnight visits in our metabolic ward during which standardized meals were provided and blood samples obtained every two hours.
  - Uric acid AUC for each 24-hour period was calculated using the trapezoidal method.

Results

Blood Pressure

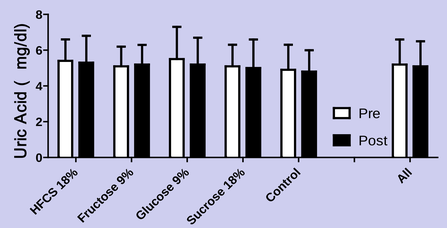


•Time effect, p>0.05
•Interaction effect (Time x Group) p>0.05



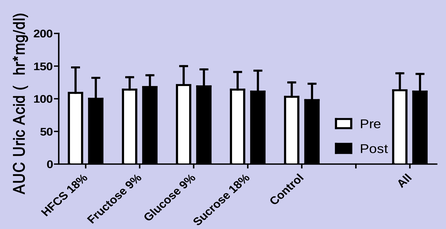
•Time effect, p>0.05
•Interaction effect (Time x Group) p>0.05

Fasting Uric Acid



•Time effect, p>0.05
•Interaction effect (Time x Group) p>0.05

Metabolic Unit – Uric Acid (n=78)



•Time effect, p>0.05
•Interaction effect (Time x Group) p>0.05

Discussion & Conclusion

- These data suggest that ten weeks of consumption of fructose at the 50th percentile level, whether consumed as pure fructose or with additional non-fructose sugars, as is commonly the case, does not promote hyperuricemia or increase blood pressure.

Support for this study provided by a grant from the Corn Refiners Association