

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

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

Introduction

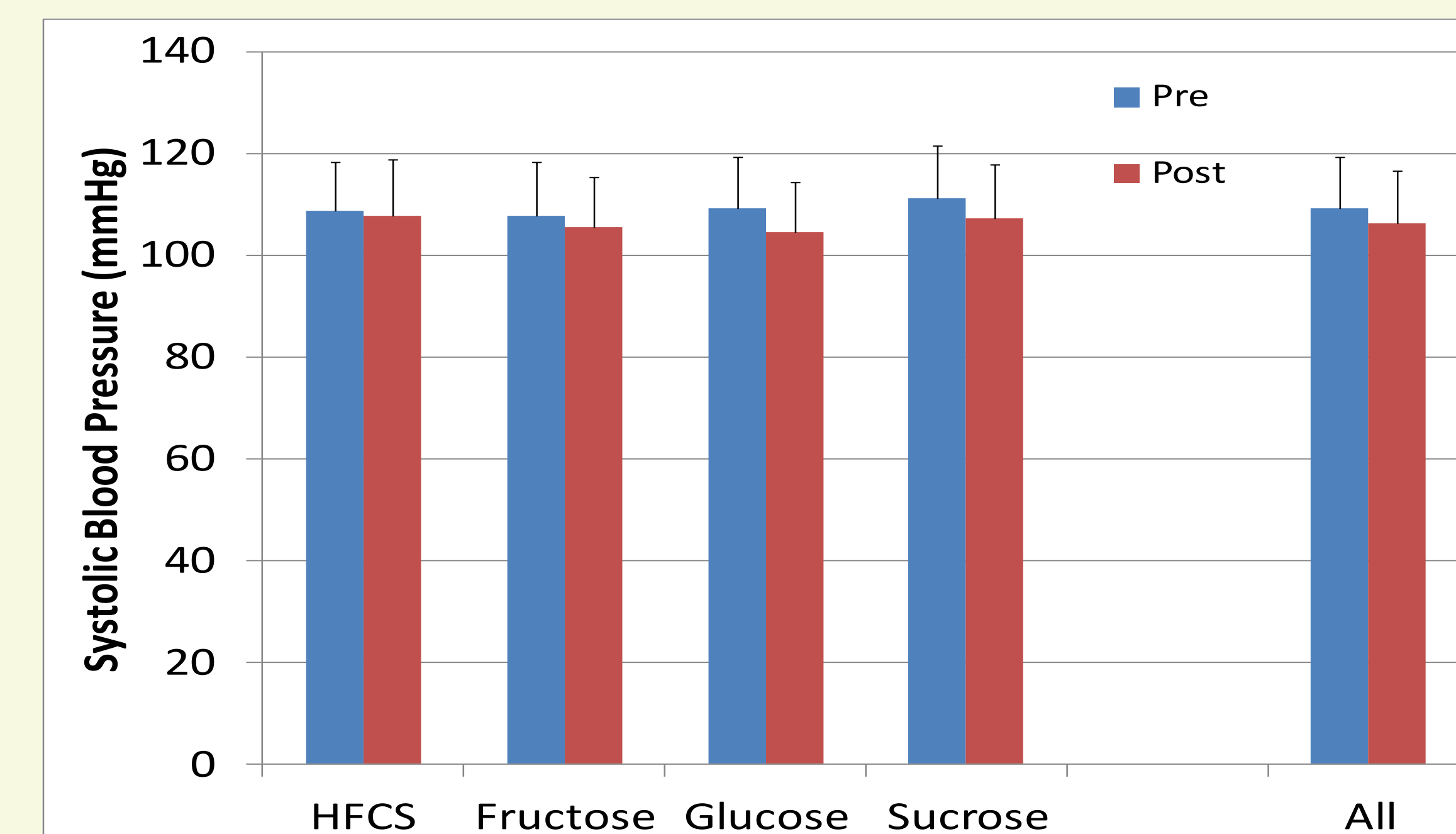
- Hyperuricemia may be promoted by consumption of very high doses of fructose, which in turn may increase blood pressure.
- This relationship has been clearly shown in rodent models, but has been observed while using doses of pure fructose high enough that make them inapplicable to human diets.
- The 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

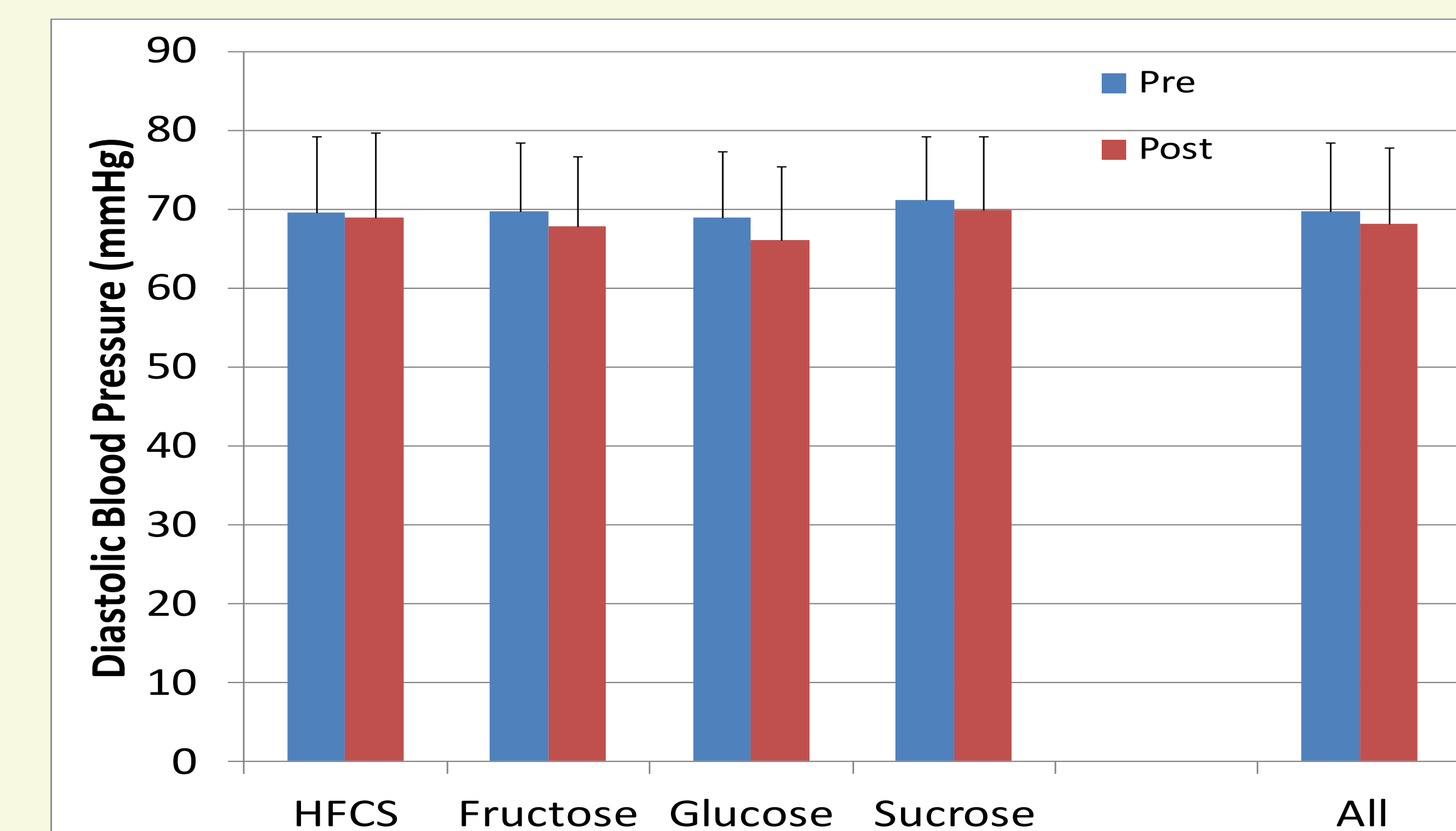
- Participants in this ten-week study (n=267) were men and women between 20-60 years, with a BMI between 21 and 35 kg/m².
 - Mean age 37.1 ± 12.1 years
- All participants were weight stable at the time of enrollment
 - No change in weight >3% of current weight within the past 30 days.
- Individuals were 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.
- A subset of participants (n=78) underwent a one-night stay in the metabolic unit, while consuming a calorie and macronutrient controlled diet containing sugars in the amount described above.
- Uric acid were measured every two hours for 24 hours and Area Under the Curve (AUC) calculated.

Results

Blood Pressure

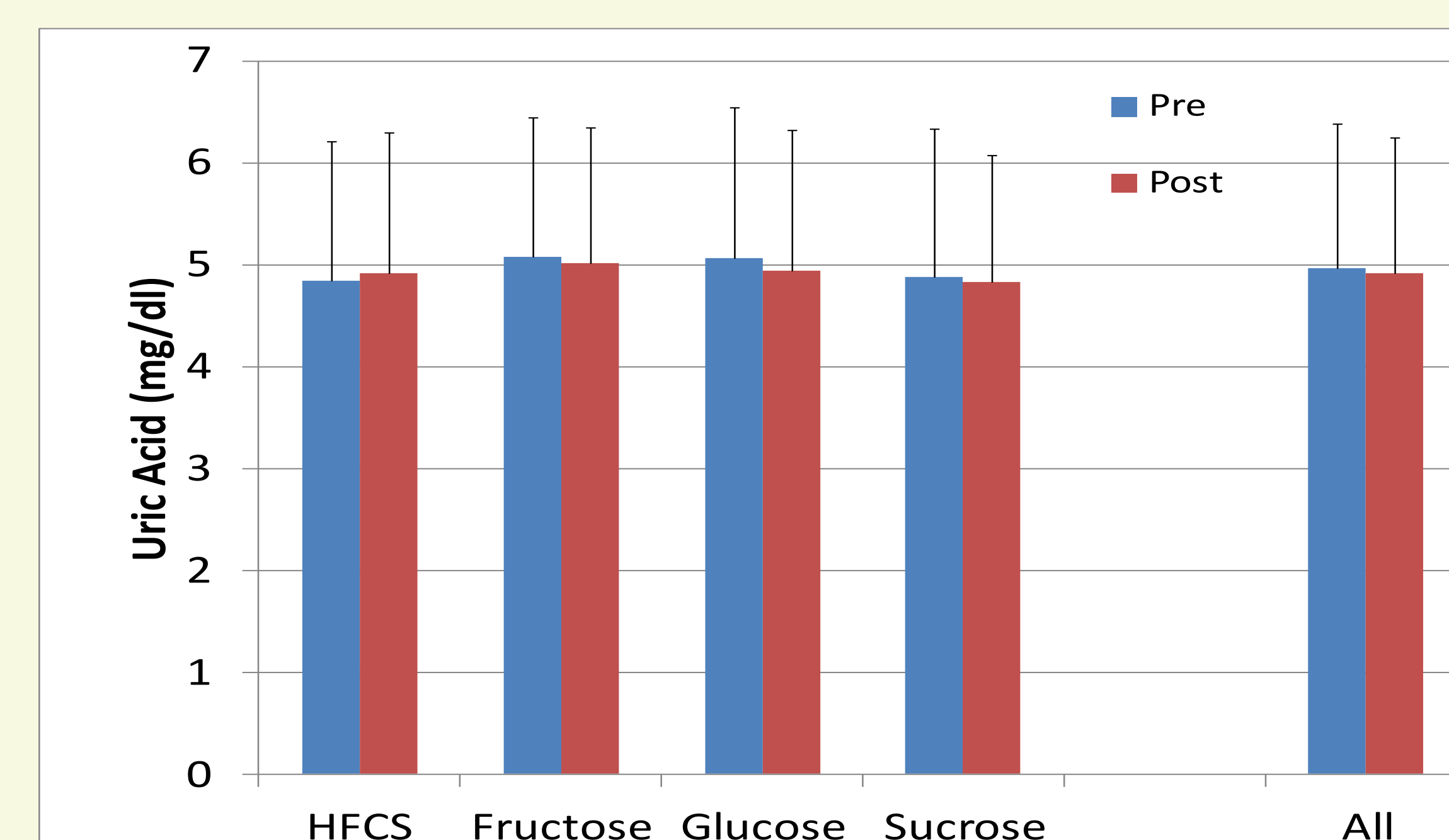


- N=267
- Time effect, p<0.001
- Interaction effect (Time x Group) p=0.081



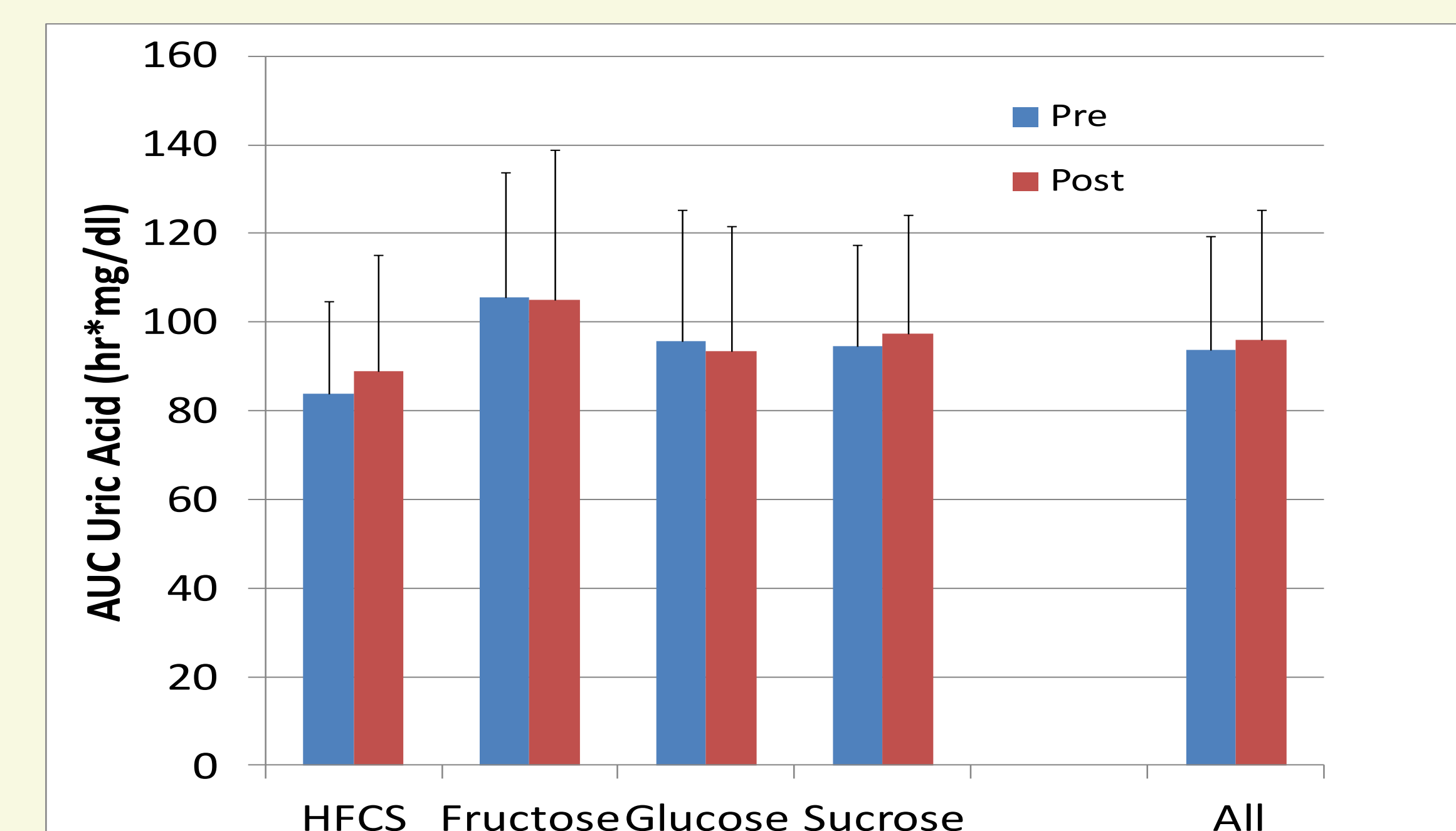
- N=267
- Time effect, p=0.003
- Interaction effect (Time x Group) p=0.510

Fasting Uric Acid



- N=267
- Interaction effect (Time x Group) p=0.562; Time effect, p=0.367

Metabolic Unit – Uric Acid



- N=78
- Interaction effect (Time x Group) p=0.266; Time effect, p=0.100

Discussion & Conclusion

These data suggest that ten weeks of consumption of fructose at the 50th percentile level, whether consumed as pure fructose or with other non-fructose containing 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