

Ten Weeks of Daily Consumption of Common Fructose Containing Sugars Does Not Increase Liver Fat Content

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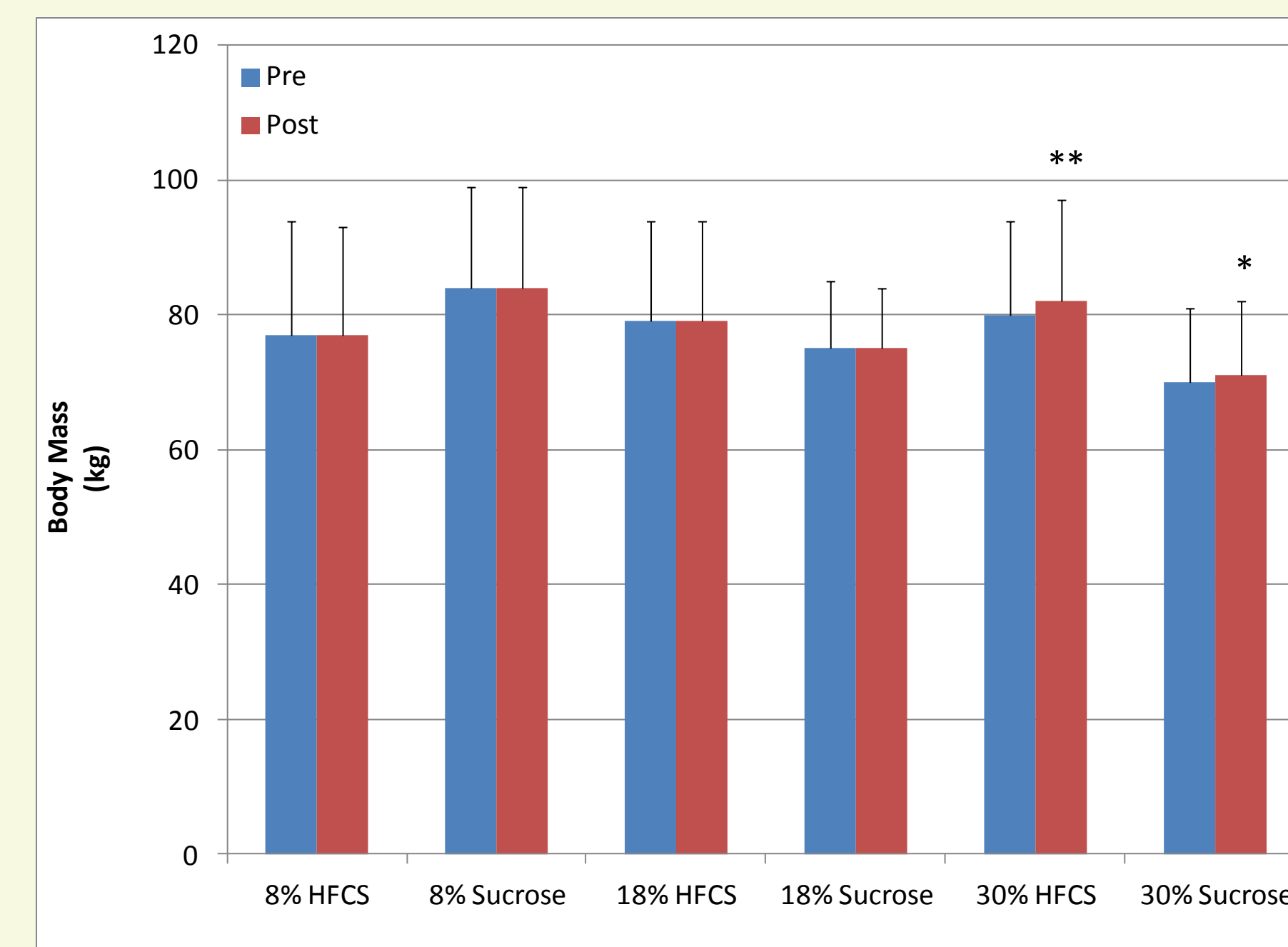
Introduction

- The accumulation of ectopic fat in non-adipose tissues has been shown to be a key factor in the development of abnormal glucose metabolism and the subsequent development of type II diabetes.
- The lipemic effects of dietary fructose are well documented, but recent theories have suggested this effect may be augmented when fructose is accompanied with glucose.
- As the most common sources of fructose, high fructose corn syrup (HFCS) and sucrose, also contain glucose such a response would be particularly detrimental to metabolic health.
- The purpose of this study was to investigate the effect of addition of commonly consumed fructose containing sugars to the usual diet on liver fat content.

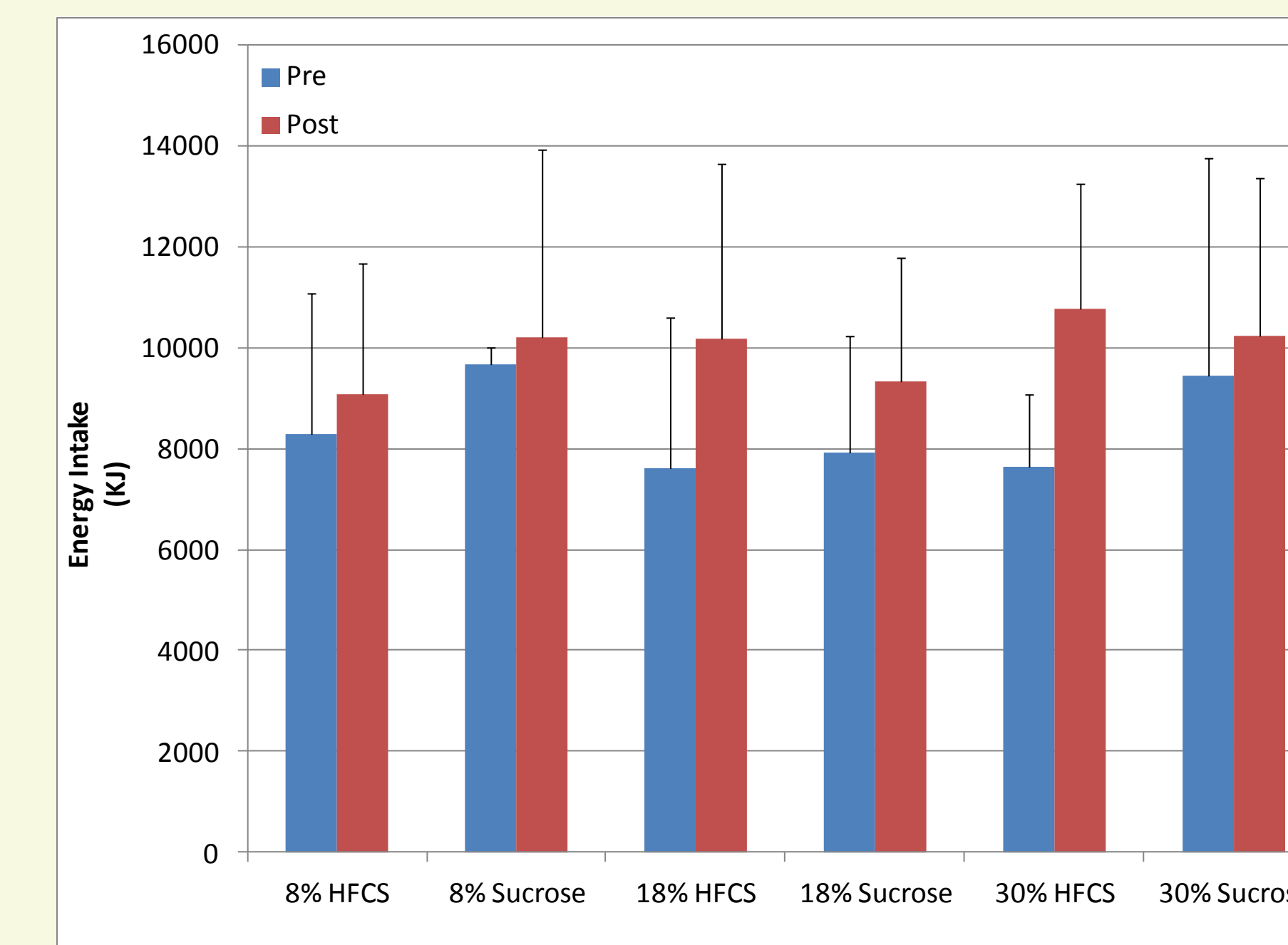
Methods

- Sixty-eight participants were involved in this ten week study.
 - Mean age 42.2 ± 11.7 years.
- Participants consumed 1% fat milk sweetened with either HFCS or sucrose.
- The level of milk consumption was individually prescribed so that the added sugar contributed a specific percentage of the calories required for weight maintenance.
 - Groups 1 and 2 – 8% calories from HFCS or Sucrose
 - Groups 2 and 3 – 18% calories from HFCS or Sucrose
 - Groups 5 and 6 – 30% calories from HFCS or Sucrose
- Individual caloric targets were determined by estimating resting metabolic rate (Mifflin St Joer) and applying an individualized activity factor determined according to self-reported levels of physical activity.
- Participants were instructed to try and maintain normal eating habits and provided recommendations on how to compensate for the calories being consumed from the sweetened milk. Participants were given no further dietary instruction or structure to follow.
- Participants and research staff were blinded to which sugar was consumed.
- Fat content of the liver was obtained before and after the ten week intervention. Imaging was performed on a Philips 64-slice CT scanner.
- Region of interest measurements in the four sectors of the liver delineated by the hepatic veins were obtained in all patients, and converted to hepatocellular fat content percentages

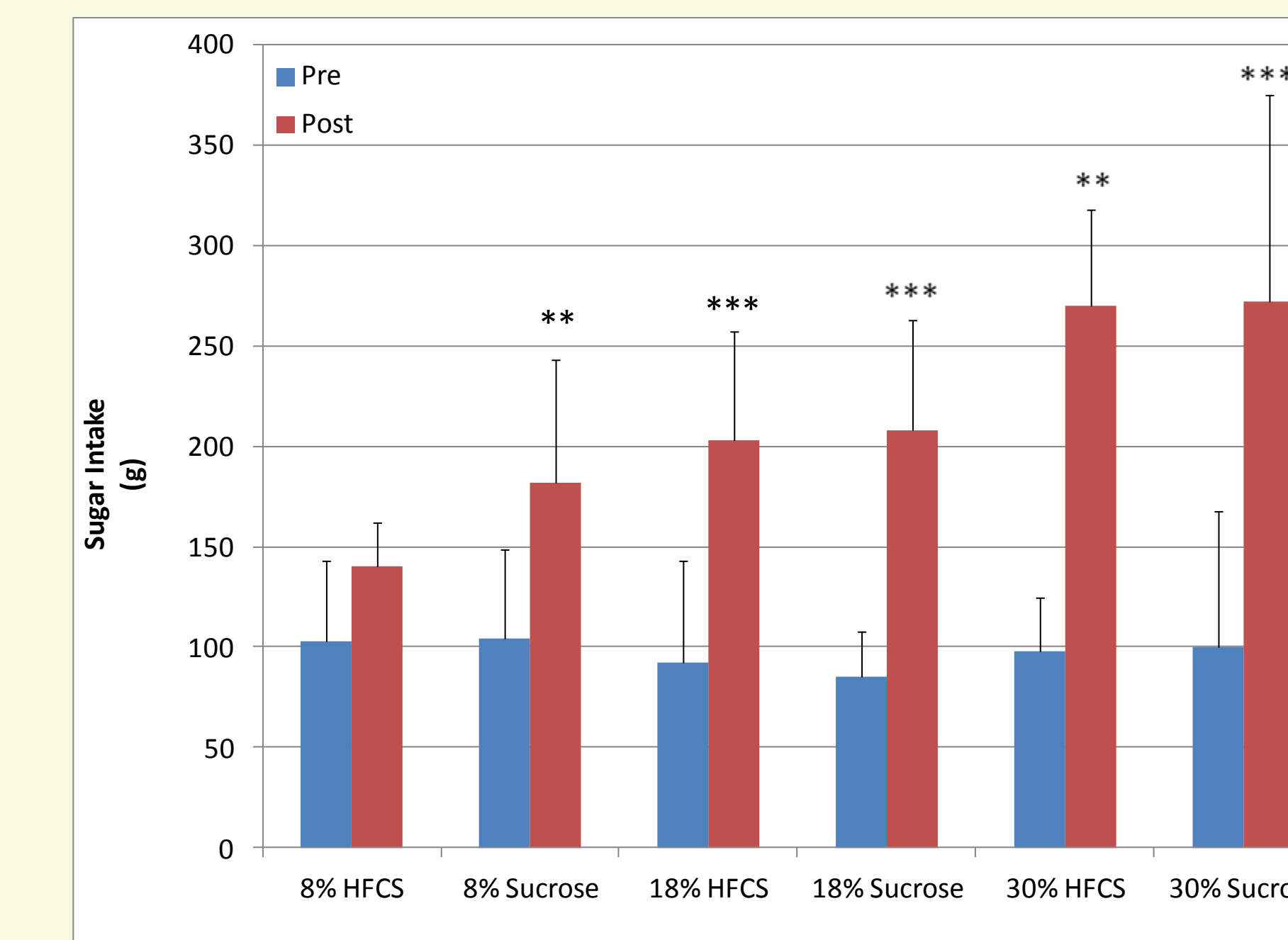
Results



Time p<0.002
Interaction p<0.05



Time p<0.001
Interaction p=0.277



Time p<0.001
Interaction p<0.001

Within Group Different than Pre, p<0.05 *, p<0.01 **, p<0.001 ***

		8% HFCS	8% Sucrose	18% HFCS	18% Sucrose	30% HFCS	30% Sucrose	Total	Time p	Interaction p
Liver Fat (%)	Pre	7.70 ± 7.12	19.23 ± 14.61	13.23 ± 4.48	14.75 ± 13.86	13.30 ± 9.38	9.70 ± 5.60	13.32 ± 10.49	0.964	0.208
	Post	9.40 ± 4.65	16.15 ± 15.64	15.62 ± 9.33	12.83 ± 13.57	14.70 ± 8.47	9.00 ± 6.29	13.21 ± 10.75		

Discussion & Conclusion

- These data suggest that ectopic fat storage in the liver is not promoted when fructose is consumed as part of a normal diet, even in amounts as high as the 90th percentile consumption level.



Rippe Lifestyle Institute