

### Therapeutic Interventions for Fructose-Induced Fatty Liver Disease are Premature

To the Editor:

In their recent article, Vos and McClain<sup>1</sup> paint a grim picture of dietary fructose, likening its effect to alcohol-induced hepatic steatosis and liver injury and thereby “defining targets for therapeutic interventions.” The case for such interventions is unsupported, built as it is on inappropriate extrapolation of highly exaggerated diets to the human condition, and decidedly premature for two reasons.

First, fructose has not been shown to promote untoward metabolic effects at typical human exposures (9% of calories), but rather only under extreme levels exceeding 25% of calories in humans and 30%-60% or more of calories in rodents (see references 1, 5, 7, 8 in Vos and McClain<sup>1</sup>). Indeed, a recent review by Dolan et al.<sup>2</sup> concluded that fructose does not cause relevant changes in triglycerides or body weight in humans even approaching 95th percentile intake levels (17%-18% of calories).<sup>3</sup>

Second, Vos and McClain ignore the realities of fructose intake in the human diet. Although they accurately report that major dietary sources are added sugars like sucrose, high fructose corn syrup, honey, and fruit juice concentrates, they fail to acknowledge that these added sugars all contain essentially equal amounts of fructose and glucose. Thus, another eccentricity of the experimental diets cited by the authors in support of a fructose effect is the comparison of pure fructose against pure glucose, a circumstance so rarely encountered in the human experience that such experiments cannot be used to predict human outcomes.

Absent substantive proof that fructose causes metabolic upsets at typical (or even 95th percentile) exposures and in typical mixed-

carbohydrate meals, it is premature of Vos and McClain to conclude that therapeutic interventions are needed. And the authors are surely guilty of hyperbole and alarmism by titling their article, “Fructose Takes a Toll.”

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### References

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*Potential conflict of interest: The author is a consultant to the food and beverage industry in the area of nutritive sweeteners. His clients include research institutes, food industry councils, trade organizations, and individual companies.*