

# Calorie Control Council Response to Underwood

## “Sugary drinks, fruit, and increased risk of gout”

Underwood M. Sugary drinks, fruit, and increased risk of gout. *Brit Med J.* 2008;336:285-286

Author Underwood has badly missed the mark in warning “...it would be ill advised for the EU to allow increased use of isoglucose [high fructose corn syrup, HFCS] until its safety has been confirmed.” And his comment that “Perhaps liberalization of the sugar trade will remove the demand for high fructose corn syrup; this would improve the health of consumers...of countries that produce cane sugar” displays a fundamental lack of understanding of the composition and metabolism of HFCS and sucrose (sugar). The safety of high fructose corn syrup was affirmed when it was first granted Generally Recognized as Safe (GRAS) status by the US Food and Drug Administration (FDA) in 1983, and again when GRAS status was reaffirmed in 1996 (1). Numerous expert scientific panels have evaluated the safety of HFCS, fructose and sucrose in the past three decades and found that the sweeteners pose no risk to human health at common levels of consumption other than dental caries.

Expert scientific panels at two recent symposia have unanimously concluded there is no difference in the way HFCS and sucrose are metabolized (2,3). And rightly so, as HFCS and sucrose are indistinguishable by the body in terms of composition (half glucose and half fructose) and metabolic pathway disposition once in the bloodstream.

It is unfortunate that so many scientists confuse HFCS and pure fructose. HFCS is not pure fructose, but rather 42% or 55% fructose with the remainder glucose or glucose oligomers (HFCS-90 at 90% fructose is a specialty product and not used in appreciable quantity). Pure fructose is used by the food industry as a specialty sweetener for specific functional reasons that add substantive value. It is important to note that the human diet—almost without exception—finds fructose and glucose together; in fact the fructose:glucose ratio is typically 0.7 (4).

It is also unfortunate that so many scientists attribute results of experimentation with pure fructose to HFCS. Contrary to author Underwood’s claim, there is no evidence that HFCS has an adverse effect on hyperuricemia and gout. The scientific literature is replete with experiments demonstrating metabolic perturbations from pure fructose at exaggerated concentrations. But data from such experimentation are unreliable, since no one eats a diet of pure fructose and certainly not at such extraordinary levels. Neither are such experiments an indictment of foods and beverages sweetened with pure fructose: used and consumed at common levels, pure fructose adds functionality to formulations and poses no health threat. Given the close compositional similarities and metabolic processing between sucrose and HFCS, it is of no health consequence whether the sugar trade is liberalized or not—the human body simply cannot distinguish them. And absent data to the contrary, sucrose, HFCS and fructose are safe for consumers in a balanced and moderate diet.

## References

1. 61 Fed. Reg. 43447 (August 23, 1996), 21 C.F.R. 184.1866. Direct food substances affirmed as Generally Recognized as Safe; High Fructose Corn Syrup - Final Rule. organizations and individual companies.
2. American Society for Nutrition Symposium. Everything you always wanted to know about HFCS but were afraid to ask. *Experimental Biology*. Washington, DC. April 2007.
3. ILSI-USDA Workshop: State of the science on dietary sweeteners containing fructose. Beltsville, MD. March 18-19, 2008
4. Forshee RA, Storey ML, Allison DB, et al. A critical examination of the evidence relating high fructose corn syrup and weight gain. *Crit Rev Food Sci Nutr* 2007;47:561-82.