

REVIEW ARTICLE

Liquid calories, sugar, and body weight^{1,2,3}

Adam Drewnowski and France Bellisle

¹ From the Center for Public Health Nutrition, University of Washington, Seattle, WA (AD), and the Institut National de Recherche Agronomique (INRA), Centre de Recherche en Nutrition Humaine (CRNH)–Île de France, Bobigny, France (FB)

The consumption of sugar-sweetened beverages has been linked to rising rates of obesity in the United States. The standard explanation is that energy-containing liquids are less satiating than are solid foods. However, purely physiologic mechanisms do not fully account for the proposed links between liquid sugar energy and body weight change. First, a reevaluation of published epidemiologic studies of consumption of sweetened beverages and overweight shows that most such studies either are cross-sectional or are based on passive surveillance of temporal trends and thus permit no conclusions about causal links. Second, research evidence comparing the short-term satiating power of different types of liquids and of solids remains inconclusive. Numerous clinical studies have shown that sugar-containing liquids, when consumed in place of usual meals, can lead to a significant and sustained weight loss. The principal ingredient of liquid meal replacement shakes is sugar, often high-fructose corn syrup, which is present in amounts comparable to those in soft drinks. Far from suppressing satiety, one such liquid shake is marketed on the grounds that it helps control hunger and prevents hunger longer when consumed for the purpose of weight loss. These inconsistencies raise the question whether the issue of sugars and body weight should continue to be framed purely in metabolic or physiologic terms. The effect of sugar consumption on body weight can also depend on behavioral intent, context, and the mode of use, availability, and cost of sweetened liquids.

Key Words: Sweetened beverages • meal replacement shakes • weight gain • weight loss • satiety • cost

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