The Honorable Debbie Stabenow
Chairwoman
Senate Agriculture Committee
731 Hart Senate Office Building
Washington, D.C. 20510

The Honorable John Boozman
Ranking Member
Senate Agriculture Committee
141 Hart Senate Office Building
Washington, D.C. 20510

UCRCB&H

University of California Research Consortium on Beverages and Health

March 7, 2022

Dear Chairwoman Stabenow, Ranking Member Boozman, and Committee Members:

We, the members of the University of California Research Consortium on Beverages and Health, strongly recommend that during reauthorization of the child nutrition programs, **Congress direct USDA to develop and implement an explicit standard that limits added sugars in federal child nutrition program meals and snacks and for competitive foods**.

This will bring these programs into alignment with the Dietary Guidelines for Americans, as already required by law.

Our Consortium includes faculty from every UC campus with expertise in various aspects of sugar science – its metabolism, health impacts, environmental and economic impacts – as well as in policies to decrease consumption of added sugars, particularly sugary drinks.

This is why we wish to underscore the extensive research linking consumption of added sugars to myriad diet-related chronic diseases. We want to emphasize that **the detrimental effects of added sugars go beyond simply their inherent calories**. Added sugars affect energy utilization within the liver, leading to metabolic disorders such as fatty liver, hyperlipidemia and insulin resistance. In the Addendum we provide background information and our rationale in support of this request, with selected key citations from the scientific literature.

The Centers for Disease Control states, "Americans are eating and drinking too many added sugars."[1] The federal child nutrition programs reach 30 million children annually, and childhood is an important time in which to lay the foundation for healthy eating habits. **This is more important than ever, given the impact of COVID-19 on children's nutrition and health status.**

During COVID-19, child obesity has increased dramatically.[2] A retrospective study of 430,000 children showed **a nearly double rate of Body Mass Index (BMI) increase during 6 pandemic**

months in 2020 as compared to 6 pre-pandemic months in 2019.[3] Children and families have also suffered an increase in unmet needs for dental care.[4] Equally, there is now extensive science showing that several diet-related chronic conditions are leading risk factors for more severe COVID-19 symptoms (and drastically higher health care expenses) and mortality.[5] As children are now returning to child care, preschool and school programs, **this is a critical time to reinstate healthy and science-based child nutrition standards to return children onto a trajectory toward better nutrition, oral health and overall health.**

We strongly urge Congress and the U.S. Department of Agriculture to use all possible means to reduce the risk of the burdensome diet-related chronic conditions that affect the majority of the U.S. population, with a disproportionate burden on marginalized populations.[6] Reducing consumption of added sugars is a critical strategy.[7]

Thank you for your consideration of our request,

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Addendum

The law

The Healthy, Hunger-Free Kids Act "requires that school meals reflect the latest Dietary Guidelines for Americans."[8] The absence of an explicit standard for added sugars means that the program does not meet this goal. In fact, the majority of schools provide meals that far exceed the amount of added sugar recommended in the 2015-2020 Dietary Guidelines.[9]

Recommended levels for added sugars in the diet

The **2015-2020 and 2020-2025 Dietary Guidelines for Americans** recommend that Americans aged 2 years and older keep their intake of added sugars to less than 10% of their total daily calories. For example, in a 2,000-calorie diet, no more than 200 calories should come from added sugars (about 12 teaspoons). The new 2020-2025 Dietary Guidelines add guidance for infants from birth to 24 months of age and recommend that children younger than 2 years should not be fed any foods and beverages with added sugars.[10]

The **Scientific Report of the 2020 Dietary Guidelines Advisory Committee**, in fact, went farther and advised that "the recommendation be decreased from 10 percent to 6 percent of energy from added sugars." The Report explains that "for adults and children ages 2 years and older, a recommendation of less than 6 percent of energy from added sugars is more consistent with a dietary pattern that is nutritionally adequate while avoiding excess energy intake than is a pattern with less than 10 percent energy from added sugars."[11]

The **American Heart Association** (AHA) recommends that children consume no more than 25 grams (100 calories or about 6 teaspoons) of added sugars per day and that children under 2 years of age should avoid added sugars altogether. AHA states, "Although added sugars most likely can be safely consumed in low amounts as part of a healthy diet, few children achieve such levels, making this an important public health target."[12]

It should be noted that the final rule for CACFP does include restrictions on added sugars in yoghurt (no more than 23 grams sugars per 6 oz of yoghurt), prohibits flavored milk for children ages 2 through 5, and recommends as a best practice that flavored milk contain no more than 22 grams of sugar per 8 fluid ounces for children 6 years old and older.[13] For reference, 22 grams of sugar equals just over five teaspoons of sugar.

Definition and sources of added sugars in the American diet

Added sugars come from many sources including from sugarcane or sugar beets (table sugar), from starches such as corn (including high-fructose corn syrup), from syrups and honey, and from concentrated fruit or vegetable juices.[14] The building blocks of these sugars are glucose

and fructose, and depending upon how the glucose and fructose molecules are combined, they are metabolized (processed) differently in the body.

Nearly 70 percent of added sugars in the U.S. diet comes from five food categories: sweetened beverages, desserts and sweet snacks, pre-sweetened coffee and tea drinks, candy and sugars, and breakfast cereals and bars. Among younger children ages 2 to 5 years and 6 to 11 years, higher fat milk and yogurt products and burgers and sandwiches, respectively, are among the top 5 contributors to added sugars intake (replacing pre-sweetened coffee and tea drinks which are among the top five for adults).[15]

The impacts of added sugars on health: excess calories, metabolic disturbances, chronic disease

The scientific evidence shows how critical it is for Americans to reduce their intake of added sugars.

Foodstuffs with abundant **added sugars are among the top sources of dietary calories** in the American diet. On a given day, the top sources of calories for U.S. children aged 2-18 were sugar-sweetened beverages (soda and fruit drinks combined) (173 kcal/day), grain desserts (138 kcal/day), and pizza (136 kcal/day).[16]

The Scientific Report of the 2020 Dietary Guidelines Advisory Committee explains that when added sugars comprise more than about 10% of daily dietary intake, it typically signifies consumption of unhealthy sweetened foods in place of more nutritious items and/or an excess of calories.[17]

The scientific literature contains arguments both for[18] and against the presumption that added sugars are a health risk simply because a diet high in added sugars tends to lead to excessive energy (caloric) intake.[a] However, evidence indicates that, **independent of calories, added sugars have detrimental metabolic effects that are not due to weight gain and occur even in the absence of weight gain**.[19,20] The main added sugars contain both fructose and glucose. Primarily, the unique metabolism of fructose allows it to overload the liver, which stimulates production of both fatty acids and uric acid, while inhibiting fat burning. At the same time the

[a] Investigation has unraveled a history of industry-sponsored research that may bias scientific considerations (Stanhope, KL. Sugar consumption, metabolic disease and obesity: The state of the controversy. *Crit Rev Clin Lab Sci,* 2016. **53**(1): p. 52-67; Kearns CE, Schmidt LA, Glantz SA. Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents [published correction appears in JAMA Intern Med. 2016 Nov 1;176(11):1729]. *JAMA Intern Med*. 2016;176(11):1680-1685) and that has promoted the hazards of consumption of fats over the hazards of consumption of added sugars. (Kearns CE, et al. Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents. *JAMA Intern Med*. 2016;176(11):1680-1685. O'Connor AO. *How the Sugar Industry Shifted Blame to Fat.* At https://www.nytimes.com/2016/09/13/well/eat/how-the-sugar-industry-shifted-blame-to-fat.html)

glucose causes glucose and insulin spikes in the blood. These direct effects of added sugar consumption have detrimental downstream consequences – fatty liver, hyperlipidemia, and insulin resistance – that increase risk for metabolic syndrome, cardiovascular disease and type 2 diabetes. The main risk factor for cardiovascular disease (LDL-cholesterol) is increased more potently when a combination of fructose and glucose is consumed (i.e. high fructose corn syrup) than when an equal amount of either pure fructose or pure glucose is consumed.[21]

The Scientific Report of the 2020 Dietary Guidelines Advisory Committee also provides thorough documentation of the prevalence of diet-related chronic disease in the U.S. population. Extensive science shows that excess **consumption of added sugars is a risk factor for many diet-related chronic diseases, including but not limited to:**

- **Obesity**[22]
    - Modelling shows that if current trends continue, the prevalence of obesity in the U.S. adult population will rise to 48.9% by 2030, while 24.2% of US adults will have severe obesity.[23]
- **Metabolic diseases including type 2 diabetes and fatty liver disease**[24]
    - Non-alcoholic fatty liver disease is rising among children.[25]
- **Cardiovascular diseases**[26]
    - Even children can develop dyslipidemia and hypertension.[27]
- **Dental decay**[28,29]
    - Tooth decay is one of the most common chronic diseases of children and adolescents[30]

The mechanisms underlying the synergy between fructose and glucose, as well as their individual effects, in inducing negative health effects in humans are not fully understood. However, the consensus among some of the most prominent researchers[31,32,33,34] in the world is that **fructose and added sugar consumption is a modifiable risk factor** for the chronic diseases that are burdening our healthcare system.

Today's children are tomorrow's adults: Other costs to the nation stemming from excessive intake of added sugars

Healthcare

- Obesity: Cawley et al. estimated the 2016 aggregate direct medical costs (inpatient, outpatient, and prescription drugs) of obesity among adults in the United States was $260.6 billion. Individuals with obesity had at least double the medical bills of those without obesity.[35]
- Diabetes: The American Diabetes Association estimated the 2017 annual cost of diagnosed diabetes in the U.S. at $327 billion. This includes $237 billion in direct medical costs and $90 billion in reduced productivity. Of note, 67.3% of medical costs is provided by government insurance (including Medicare, Medicaid, and the military).[36]

- Cardiovascular disease (CVD): The American Heart Association names cardiovascular disease as the leading killer of Americans and states that the cost to the nation in 2016 was $555B – $318B in medical costs and $237B in lost productivity. These costs are estimated to rise to $1.1T by 2035.[37]
    - Treatment for hypertension, alone, was $70.7B in 2016.[38]
- In our state of California, the most recent figures indicate:
    - Total health care and related costs for treatment for type 2 diabetes were estimated at about $24.5B/year in 2012.[39]
        - CDC estimates for 2013 type 2 diabetes placed direct medical costs at $7B for Medicare, $3B for Medi-Cal, and $10B to other payers, while indirect costs of diabetes-related morbidity and mortality were estimated at $30B.[40,41]
    - Overweight and obesity-related health costs were estimated at almost $21B in 2006.[42]
    - In 2009, public and private expenditures on dental services totaled $14.7B.[43]

Environment

- Healthcare for diet-related diseases generates tremendous greenhouse gas emissions (GHGE). In 2013 GHGE from U.S. health care made up 9.8% (or 655 million metric tons carbon dioxide equivalents (Mt CO_2-e)) of the national total.[44]
- We calculate that the reduced need for healthcare if U.S. adults aged 30-84 reduced their added sugar intake by *just ½ teaspoon* (2.1 grams) per person per day would result in a reduction of 338 tonnes of greenhouse gas emissions (GHGE) per year (based on Eckelman and Sherman, 2016, *ibid*.)

Military

- Obesity is the leading disqualifier for fitness to serve in the military.[45]
- The Department of Defense spends $1.5B annually on healthcare costs related to obesity for active duty and former service members and their families.[46]

Disparities in prevalence and impact of diet-related chronic diseases

These diet-related chronic conditions are also rife with disparities[47,48, 49,50,51] and exacerbate economic inequities in the U.S.[52]

- For example, 44.3% of California children in families under 100% of federal poverty level (FPL) are overweight or obese while 21.2% of California children in families over 400% of FPL are overweight or obese.[53]

The power of change

Huang et al. modeled a scenario in which US adults aged 30-84 reduced their added sugar intake by *just ½ teaspoon* (2.1 grams) per person per day on average.

- Based on the resulting reduction in risk of just three diseases, coronary heart disease (CHD), stroke, and type 2 diabetes, the authors estimated $31B savings in U.S. health care costs over 20 years (2018-2037).[54]

Building healthy habits

It is important to lay the foundation for healthy eating habits early in life.[55,56,57]

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