

Diets, health and sugar reduction in the spotlight during the era of COVID-19



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Summary: The array of serious health risks imposed by excessive energy and sugar consumption are widely acknowledged globally. Especially in the era of COVID-19, in which obese and chronically ill individuals are at greater risk of developing serious complications due to COVID-19 infections, it has become incumbent upon the food and beverage industry to further expand programs and projects that seek new ways to reduce the levels of energy and free sugars in food and beverage products. Expediting energy and sugar reduction programs already in place as well as continuing to introduce options not only establishes compliance with new dietary guidelines and regulations that are being introduced globally, it meets the increasing public recognition of the need for healthier diets. The replacement of sugar-based sweeteners in foods and beverages with plant-based, nonnutritive sweeteners such as stevia sweeteners developed from the stevia leaf offers a range of options for food and beverage manufacturers that can satisfy both the consumer desire for sweetness while supporting improved public health. There is a wealth of scientific evidence that supports the use of nonnutritive sweeteners including stevia sweeteners to help reduce the risk of chronic diseases such as diabetes and obesity.



Introduction

In recent decades, countries across the globe have become increasingly aware of the negative impact of excessive intakes of energy and added sugar, which are key contributing factors of chronic illness, namely obesity and diabetes.¹⁻³ According to the World Health Organization (WHO), non-communicable (aka chronic) diseases such as these are the world's leading cause of death and caused an estimated 41 million of the 56 million deaths (73%) in 2017.⁴

Today, during the height of the coronavirus pandemic, these same obesity-related conditions are worsening the dangerous effects of COVID-19. Preliminary research has shown that people with heart disease and diabetes are at higher risk of COVID-19 related complications and are experiencing increased mortality around the world.^{5,6} In a recent study from China, individuals with diabetes had much higher rates of severe complications and death than those without diabetes. In fact, according to researchers, the more health conditions an individual has, the higher their chance of experiencing serious and often deadly symptoms of COVID-19.⁶

Underlying conditions and symptoms among adults aged ≥18 years with coronavirus disease 2019 (COVID-19)-associated hospitalizations – COVID-NET, 14 states, March 1–30, 2020

Underlying condition	Age group (yrs), no./total no. (%)			
	Overall	18–49	50–64	≥65 years
Any underlying condition	159/178 (89.3)	41/48 (85.4)	51/59 (86.4)	67/71 (94.4)
Hypertension	79/159 (49.7)	7/40 (17.5)	27/57 (47.4)	45/62 (72.6)
Obesity	73/151 (48.3)	23/39 (59.0)	25/51 (49.0)	25/61 (41.0)
Chronic metabolic disease	60/166 (36.1)	10/46 (21.7)	21/56 (37.5)	29/64 (45.3)
Underlying condition	47/166 (28.3)	9/46 (19.6)	18/56 (32.1)	20/64 (31.3)

Source: US Centers for Disease Control and Prevention (CDC), Morbidity and Mortality Weekly Report, Hospitalization Rates and Characteristics of Patients Hospitalized with Laboratory-Confirmed Coronavirus Disease 2019 – COVID-NET, 14 States, March 1–30, 2020. Weekly / April 17, 2020 / 69(15);458–464

The serious health risks of obesity and related illnesses underscore the great importance of changing the lifestyle-related risk factors of these conditions, including sedentary behavior and unhealthy diets. The presence of free sugars in the diet can both contribute to overall caloric density, and impact the nutritional quality of the diet by providing energy without nutrients, leading to weight gain and increased risk of chronic diseases.

Though researchers already acknowledged the relationship between sugar and insulin eighty years ago, the health profession only began to take heed in the 1950's and 60's^{7,8}; in 2015, a formal guideline was finally established by the WHO that recommended the reduction of added sugar intake be less than 10% of total energy intake with a further suggestion for intakes to be below 5% of energy intake.⁴ The consequent increase in awareness of the health risks of poor diets has inspired the public's expanding interest in healthier, reduced energy and lower sugar diets, as well as a parallel increase in interest in whole foods. The intersection of this already growing awareness combined with the recognition of vulnerability to COVID-19 complications due to chronic health conditions provides the food and beverage industry with a unique and important opportunity to expand reduced energy and reduced/zero sugar offerings that will meet consumer requirements for great taste and health.

Meeting a growing desire for sugar free, natural sweeteners

The innate human desire for sweet tasting foods along with the widespread need for improved and reduced sugar diets means new and palatable options for sweetness without the calorie density and potential health implications of added sugars from caloric sweeteners such as sucrose, high fructose corn syrup, agave, and honey are essential.

Unlike the aforementioned nutritive sweeteners which are rich in calories, artificial and natural nonnutritive sweeteners provide little to no energy and are hundreds to thousands times sweeter than sugar (sucrose). Although some low calorie sweetener-alternatives do provide some calories, their high levels of sweetness allow them to be used in such small amounts that their calorie contribution is minimal.

Stevia sweeteners fall under the category of nonnutritive sweeteners. The sweet tasting molecules called steviol glycosides are extracted from the *Stevia rebaudiana* Bertoni plant, that is native to South America, and has been in use for hundreds of years to sweeten traditional beverages and medicines. First commercially prepared in Japan in the early 1970's, stevia is easy to grow and cultivate.

Today's stevia-based sweeteners contain one or more of the steviol glycosides found in the stevia plant, such as rebaudioside A, also known as Reb A⁹ which in 2008, was placed on the FDA's GRAS list.¹⁰ While food and beverage manufacturers have had this sugar reduction tool available for many years, the first approved and commercially available ingredients, namely Reb A, contributed unwanted off tastes to many products. The next generation stevia sweeteners such as Bestevia[®] e+, Bestevia[®] Reb M, and Bestevia[®] Reb D, which deliver a clean, sweet taste without the aftertastes associated with first generation stevia sweeteners, are establishing a new foundation of sugar reduction solutions that will be an essential part of every sugar reduction toolkit.

The effect of steviol glycosides on health

Interest in stevia continues to gain ground as a result of a respectable growing body of science that supports the benefits of steviol glycosides for health. Steviol glycosides have been found to be safe and have no adverse effects on blood glucose management when used to reduce or substitute sugar and calories in a meal or food. Randomized controlled trials noted a significant reduction in post-meal blood glucose levels with purified steviol glycosides used in reduced-sugar/calorie meals^{11,12} or in supplement form, in healthy subjects and individuals with diabetes.¹³ In one study involving lean and obese subjects, a significant reduction in post-meal blood glucose and insulin occurred when stevia was consumed in a mid-morning meal compared to sucrose.¹¹ In addition, longer-term studies ranging from 3 months to 1 year in healthy individuals and those with diabetes indicate that steviol glycosides are safe and have a neutral effect on fasting blood glucose, insulin, and hemoglobin A1C at doses of equal to and less than 1500 mg per day.^{12,14}

Although some have raised concerns that nonnutritive sweeteners may contribute to obesity, a critical review of the literature has found no supportive evidence for mechanisms contributing to weight gain. In fact, most of the studies exploring the use and effect of nonnutritive sweeteners on weight in adults have shown that they can be helpful, helping to reduce caloric intake, resulting in a few pounds of weight loss, and helping prevent unwanted weight gain.¹⁵

Other research on steviol glycosides have also observed a modest but positive effect on blood pressure,¹⁶ and demonstrate that stevia is not cariogenic and may be beneficial for the prevention of dental caries, as well.¹⁴ In addition, human studies have reported no negative gastrointestinal side effects from steviol glycosides.¹⁴

Most importantly, stevia is safe to use and enjoy. The research data for high-purity stevia sweeteners is solid and the research is conclusive: foods and drinks containing stevia sweeteners in approved amounts are safe for all consumers, including children, pregnant and nursing women, as well as those with diabetes.¹⁴



The weight gain side effect of staying at home

The swift and unprecedented implementation of stay-at-home orders across the globe brought a range of unintended consequences. While consumers tried to avoid COVID-19 exposure, they experienced anxiety about the future, an increase in sedentary behavior with the limited ability to leave home, and an increase in the consumption of comfort foods such as baked goods and longer shelf life foods that are not always optimized with a strong nutritional profile. The end result is believed to

be an unexpected increase in weight gain across many populations as they try to balance the jarring realities of stay-at-home. While many food and beverage manufacturers experienced a surge in sales of comfort foods, consumers will soon need to reckon with their COVID-19 weight gain, which is an opportunity for the food and beverage industry to provide the reduced energy and sugar options that consumers will need.

The future is sweeter with stevia

Stevia's health and safety profile together with a growing health consciousness has encouraged the industry's use of "plant-based", "natural origin" and "nature-based" sweeteners and driven the considerable increase in the number of products with stevia in recent years. In 2018, the number of new products using stevia grew +31% compared with +11% in 2017.¹⁷ In addition, with the growing number of regulatory approvals for high-purity next generation stevia sweeteners around the globe, hundreds of new foods and beverages have been launched with it as a sweetener. To illustrate this growth in availability, Sweegen's Bestevia® Reb M, which is produced via a proprietary bioconversion process, has been approved as a sweetener not only in the US, but globally in Canada, Mexico, Columbia, Australia, New Zealand, Malaysia, and Singapore with many more approvals anticipated in the coming years. Since 2010 alone, over 16,000 products were launched with stevia around the world, and the numbers are sure continue to rise as regulatory approvals continue to expand.¹⁸

Since replacing sugar in foods and beverages can pose product development challenges due to the texture, viscosity, and mouthfeel that sugar provides without a lingering aftertaste, Sweegen has developed Bestevia® Taste Solutions, which are a range of ingredient solutions that use next generation stevia sweeteners in combination with proprietary flavors and best-in-class texturants to help solve product development challenges related to sugar reduction. Bestevia® Taste Solutions are offered for a range of food applications including beverages, dairy, bakery, confectionery, condiments, sauces, and nutritional/weight management products. Stevia is versatile in application making it an ideal sugar replacement for consumers seeking a sweetener that meets their demands for a cleaner, plant-based, reduced sugar diet.

Summary

The serious health risks imposed by excessive energy and sugar consumption continue to have a negative impact on public health, and this situation is particularly evident in the era of COVID-19. The continued prevalence of chronic disorders such as diabetes and obesity leaves no question about the importance of dramatic dietary changes to improve public health outcomes and reduce the risk of mortality. In light of the new national and global dietary guidelines encouraging the reduction of added-sugar intake, replacing traditional caloric sweeteners with high-purity stevia sweeteners meets both widespread health needs and changing consumer desires for healthy and tasty sweetener options. Furthermore, stevia has withstood the test of time and has a proven safety record for consumers of all ages, making it an ideal option for use across a variety of product applications. Together with recent innovations in next generation stevia sweeteners which have produced better tasting, nature-based, high-purity ingredients, product developers and consumers will surely enjoy a smooth transition to reduced or no-sugar added products with a promise of delicious foods and beverages that promote and support healthier lifestyles.



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