What do you say when your patients ask whether low-calorie sweeteners help with weight management?1–3

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Public health efforts around the world are aimed at reducing obesity. Currently, reducing sugar intake seems to be the most widely promoted strategy for reducing energy intake (1). In many countries, policy efforts are focused on sugar, and suggestions range from imposing taxes, to having it regulated by food regulatory agencies, to limiting portion sizes of beverages containing sugar. Reducing sugar intake is certainly one potential strategy for reducing energy intake, but whether or not efforts focused primarily on sugar are scientifically justifiable, or effective, is not the topic of this editorial.

The fact that humans are born with a strong preference for sweet taste provides a challenge to efforts to simply reduce sugar intake. Sweetness gives us pleasure, and pleasure is a strong reason for making food choices. If our goal is to reduce sugar intake, what strategies can be successful? For example, can we just ask people to drink water instead of sugar-sweetened beverages or just to eat less sugar? It may also be possible to recondition taste preferences toward less sweetness, but is relying on willpower sustainable in the real world? We can also ask food companies to reformulate products to contain less sugar (there is the question of what should replace the sugar: other carbohydrates, fat, or protein?), but again, the pleasure value is likely to be less than with foods with higher sugar content. Finally, we can make sugar products cost more or be more difficult to obtain. We should certainly explore these options, but in the long run will strategies relying on willpower or regulatory policy be sufficient to ultimately trump our biology?

All of this brings into play the question of the role for low-calorie sweeteners (LCSs). They were developed by the food industry to solve this exact problem: to provide sweet taste with minimal calories. On the surface this would appear to be the perfect solution to our problem. Substituting LCSs for sugar provides the sweet taste we crave without giving us the extra calories that could contribute to weight gain. No need to change the entire food supply. But, not so fast. Although the safety of these products has been extensively evaluated by regulatory agencies (2), their effectiveness has been questioned. Some epidemiologic data have been published over the past few years that suggest that LCSs may be doing just the opposite of what they were intended to do—they may actually promote more overall sugar intake and cause weight gain (3). There is even some basic science research suggesting that LCSs may “trick” the sweet receptors in our brains and lead us to overconsume sugar (4).

For these reasons, it is fair for the scientific community to take a long look at whether LCSs help or hinder in body weight regulation. This question cannot be answered with observational studies and needs more rigorous efforts to determine cause and effect. Fortunately, these kinds of studies have been conducted, and Miller and Perez (5) have provided a meta-analysis of published work in this issue of the Journal. Their meta-analysis analyzed 9 prospective cohort studies (not as powerful in determining cause and effect) and 15 randomized controlled studies (considered the most powerful in determining cause and effect) of LCSs and body weight. Their conclusions are clear and powerful. In randomized controlled trials (RCTs), the use of LCSs is associated with lower body weight, BMI, and waist circumference. In prospective cohort studies, the use of LCSs is associated with less weight gain but a slightly greater BMI. Clear evidence that the use of LCSs helps—not hurts—in weight management.

I have reviewed meta-analyses previously where I thought that there was an insufficient number of studies to justify such an analysis or where mixed results from different studies were troubling. That is not the case here. The authors concluded that the research available was more than adequate for the conclusion they drew. The RCTs had a total of 1951 subjects and the cohort studies a total of >100,000 subjects. For all 15 RCTs, weight outcomes were either better for LCSs or no different. Not a single study found that LCSs had worse weight outcomes. Since the article was submitted, our group has published another RCT (6) in 303 subjects that shows that subjects assigned to consume beverages with LCSs lost significantly more weight in a 16-wk behavioral weight-loss program than did those assigned to consume water alone.

It is worth noting that 4 studies were in children and showed the same results as studies in adults. We are very conservative when it comes to weight-management strategies in children, but given that bariatric surgery is being adopted as a weight-loss intervention in some adolescents (7), maybe we should be less concerned about the use of LCSs by obese children.

What does this mean for the consumer? It means that LCSs seem to be doing exactly what they were designed to do: helping reduce total energy intake while providing the sweet taste we value. This is good news for people trying to lose or to not gain weight.

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You can confidently use this tool (LCSs) without worrying that you might be unintentionally hurting your weight-management efforts.

Does this mean the question is answered once and for all? No, that is not how science works. Those researchers who believe that LCSs may have a negative impact on body weight should continue their work and may uncover previously undetected negative effects of LCSs. For example, LCSs could be found to negatively affect the intestinal microbiome. The use of LCSs over years or decades could be shown to negatively affect body weight. There are many different types of LCSs, and they may turn out to have different effects on weight. These are fair questions for researchers to pursue. But it is important for health care professionals to provide the best possible answer when people ask them if it is ok to consume foods and beverages with LCSs for weight management. LCS consumption may be found to have negative health consequences on body weight down the road, but we know that obesity has negative health consequences right now. We need more tools to help people permanently reduce or avoid obesity and our best science suggests that the use of LCSs is one such tool. On the basis of research summarized in the study by Miller and Perez, it is hard to understand why health professionals would advise against the use of LCSs for people trying to achieve healthy weights.

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