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Non-Caloric Sweeteners Redux
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Bottom Line at the Top: Non-caloric sweeteners come and go. All are safe when consumed in small quantities. Stevia and Monk fruit sweetener appear to be safe in any amount, but that was the general impression in the past about sucralose and erythritol, which are now associated with adverse health effects.

I last wrote about non-caloric sweeteners in 2008. Aspartame (Equal) had been the most commonly consumed product. It was essentially safe, but some users complained of side effects, usually headache, which might have been due to aspartame's metabolic byproducts, formaldehyde and methanol, large quantities of which may cause headache, or they had read that and were "suggestible".

A plant-based product, stevia (Stevia rebaudiana), which is a bush native to South American countries, currently subject to 10-33% Trump tariffs, has grown in popularity and is available under various brand names. Its chemical components, stevioside and rebaudioside A (rebiana) together are 200-300% sweeter than table sugar and are approved by the Food and Drug Administration to sweeten food. There is no justification for using it to treat any diseases except to replace sugar in diets, though some pretend that it does. It is safe for most people to consume but adversely interacts with the drug Lithium taken by those with mania. If successful in weight reduction efforts, it might cause low blood sugar and/or blood pressure. There is no data with which to determine an optimal, safe dose. Because the bush is related to the allergenic plants ragweed, chrysanthemum, marigold and daisy, consuming large amounts may trigger allergy symptoms in people with those allergies.

Another plant sweetener is a sugar alcohol extract of monk fruit, that is 100-250 times as sweet as table sugar but is not absorbed into the body, so it provides no calories. It has a GRAS designation (Generally Recognized as Safe) by the Food and Drug Administration.

Sorbitol is another naturally occurring sugar alcohol, found in a variety of stone fruits like apple, pear, apricot, date, peach, plum and fig. Commercially available sorbitol sold as a sweetener is made from potato starch. It provides few calories, because it is not directly absorbed from the intestine. It does pass into the intestine, where our colonic bacteria use it for food, breaking it down into smaller molecules that we absorb, providing minimal calories. Because it is not immediately absorbed, when consumed in large quantities it pulls water from the circulation into the colon, at times causing diarrhea, somewhat justifying a sign I saw in California's pear orchard country, "Start a movement, eat a pear."

Other sugar-like compounds, sucralose (a chlorinated table sugar analog) and erythritol (a short chain sugar alcohol), both sold under various brand names, were initially believed to be safe non-caloric sweeteners. However, the World Health Organization (WHO) recently issued a provisional recommendation against their use for weight control. Scientists found that they adversely affect immune function in mice and vascular health in humans, whereas saccharin, a much older non-caloric sweetener, does not have similar effects. Specifically, sucralose reduced immune cells' ability to fight infection and cancers. On the plus side, it also reduced immune reactions against normal tissue, reducing severity of autoimmune disease, including colitis. High blood erythritol levels were linked to adverse cardiovascular events by activating platelets to clot in arteries of people at known risk. The WHO has tasked other organizations' experts to establish safe consumption levels.

Sucralose, used in studies for comparison to other sweeteners, so far is not known to cause adverse health effects. In large quantities, it may cause bloating.

A larger issue than sweet source is the effectiveness of non-caloric sweeteners to manage weight. Since 1976, the obesity rate has more than doubled, even as artificial sweetener use surged. Normally, consuming sugar triggers the deep brain amygdala, dopamine and opioid reward systems to signal a craving for more sugar as if it were an addictive drug. These brain areas respond more to caloric sweets than non-caloric sweeteners but are triggered by the latter to some extent. So consuming sweets of any kind begets more consumption, which is why it is so hard to limit them. I know a handful of patients who have succeeded in limiting themselves to 100 or fewer calories of sweet a day while losing weight, but they are in the minority. The only way to succeed at truly breaking a sweet addiction is to go off all sweets, with and without calories, 'cold turkey.'