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Print post

When I was studying to become a naturopath and completing my clinical hours, a new sweetener called stevia was becoming popular. However, there was something about it that did not sit right with me. The aftertaste in my mouth made me wonder whether we really were supposed to be eating it. Was there more to this seemingly innocent "natural sugar-free sweetener" than we were hearing about?

I decided not to eat stevia based on how much I disliked the aftertaste, but, being a perpetual student always seeking answers, I wanted to know something about the history of the stevia plant. When I began researching stevia around 2011, I quickly came across its origin story, which described stevia as coming from a tribe (the Paraguayan Matto Grosso Indians) that reportedly used it as a form of "natural" birth control. According to the story, the women of this tribe would eat a fresh leaf from the untouched plant as a form of pregnancy prevention.

Eventually, this very sweet plant made its way to the United States as a "natural sugar-free sweetener" promoted as totally "safe." But if it was being used as birth control, was this sweetener truly safe? For a plant to work as birth control, it has to affect the hormones in some form or fashion, which means that it also can affect the endocrine system.

IMPACT ON THE LIVER

As I continued to dig, the story began to take on an even more ominous tone. I learned that stevia could affect liver enzymes, an indicator of inflammation or damage to cells in the liver. Left uncorrected, elevated liver enzymes can lead to serious non-reversible liver damage and liver failure. A 2020 study in mice, titled "The hidden hazardous effects of stevia and sucralose consumption in male and female albino mice in comparison to sucrose," showed that stevia usage resulted in

significantly elevated levels of liver function enzymes (ALT and AST), as well as urea, creatinine, cholesterol, LDL and free fatty acids, which are indicators of decreased liver function, decreased kidney function, increased risk of heart-related issues and more.[1]

When I was still in the early stages of my research on stevia's liver-damaging actions, a customer came into our newly opened health food store looking for a supplement to help reduce her liver enzymes. I could not help asking her, "Before I help you with a supplement, I have to ask: Are you consuming stevia?" She replied that she was not but that she found my question extremely interesting, as I was not the first person to have asked her. I asked who else had inquired about stevia and liver enzymes. When she told me it was her doctor, I almost fell over in shock. She explained, "My doctor has seen enough direct effects from stevia that if he has any patients who are consuming stevia and have elevated liver enzymes on their blood work, he tells them to stop consuming stevia for three weeks and then he repeats their blood work; he is not willing to prescribe anything for elevated liver enzymes until he has done this."

At a subsequent conference attended by a well-known natural foods industry educator who was very much for stevia, I was introduced to the audience as "the naturopath who doesn't like stevia." Conference attendees approached me to tell me of their negative experiences with stevia. A lady who experienced elevated liver enzymes as a direct result of consuming stevia recounted that her enzyme levels had begun falling as soon as she stopped using stevia.

This feedback let me know that I was on the right track and needed to keep studying. Following over eight years of research on the dangers of stevia and xylitol (they are often used together or in alternation), I wrote my sixty-four-page book, *The Real Truth about the Dangers of Stevia and Xylitol*.[2] My goal in writing the book was to provide people with a written explanation to read, research and share with family and friends.

WHAT IS STEVIA?

Stevia is composed of various compounds that make up the plant's chemistry: stevioside (5 to 10 percent), rebaudioside A (2 to 4 percent), rebaudioside C (1 to 2 percent), dulcoside A (0.5 to 1 percent) and rebaudioside B, D, E, F and steviolbioside.[3-5] Steviol is a diterpene first isolated from the plant *Stevia rebaudiana*.[6] When reading labels to avoid stevia, you have to know all of these various names, as some companies will "hide" the stevia under the name of one or more of its compounds.

The processes that companies use to create stevia blends typically involve chemical solvents, including acetonitrile (toxic to the central nervous system), and a GMO corn derivative (sugar alcohol) called erythritol.[7] Because the steviol glycosides often used to make stevia extracts and liquids undergo significant processing and use various solvents for extraction and purification, any claims

creating the impression that steviol glycosides are "natural" are not permitted, and steviol glycosides cannot be described as a "natural sweetener."[8] However, the U.S. Food and Drug Administration (FDA) states that it "has not objected" to the use of "highly purified steviol glycosides obtained from stevia leaves" as sweeteners.[9] On the other hand, crude (whole-leaf) stevia does not have generally recognized as safe (GRAS) status and is not permitted for food additive use.[10]

According to both U.S. and European regulators, the Approved Daily Intake (ADI) of stevia—the amount that "should" be free of side effects—is four milligrams per kilogram of body weight.[11,12] Considering a person's weight in pounds, that means that someone could consume the following amounts (according to FDA) without incurring side effects (where one packet is equal to one-quarter teaspoon or about four drops of liquid stevia)[13]:

- A person weighing one hundred pounds could consume up to one hundred eighty mg per day, or up to four and a half packets per day or up to eighteen drops.
- A person weighing one hundred fifty pounds could consume up to two hundred seventy mg per day, or up to six and three-quarters packets per day, or up to twenty-seven drops.
- A two-hundred-pound person could consume up to three hundred sixty mg per day, or up to nine packets per day, or up to thirty-six drops.

Just because something is allowed does not make it "safe." Moreover, many people exceed the ADI, adding two to three dropperfuls (approximately sixty to ninety drops) of stevia to their coffee every morning; even for someone weighing two hundred pounds, this would equate to an intake two to three times in excess of the FDA's recommended amount. Even worse, describing the ADI as "without side effects"—as in "without immediate side effects today"—may be shortsighted because it does not look at long-term damage. The real limit may very well be zero drops!

HEALTH EFFECTS: COUNTING THE WAYS

The suspected adverse health effects of stevia are wide-ranging. First, and somewhat paradoxically, stevia products may contribute to weight gain rather than help a person lose weight. The FDA classifies steviol glycosides as a "high-intensity sweetener," meaning a sweetener that is "many times sweeter than sugar but contribute[s] only a few to no calories when added to foods."[9] Think about it

—as a substance estimated to be three hundred times sweeter than sugar, stevia is not going to help someone get rid of their sweet tooth or their habit of eating sweets. Instead, stevia may potentially boost the appetite, leading to more sugar cravings throughout the day.[14]

Daily stevia consumption is said to obstruct the body's metabolism. As stevia slows down or stops metabolism, it interrupts the process of food's conversion into energy. In addition to weight gain, this may also lead to outcomes such as lack of energy and even hair loss.[15]

Consumption of stevia may be linked to cancer. A 2017 systematic review of research on "non-nutritive sweeteners," including stevia, reported that studies investigating stevia's effects on cancer "are completely lacking."[16] However, laboratory research indicates that steviol is capable of causing mutations in the genetic material or DNA of cells, which could promote cancer.[17,18] Additionally, a study published in 2023 found a causal relationship between the sugar alcohol erythritol, added to many stevia products, and liver cancer, as well as a possible relationship with heart disease.[19,20] In mice, researchers found that stevia led to oxidative stress,[1] which is a primary building block for creating cancerous cells.[21]

A 2014 study out of Latvia suggests that stevia may have a negative effect on probiotic bacteria in the human gastrointestinal tract.[22] When the researchers tested the influence of stevioside and rebaudioside A on the growth of six different strains of *Lactobacillus reuteri*, they found that the two stevia glycosides inhibited the growth of all six strains. The authors noted that *Lactobacillus reuteri* strains "are an important natural inhabitant of the human gastrointestinal tract"; just about every probiotic dietary supplement on the market contains one or more strains from the genus Lactobacillus.

Research suggests that problems or complexities in reproduction are indeed a danger of stevia.[23] In female hamsters, a 1998 study reported that high doses of steviol on days six to ten of gestation "were highly toxic to both dams and fetuses" and resulted in a reduced number of offspring.[24] The authors' caveat was that the high doses were considerably more "than the suggested acceptable daily intake of stevioside for humans."

A 1999 study in rats suggested that regular, long-term stevia consumption could affect the reproductive system of males, specifically resulting in a reduced sperm count. The researcher reported:

"[C]hronic administration (60 days) of a *Stevia rebaudiana* aqueous extract produced a decrease in final weight of testis, seminal vesicle and cauda epididymidis. In addition, the fructose content of the accessory sex glands and the epididymal sperm concentration are decreased. Stevia treatment tended to decrease the plasma testosterone level, probably by a putative affinity of glycosides of extract for a

certain androgen receptor, and no alteration occurred in luteinizing hormone level. These data are consistent with the possibility that Stevia extracts may decrease the fertility of male rats."[25]

Nutrition scientist Sarah Ballantyne has observed that steviol glycosides "are synthesized in the same pathway as, and end up being structurally very similar to" a class of plant hormones call gibberellins, which are derived from kaurene.[26] This means, Ballantyne points out, "that steviol glycosides have a steroid hormone structure." Human reproductive steroid hormones include estrogen, progesterone and testosterone. Ballantyne points to evidence that steviol glycosides have contraceptive effects in both males and females.[27-29] Notably, the steviol glycoside called stevioside has been found to have "potent contraceptive properties in female rats, implying that stevia may have an impact on estrogen, progesterone, or both."[27] In a study published in 2018, researchers found that "adding 'normal' amounts of stevia to the drinking water of obese rats worsen[ed] the animal's' ability to conceive," with only 53 percent of the rats able to achieve pregnancy.[30]

Stevia also has blood sugar effects. The Living Well blog quotes another blogger as follows: "Stevia is 'sweet' on the palate, so the body assumes it is receiving sugar and primes itself to do so. Glucose is cleared from the bloodstream, and blood sugars drop, but no real sugar/glucose is provided to the body to compensate. When this happens, adrenaline and cortisol surge to mobilize sugar from other sources (liver, muscle glycogen, protein, or body tissue) to bring blood glucose back up."[31]

Commenting on the effects on the adrenals, Lauren Geertsen at the *Empowered Sustenance* blog writes: "The frequent release of the stress hormones (adrenaline and cortisol) in response to the stevia-induced hypoglycemia is damaging to our adrenal glands and overall health. These stress hormones are designed to be utilized when we need to be in a fight-or-flight response—not when we are eating a meal. The consequences of excess stress hormones means a suppressed immune system, increased inflammation, and lower thyroid function. . . just to name a few!"[32]

Finally, individuals taking medication should be aware that stevia can interact with some medications; they should consult with their practitioner before consuming or purchasing stevia products.[33,34]

WHY TAKE THE RISK?

In the conclusion to the 2020 study about the "hidden hazardous effects" of stevia and sucralose (aka Splenda),[1] the authors summarize that both sweeteners increase blood sugar "in spite of their lack of

calories," increase liver enzymes due to the "reshaping" of gut flora, elevate urea and creatinine levels, reduce anti-inflammatory cytokines and elevate pro-inflammatory cytokine secretion. While acknowledging that sucrose (sugar) is "caloric" and has some of its own risks, they argue that "it is safer than sucralose or stevia."

This article provides only an abbreviated overview of the research on stevia and its detrimental effects on various body systems, which I explain at greater length in my book. I feel sure that anyone who understands the risks will no longer want to consume stevia or feel safe doing so.

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