

Another New Sugar Substitute

Editor's Note: It may not be that we need more sugar substitutes, but like mosquitoes, they keep on coming. And like mosquitoes, most of the artificial sweeteners including sucralose leave a bad after-taste and the effect of their long term usage is really not known. So now comes the latest entry to the sweetener market 'Stevia.' Major claims for this new substitute are zero calories, zero carbohydrates, and zero chance of a spike in blood sugar levels. Promoters tout all those zeroes as evidence that the herb is far more healthful than sugar and artificial sweeteners. The sweetener has not yet received the FDA endorsement as "generally recognized as safe." This specific lack of endorsement, allows marketing as a dietary supplement but not if used in food or drinks.

The species *Stevia rebaudiana* Bertoni, commonly known as sweetleaf, sweet leaf, sugarleaf, or simply stevia, is widely grown for its sweet leaves. *Stevia rebaudiana* is an herb in the Chrysanthemum family which grows wild as a small shrub in parts of Paraguay and Brazil. The glycosides in its leaves, including up to 10% Stevioside, account for its high sweetness, making it unique among the nearly 300 species of Stevia plants. The refined extracts of Stevia called steviosides (a white powder, 85-95% Steviosides) claim to be 200-300 times sweeter than table sugar.

Stevia is widely used as a sweetener in Japan, and it is now available in the US and Canada as a dietary supplement, although not as a food additive.

The dietary supplements have been slow to catch on with mainstream consumers, partly because of a bitter licorice aftertaste. Makers of the new sweeteners claim to have found ways around that: since the degrees of processing and purity vary significantly—some products contain added flavors, bulking agents, or fiber.

History of Stevia

There are indications that Stevia (or Ca-he-he) has been used to sweeten a native beverage called mate since Pre-Columbian times. However, a natural scientist named Antonio Bertoni first recorded its usage by native tribes in 1887.

In the early 1970s, Japan began cultivating stevia as an alternative to artificial sweeteners such as cyclamate and saccharin, which are suspected carcinogens. The plant's leaves, the aqueous extract of the leaves, and purified steviosides are used as sweeteners. Since the Japanese firm Morita Kagaku Kogyo Co., Ltd. produced the first commercial stevia sweetener in Japan in 1971, the Japanese have been using stevia in food products, soft drinks (including Coca Cola), and for table use. Japan currently consumes more stevia than any other country, with stevia accounting for 40% of the sweetener market.

Rebiana is the trade name for a stevia-derived sweetener

being developed jointly by The Coca-Cola Company and Cargill with the intent of marketing in several countries and gaining regulatory approval in the US and EU. Truvia is Cargill's consumer brand of Rebiana-based sweetener and PepsiCo, with Whole Earth Sweetener Co., has developed a new line of beverages sweetened with a stevia product called PureVia.

Cultivation of Stevia

Stevia species are found in the wild in semi-arid habitats ranging from grassland to mountain terrain. Stevia does produce seeds, but only a small percentage of them germinate. Planting cloned stevia is a more effective method of reproduction.

Stevia is cultivated mainly in Paraguay, Brazil, Japan and China. There are other growers scattered across the Pacific Rim. Stevia is also being cultivated in Southern Ontario and Mexico. Surprisingly, it has been successfully grown in California and the South of England as well. Today, stevia is cultivated and used in food elsewhere in east Asia, including in China (since 1984), Korea, Taiwan, Thailand, and Malaysia. It can also be found in Saint Kitts and Nevis, in parts of South America (Brazil, Colombia, Peru, Paraguay, and Uruguay) and in Israel. China is the world's largest exporter of stevioside.

How has Stevia been used in food applications?

First, as a prepackaged replacement for sugar and artificial sweeteners. Second, it has been used in various food products, including the Japanese sugar-free versions of Wrigley's gums, Beatrice Foods yogurts and even diet Coke. It has also been used in Japanese style pickles, dried seafoods, fish meat products, vegetables and seafoods boiled down with soy sauce, confectioneries and a host of other products. Whether it will reach into food applications such as these in the U.S. market depend largely on the FDA's regulatory position and health industry efforts to re-classify Stevia as a GRAS (generally recognized as safe a substance).

The FDA's position on Stevia is somewhat ambiguous. In 1991, citing a preliminary mutagenicity study, the FDA issued an import alert which effectively blocked the importation and sale of Stevia in this country. Ironically, this was the year that a follow-up study found flaws in the first study and seriously questioned its results.

In September of 1995, the FDA revised its import alert to allow Stevia and its extracts to be imported as a food supplement but not as a sweetener. Yet, it defines Stevia as an unapproved food additive, not affirmed as GRAS (Generally Recognized as Safe) in the United States.

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