



International Stevia Council
Stevia Media Resource



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A NATURAL SWEETENER FOR A CHANGING WORLD

Governments and policy makers around the world are increasingly worried about what is now being called the “obesity epidemic,” and the fallout on a global scale is devastating. From diabetes to heart disease, health officials are calling for decreases in calorie intake. Stevia – the only 100 percent naturally derived zero-calorie sweetener – can be a part of the solution.

ABOUT STEVIA

Stevia – A Sweet History

Stevia is a small shrub native to the region of South America where the borders of Paraguay, Argentina, and Brazil meet. The scientific name for the Stevia plant is *Stevia rebaudiana Bertoni* and it is a member of the largest family of plants, Asteraceae which is also called the “sunflower family”.

There are 240 close relatives of Stevia and they are all herbs or shrubs originating from the tropical and semi-tropical areas of North, Central and South America.

The discovery of the sweetness of the Stevia plant is attributed to an Italian-Swiss botanist, Dr. Moisés S. Bertoni, in 1901ⁱ. However, researchers believe the use of the plant to sweeten medicines and foods by indigenous people dates prior to the arrival of the Spanish in the 16th century^{ii,iii}.

The sweetness found in the Stevia plant is released by steeping its dried leaves in water, filtering and separating the liquid from the leaves and stems, and further purifying the plant extract with either water or food grade alcohol – all conventional plant extraction methods. The result is a naturally sourced, high intensity sweetener that is zero calorie and 200 – 350 times sweeter than sugar.

The reason for the sweetness of the Stevia plant lies in the existence of certain sweet compounds in the plant’s leaves known as Steviol glycosides, first isolated and identified individually by French researchers, M. Bridel and R. Lavielle, in 1931.

There are between 30 and 40 known Steviol glycosides in the Stevia leaf with Stevioside and Rebaudioside A being the most prevalent.

Purified Stevia extracts are up to 200 - 350 times sweeter than sugar, they are heat and pH stable, are zero-calorie and do not impact blood glucose levels^{iv} at the levels of use.

A Safe, Natural Way to Moderate Calories

For decades, high purity Stevia leaf extracts have been approved for use in foods and beverages in Japan. In the last five years, leading food safety and regulatory agencies across the world have issued positive safety opinions on and/or allowed the safe use of purified Stevia leaf extracts in foods and beverages.

A Global Trend of Obesity^{vii}

- Global obesity rates have more than doubled since 1980
- Nearly 2 billion adults worldwide qualified as overweight in 2014, and 600 million are considered obese
- 42 million children under the age of 5 were overweight in 2013

*Source: World Health Organization, 2015

Center of the Epidemic^{viii}

The Countries with Highest Estimates of Diabetes

- China – 107 million people
- India – 69 million people
- USA – 29 million people
- Brazil – 14 million people
- Indonesia – 10 million people

*Source: International Diabetes Federation – World Atlas on Diabetes Seventh Edition 2015

Diabetes in America^{ix}

- In 2012, more than 29 million Americans had diabetes, roughly 9.3 percent of the entire population
- Roughly 1.4 million Americans are diagnosed with diabetes each year
- In 2010, diabetes was named the 7th leading cause of death in the United States
- Costs related to medical expenses and lost productivity topped \$245 billion in 2012 in the United States alone

*Source: American Diabetes Association 2012

These include the Joint FAO/WHO Expert Committee on Food Additives (JECFA), the French ANSES (National Agency for the Security of Food, the Environment and the Work), the Food Standards of Australia New Zealand (FSANZ), the US Food and Drug Administration (FDA), Health Canada (HC) and the European Food Safety Authority (EFSA). For more information on regulatory safety approvals of stevia extracts, please refer to the previous section.

Pre-clinical and clinical studies show that the use of Stevia extracts is safe for the general population including people with diabetes, children and pregnant populations and that there are no known side effects. With respect to allergies, some people are hypersensitive to plants from the Asteraceae family that Stevia rebaudiana Bertoni belongs to, however, experts have noted that there is insufficient scientific evidence to support warning statements to consumers about allergy to highly purified stevia extracts.⁷

Industry has embraced this reality. In fact, by end of 2015 more than 9,000 products now comprise Stevia as an ingredient – quite a testament to the safety of Stevia.

WHY STEVIA?

The key advantages of Stevia are that it is a plant-sourced all-natural and zero-calorie sweetener.

A Green Story

Consumers are increasingly interested in knowing the origin of their food and are demanding “better for me” products. The food and beverage industry is responding to this demand by developing products that are more natural with lower sugar and lower calorie content. As a plant-based sweetener with no calories, Stevia presents the perfect, unprecedented opportunity for:

- Consumers who are looking for naturally sourced low calorie sweeteners in their search for a balanced healthy lifestyle and better weight management.
- The food and beverage industry - who can reformulate their products providing calorie-free alternatives from a natural source.
- Governments, regulators and decision-makers - who look towards improving nutritional profiles of the foods and beverages available on the market to help fight the dramatic rise in obesity, diabetes, and their related health issues on a global scale.

A Sweetness to Rival All Others

Purified Stevia extracts have a clean taste similar to that of sugar. Different combinations of Stevia extracts, also called steviol glycosides (the compounds that occur naturally in the leaves of the Stevia plant) provide different taste profiles, allowing food and beverage manufacturers the flexibility they need to produce different categories of products and to respond to different consumer tastes as they vary by location. The development of formulation solutions with mixes of newer, more rare steviol glycosides, such as Reb D and Reb M, is offering new opportunities for great tasting products with calorie reduction up to 50%. Over time, Stevia can offer a full portfolio of formulation options from full calorie all the way down to zero calories, all with an impressive green, natural and sustainable story. Below are examples of the growing confidence in product reformulation with Stevia and the ability to reach deeper calories reduction. In addition, in the past 30 months many kid- and family-friendly products have been launched.

A Measured Approach^x

- The World Health Organization in 2015 recommended limiting fats and sugars to combat obesity
- In 2014, Mexico raised taxes on sugary drinks to 1 peso per liter to combat the country’s growing obesity epidemic
- The US FDA, as part of its proposal to update the nutrition facts label of packaged foods is proposing to include a percent daily value (%DV) for added sugars, which amounts to 50 grams or less of sugar for a 2000 calorie diet. This percent daily value being proposed is based on the USDA’s Dietary Guidelines’ recommendation that the daily intake of calories from added sugars not exceed 10 percent of total calories.
- England’s Scientific Advisory Committee on Nutrition in 2015 recommended cutting that same number in half to only 5 percent of total calories, or seven tea-spoons daily

*Sources: World Health Organization, 2015; Office of Disease Prevention and Health Promotion, 2015; U.S. Food and Drug Administration, 2-14; The Scientific Advisory Committee on Nutrition, 2016

Reformulation

New Product

**<30%
Reduction**



**30% – 50%
Reduction**



**>50%
Reduction**



Versatility

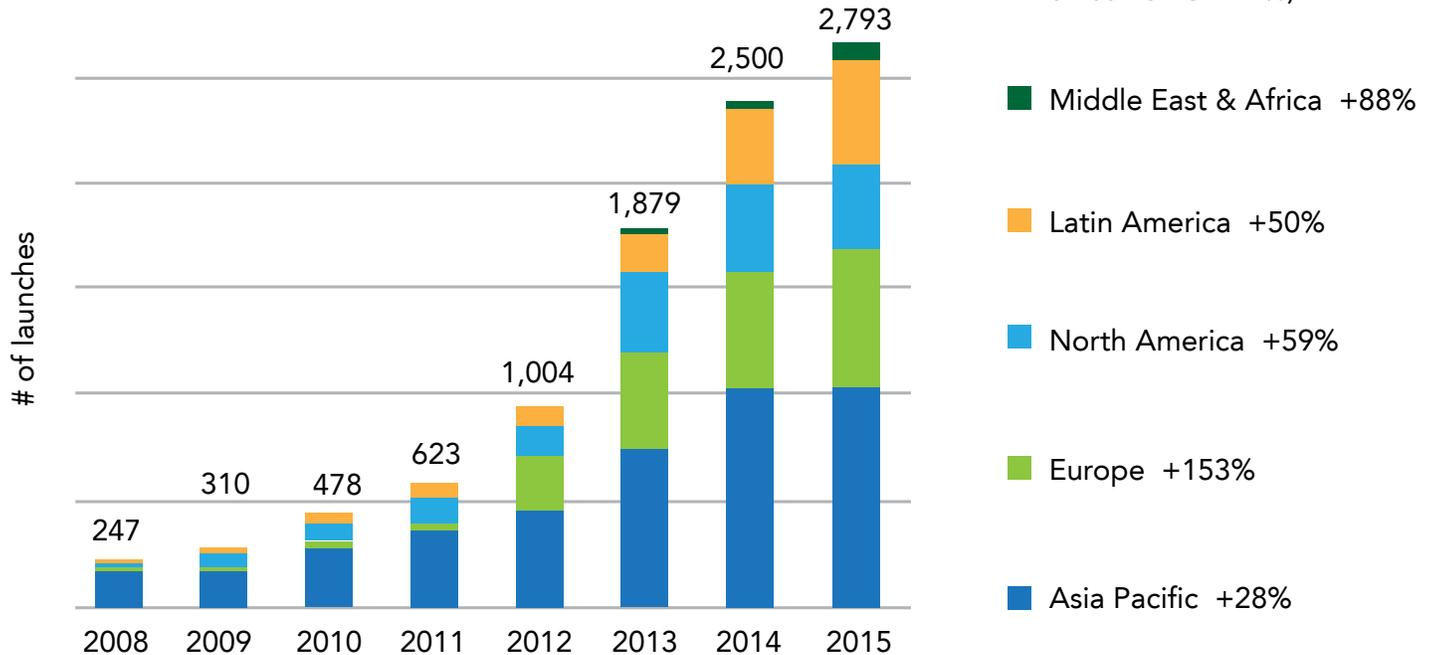
Purified Stevia extracts are versatile in a wide range of applications as a result of being heat, pH and photo stable. These qualities are highly attractive to food and beverage manufacturers across the world and over the past three years there has been an explosion in the number of Stevia-sweetened products available on the market.

More than 9,500 Stevia-sweetened products were introduced worldwide by December 2015, with increasing numbers of new products being added each year.

Sales of products containing Stevia are expected to continue to grow following continued Stevia approvals by regulatory bodies and product innovations in markets across the globe.

Suitable for everyone, Stevia extracts are safe for everyone to enjoy, including children, pregnant women and are a great sweetening option for people with diabetes since it does not have any impact on blood glucose levels.

Stevia Product Launches by Year



Source: Mintel GNPD 2015

A Scalable Supply

Stevia has a scalable and a scaled supply – meaning current and future production can comfortably support major global brand launches. The foundations for large volume productions able to respond to the global demand have been established. Stevia is an attractive crop for farmers as it yields a strong economic return, typically comparable to or stronger than tea, coffee, or beans. Therefore, the farming of large scale volumes of Stevia as a crop appeals to local rural communities such as small to medium family farms including women farmers or a cooperative of farmers or larger and better capitalized and mechanized agricultural operations.

A Fully Sustainable Commodity

Stevia has an excellent “green” story and is sustainable. Stevia leaf extract is one of the earliest plant-based sweeteners derived from a natural source – the Stevia plant, a small herb native to South America. Its sweetness is due to sweet compounds called steviol glycosides that occur naturally in the leaves of the Stevia plant. The Stevia plant is sustainable: in relation to land use, Stevia crops are up to five times more efficient than sugar for the equivalent sweetness. In an environmentally aware society, this is significant, that’s huge as it greatly lowers the environmental impacts of food and beverages products.

A Cost-Effective Solution

As populations around the world increasingly seek healthier lifestyles, the food and beverage industry has embraced Stevia as a natural and sustainable solution.

Over 9,000 products have launched globally over the past five years. New products vary drastically, from sauces, yogurts and tabletop products to juices, sports drinks and alcoholic beverages. This demonstrates the versatility of Stevia as a practical ingredient.

From a consumer standpoint, Stevia is an enormously attractive option. ISC 2015 research indicates that key consumer drivers include naturalness and sustainability – both of which are key strengths of Stevia. The more consumers are aware of Stevia, the more likely they are to recognize the benefits.

And awareness is certainly growing. According to a 2015 ISC online global consumer sentiment survey^{xiii} of English-speaking adults, Stevia is the second-most-discussed low and no-calorie sweetener, behind only aspartame. Further, compared with all other low and no-calorie sweeteners, Stevia mentions enjoy the highest positive sentiment. The study examined all English conversations between June 2013 and September 2015. A calculation of “net sentiment” score distinguishes positive mentions versus negative ones, with results as follows: Stevia (+65 net sentiment), sucralose (+31 net sentiment), aspartame (-48 net sentiment), sucrose (+43 net sentiment) and high-fructose corn syrup (-20 net sentiment).

Within this context, the growth of the Stevia industry is accelerating global level.



STEVIA FACTS AND FIGURES

Global Access to Stevia Products

Approved in more than 100 countries
5 billion consumers have access to Stevia products*

Number of Products Launched by Year

2015 – 2,443 (to November)
2014 – 2,276
2013 – 1,843
2012 – 1,162
2011 – 636
2010 – 477
2009 – 280

*Over 9,000 products have launched globally over the past five years.

Value of Global Sweetener Market

Total: \$70 billion USD
Sugar: \$60 billion
High-fructose Corn Syrup: \$7 billion
Non-natural high-intensity sweeteners: \$1.2 billion

Potential for High-Purity Stevia Extracts

Global B2B Sales in 2013: \$150 million
Estimated Growth in 20 Years: \$10+ billion

Stevia Agricultural Potential

Long term volume potential of Stevia leaf production: 2 million tonnes
Agricultural industry potential: \$3 to \$4 billion

THE WORLD AGREES: STEVIA IS SAFE

- In 2008, the Joint FAO/WHO Expert Committee on Food Additives (JECFA) established the safe use of steviol glycosides and set an acceptable daily intake (ADI) for steviol glycosides of 4 mg/kg bw on a steviol equivalents basis. ADI is an estimate of the amount of a food additive that can be consumed daily over an entire lifetime without appreciable health risk.
- In 2008, Food Standards Australia New Zealand (FSANZ) permitted the use of steviol glycosides in specified foods at specified levels and in Dec 2010, allowed the increase of the maximum permitted use level of steviol glycosides in ice cream and specified beverages.
- In 2008, the US FDA issued two no-objection letters for high purity steviol glycosides with Rebaudioside A and Stevioside as principal components being safe for use in food and beverages. To date, over 35 no-objection letters for high purity steviol glycosides have been issued by the US FDA.
- In 2009, the Directorate General for Competition, Consumer Affairs and Fraud Control requested the French Food Safety Agency (AFSSA) authorized the use of rebaudioside A at 97% purity in foods and beverages for up to 2 years. This approval was a further confirmation of the safe use of high purity Stevia extracts by leading safety authorities.
- In 2010, the European Food Safety Authority (EFSA), published a positive Scientific Opinion on the safety of steviol glycosides' use as a sweetener in foods and beverages.
- In 2011 the European Commission and the European Standing Committee on the Food Chain and Animal Health approved steviol glycosides for use as a food additive in the European Union, opening the way for Stevia-based products to appear on the European Union market by December 2011.
- In 2012, Health Canada (HC) approved the addition of steviol glycosides to the List of Permitted Sweeteners in certain food categories including as a table top sweetener.
- In 2014, the Indonesia National Agency of Dugs and Food Controls (BPOM) approved the use of Stevia extracts in the Indonesian market for food and beverage products.
- In 2015, the European Food Safety Authority's (EFSA), published a positive Scientific Opinion on the amendment of the specification of steviol glycosides' use as a sweetener to include Reb M, D and X.
- In 2015, the Food Safety and Standards Authority of India (FSSAI) published a notification relating to the approval of steviol glycosides in India. High purity steviol glycosides extracted from Stevia leaf are approved for use in major food and beverage categories including dairy, beverages and table top sweeteners.
- In 2015, the FSSAI (India) expanded the list of approved food and beverage categories that can now use steviol glycosides as part of their operationalization of standards of food additives for use in various food categories.
- In 2016 Health Canada's Food Directorate completed a detailed safety assessment and approved for use steviol glycosides containing the steviol glycoside "rebaudioside M" (Reb M) as a high-intensity sweetener in the same food categories and under the same conditions of use as the previously-permitted steviol glycosides in Canada.
- Steviol glycosides are permitted for use in foods and beverages in over 100 countries including Argentina, Australia, Brazil, Canada, China, Colombia, European Union (28 countries), India, Japan, Korea, Kuwait, Malaysia, Mexico, New Zealand, Paraguay, Peru, Russia, Switzerland, Taiwan, Thailand, USA, Ukraine, United Arab Emirates and Uruguay.

ABOUT US

The International Stevia Council is a global trade association representing the interests of all the players in the Stevia value chain: from leaf growers and Stevia extract producers to ingredient users, such as food and beverages manufacturers. The ISC strives to promote Stevia globally, to protect the natural halo of Stevia and to be the authoritative voice of the Stevia industry.

The International Stevia Council is a 501 (c) (6) not-for-profit organisation incorporated under the law of the State of Delaware in the United States (US). The Council was created in July 2010 by eleven founding members.

Our Vision is to be the authoritative voice for the Stevia industry in promoting the use of naturally-sourced plant-based Stevia sweetener products that can improve the diets and health of people globally by reducing sugar and calorie intakes.

Our Mission

Safety:

- Support Stevia as a safe and trusted sweetener
- Be a trusted knowledge source on the science behind the safety of Stevia

Quality:

- Establish and ensure accurate analytical methods for measuring the purity of Stevia extracts
- Ensure industry wide access to accurate analytical methods and standards for measuring steviol glycosides' content
- Support sustainable Stevia production through responsible cultivation

Recognition:

- Promote the wide variety of uses for Stevia as a sweetener
- Stakeholder education including consumer education on the benefits of Stevia

CONTACT US

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- ^{xi} US FDA Proposed Changes to the Nutrition Facts Label; October 2015. <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm>
- ^{xii} US Department of Agriculture 2015. Dietary Guidelines for Americans 2015-2020. 8th Edition
- ^{xiii} Global Stevia Gap Analysis, October 2015