

# stevia

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*Stevia rebaudiana* (Bertoni) is a South American plant native to Paraguay that traditionally has been used to sweeten beverages and make tea. The word “stevia” refers to the *entire* plant and its components, only some of which are sweet. The sweet tasting components of the stevia plant are called steviol glycosides. Steviol glycosides can be isolated and purified from the leaves of the stevia plant and are now added to some foods, beverages and tabletop sweeteners in the U.S. and elsewhere.

While the word “stevia” actually refers to the entire plant, for the purposes of this web site, the term “stevia sweeteners” will be used to refer to steviol glycosides which are the sweet components *isolated* and *purified* from stevia leaves. For an inventory of stevia sweeteners [click here](#).



## Stevia Sweeteners

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Enliten®

PureVia™

Rebaudioside A/Reb A

Rebaudioside B

Rebaudioside C

Rebaudioside D

Rebiana

Stevia

Steviol Glycosides

Stevioside

Stevia Extract In The Raw™

Sun Crystals®

Truvia™



## Safety of Stevia Sweeteners/Steviol Glycosides

Studies clearly support the safety of stevia sweeteners. Further, clinical studies show that steviol glycosides, meeting purity criteria established by the Joint FAO/WHO Expert Committee on Food Additives (JECFA), have no effect on either blood pressure or blood glucose response, indicating stevia sweeteners are safe for use by individuals with diabetes.

Recent studies, including human studies on safety, metabolism and intake, support the safety of stevia sweeteners. JECFA has conducted a thorough scientific review of the existing scientific data on steviol glycosides and concluded that they are safe for use in food and beverages. Based on the wealth of published research, independent scientific experts in both the U.S. and globally have concluded that stevia sweeteners are safe for people of all ages and populations and an Acceptable Daily Intake (ADI) of four mg/kg body weight (expressed as steviol) has been established. The estimated intake of steviol glycosides even among the highest consumers does not exceed the ADI. *Food and Chemical Toxicology* published a special supplement on the topic of stevia sweetener safety in May 2008.

## Metabolism

Based on studies conducted in the past several years, the Joint FAO/WHO Expert Committee on Food Additives (JECFA) has concluded that stevia sweeteners are metabolized by a common pathway. This begins in the gut where the steviol glycosides are broken down to steviol. Steviol is excreted in the urine as steviol glucuronide. The metabolized components of steviol glycosides essentially leave the body and there is no accumulation.

## Regulatory Status

In December 2008, in response to Generally Recognized As Safe (GRAS) notifications submitted to the US Food and Drug Administration (FDA), the FDA stated it has no questions regarding the conclusion of expert panels that rebaudioside A is GRAS for use as a general purpose sweetener in foods and beverages, excluding meat and poultry. Rebaudioside A is a stevia sweetener isolated and purified from the leaves of the stevia plant. In June 2009, FDA stated it has no questions regarding the conclusion of an expert panel on the GRAS status of another steviol glycoside extract with high rebaudioside A content for use as a tabletop sweetener. Similar GRAS notifications are before FDA for other steviol glycoside extracts isolated and purified from *Stevia rebaudiana*.

In Europe, stevia is approved as a dietary supplement but not yet for use as a sweetener. The European Food Safety Authority (EFSA) is currently conducting a safety assessment. In Canada, stevia is sold as a natural health product. Stevia and steviol glycosides have a long history of use in several countries, including Japan and Paraguay. Stevia sweeteners are approved for use in many other countries, including Korea, Mexico, Taiwan, China, Russia, Australia, Argentina, New Zealand, Colombia, Peru, Uruguay, Brazil and Malaysia.



## References:

Carakostas M, et al. Overview: the history, technical function and safety of rebaudioside A, a naturally occurring steviol glycoside, for use in food and beverages, *Food and Chemical Toxicology* (2008) vol 46:S1-S10., doi: 10.1016/j.fct.2008.05.003

Joint WHO/FAO Expert Committee on Food Additives Monograph

<http://www.fao.org/ag/agn/jecfa-additives/specs/monograph5/additive-442-m5.pdf>

[http://www.fao.org/ag/agn/agns/files/FACTSHEET\\_%20STEVIOLE%20GLYCOSIDES\\_final1.pdf](http://www.fao.org/ag/agn/agns/files/FACTSHEET_%20STEVIOLE%20GLYCOSIDES_final1.pdf)

## Stevia Sweeteners

### **What are some common and trade names for stevia sweeteners?**

Enliten®	PureVia™
Reb A	Rebaudioside A
Rebiana	Stevia
Stevioside	Stevia Extract In The Raw™
Sun Crystals®	Truvia™

### **What is rebaudioside A?**

Rebaudioside A is a sweet tasting steviol glycoside purified from the leaves of the stevia plant.

### **What is stevia?**

Stevia is a plant of the Chrysanthemum family, the leaves of which have been used as a sweetener in South America for hundreds of years. Extracts from the stevia leaf have been available as dietary supplements in the U.S. since the mid-1990's and many contain a mixture of both sweet and non-sweet components of the stevia leaf.

### **What is the difference between stevia, rebaudioside A and steviol glycosides?**

The term stevia typically refers to a crude preparation (powder or liquid) of dried stevia leaves. It may contain a mixture of many substances, only some of which are sweet. Steviol glycosides can be isolated and purified from the leaves of the stevia plant and can be used to sweeten foods and beverages and used as tabletop sweeteners. Rebaudioside A is one of the steviol glycosides purified from the leaf of the stevia plant. Other steviol glycosides include stevioside, rebaudiosides B, C, D, F, steviolbioside, rubusoside, and dulcoside A.

## Natural

### **What is natural?**

Although there is no clear definition of "natural," some consumers prefer ingredients derived from natural sources that undergo minimal processing and that are not altered during production. New products with natural claims such as stevia sweeteners give consumers more products from which to choose.

### **Are foods labeled "natural" better or more healthful?**

Not necessarily. Since there is no clear definition or labeling requirement, the primary difference between foods labeled "natural" and foods that do not bear this claim is preference.



## Foods and Beverages with Stevia Sweeteners

### **In what types of foods are stevia sweeteners used?**

Stevia sweeteners can be used in beverages and foods such as desserts, sauces, yogurt, pickled foods, breads and confections.

## Weight Control and a Healthful Lifestyle

### **How many calories do stevia sweeteners contain?**

Steviol glycosides have zero calories. Stevia-based tabletop sweeteners can have zero or minimal calories per serving, depending upon the other food ingredients with which they are combined. For example, some stevia sweeteners may be mixed with sugar as a bulking agent and these stevia sweeteners will contain some calories.

### **How are stevia sweeteners helpful in weight control?**

With zero calories, stevia sweeteners can help reduce or replace calories in foods and beverages and offer low and no calorie alternatives for people looking to lose and control weight. Consuming beverages and foods with stevia sweeteners as part of a healthful diet and lifestyle, including regular physical activity, can assist with weight control and weight loss.

## Metabolism

### **How are stevia sweeteners metabolized?**

Based on studies conducted in the past several years, the Joint FAO/WHO Expert Committee on Food Additives (JECFA) has concluded that stevia sweeteners are metabolized by a common pathway. This begins in the gut where the steviol glycosides are broken down to steviol. Steviol is excreted in the urine as steviol glucuronide and the metabolized components of steviol glycosides essentially leave the body and there is no accumulation.

## Safety and Dietary Intake

### **What is Generally Recognized As Safe (GRAS) status?**

In order for a new food or beverage ingredient to enter the U.S. food supply, the ingredient must either be a Food and Drug Administration (FDA) approved food additive or GRAS. The quality and quantity of scientific evidence required for a substance to achieve GRAS status are the same as for FDA food additive approval. For GRAS, however, there is a general knowledge requirement and acceptance of that knowledge by qualified scientists. Publication in a peer reviewed scientific journal is the mechanism normally used to establish that the necessary scientific information is generally available.

### **How has the safety of stevia sweeteners been established?**

Studies of stevia sweeteners clearly support the safety of these ingredients. Further, clinical studies show that stevia sweeteners meeting purity criteria established by JECFA have no effect on either blood pressure or blood glucose response, indicating stevia sweeteners are safe for use by persons with diabetes. In December 2008, the



US Food and Drug Administration (FDA) stated it has no questions regarding the conclusion of expert panels that rebaudioside A is Generally Recognized As Safe (GRAS) for use as a general purpose sweetener. To date, FDA has stated that it has no questions in response to three separate stevia sweetener GRAS notifications.



### **What is the Acceptable Daily Intake (ADI)?**

The Joint FAO/WHO Expert Committee on Food Additives (JECFA) defines Acceptable Daily Intake (ADI) as “An estimate of the amount of a substance in food or drinking water, expressed on a body-weight basis, that can be ingested daily over a lifetime without appreciable risk (standard human = 60 kg). The ADI is listed in units of mg [milligram] per kg [kilogram] of body weight.” Consuming more than the ADI does not mean an effect will occur because the ADI includes a wide margin of safety above what is deemed the “No Observed Effect Level.” JECFA has assigned an ADI of four mg/kg bw for steviol glycosides, expressed as steviol.

**How are stevia sweeteners useful for people with diabetes?** Research has shown that stevia sweeteners do not affect blood glucose levels or interfere with insulin. With zero calories, stevia sweeteners offer people with diabetes greater variety and flexibility in budgeting total calorie intake and assisting with weight management.

**Are there any known allergies to stevia sweeteners?** There are no known allergies to stevia sweeteners.

### Cooking and Baking

**Can stevia sweeteners be used in cooking and baking?** Stevia sweeteners provide an excellent alternative when sweetening foods such as cereal, yogurt and fruit. Some recipes allow for cooking and baking with these sweeteners, however appropriate usage levels vary according to the stevia sweetener that is used. For best results, follow the directions outlined by the manufacturer.

### Living Naturally Section

*Stevia rebaudiana* is a South American plant, native to Paraguay that has long been used to sweeten beverages and make tea. The term stevia typically refers to sweeteners made from a crude preparation (powder or liquid) of dried stevia leaves. These preparations may contain a mixture of many substances, only some of which are sweet. While the word “stevia” refers to the *entire* plant, only some of the components of the stevia leaf are sweet. These sweet components are called steviol glycosides. Stevia is grown and harvested in many countries around the world, predominantly in China and Brazil.

Stevia sweeteners are also ingredients in many products, such as ice cream, bread and soft drinks, throughout Asia and South America. In the US, stevia sweeteners are primarily found in tabletop products and reduced calorie beverages. Heightened regard for caloric consumption and increased demand from consumers for a greater variety of low calorie products has provided an impetus to incorporate stevia sweeteners into foods and beverages.

### Steviol Glycosides

Steviol glycosides are found in the leaves of the stevia plant and each has a particular taste profile and sweetness intensity. Steviol glycosides can be isolated from the leaves of the stevia plant. Steviol glycosides are approved for use in countries such as Australia, Brazil, China, Japan, Korea, New Zealand and Paraguay. In the U.S., steviol glycosides with high rebaudioside content are Generally Recognized As Safe (GRAS) for use as a tabletop sweetener.

## Rebaudioside A

Rebaudioside A is one of the many steviol glycosides in stevia leaves that provide sweetness. In the US, rebaudioside A is Generally Recognized As Safe (GRAS) for use as a general purpose sweetener and may be used in foods and beverages, excluding meat and poultry products. Rebaudioside A is approximately 250 to 300 times sweeter than sucrose.

Components of stevia sweeteners contain zero calories, which mean these sweeteners may sweeten food and beverages resulting in fewer calories. Further, research has shown that stevia sweeteners do not contribute calories or carbohydrates to the diet and do not affect blood glucose or insulin response, which allows people with diabetes to consume a greater variety of foods and comply with a healthful meal plan. Stevia sweeteners are an excellent alternative for use in foods and beverages such as diet beverages. The sweet components in stevia sweeteners are naturally occurring which may further benefit consumers who prefer foods and beverages they perceive as natural.

## Related Links

[www.caloriecontrol.org](http://www.caloriecontrol.org)

[www.enlitesweetner.com](http://www.enlitesweetner.com)

[www.fda.gov](http://www.fda.gov)

[www.purevia.com](http://www.purevia.com)

[www.truvia.com](http://www.truvia.com)

[www.steviaextractintheraw.com](http://www.steviaextractintheraw.com)

<https://www.suncrystals.com/#intro>

