

2006

## G06-1634 Stevia

Georgia Jones

*University of Nebraska - Lincoln*, [gjones2@unl.edu](mailto:gjones2@unl.edu)

Follow this and additional works at: <http://digitalcommons.unl.edu/extensionhist>



Part of the [Curriculum and Instruction Commons](#)

---

Jones, Georgia, "G06-1634 Stevia" (2006). *Historical Materials from University of Nebraska-Lincoln Extension*. 2795.  
<http://digitalcommons.unl.edu/extensionhist/2795>

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

## Stevia

Georgia Jones, Extension Food Specialist

The leaves of one species of stevia plants have naturally occurring sweetness. This NebGuide discusses the advantages and disadvantages of using stevia, also known as sweet leaf, as a sugar substitute.

### Introduction

There have been few botanical discoveries quite as dramatic as the realization that the leaves of a species of stevia plants, *Stevia rebaudiana* (Bertoni) Bertoni (*Compositae*), are intensely sweet. Stevia plants, also known as sweet leaf, are perennial shrubs native to Paraguay that include over 150 different species. The species, *S. rebaudiana* is an anomaly, since none of the other species in this North and South American genus produce these sweet compounds at high concentrations.

Because they are commercially unprofitable, relatively few highly sweet plant components have been developed as sugar substitutes. However, due to the interest in natural food ingredients, the discovery that this stevia plant has naturally occurring sweetness has attracted great interest. Stevia and stevioside, an extract of stevia, have a menthol-like, bitter aftertaste that limits their usefulness. However, they have been used for years as sweeteners in South America, Asia, Japan, China and some European countries.

### History of Stevia

For many centuries native Paraguayans have used stevia as a sweetener in herbal and medicinal teas. In addition to being a sweetener, they also consider it to have medicinal properties and use it to treat diseases such as high blood pressure and obesity. The Food and Drug Administration does not recognize any health benefits of stevia.

In 1931, a French chemist isolated the glycosides that give stevia its sweet taste. Of the eight glycosides discovered, stevioside, the most prevalent compound in the stevia leaf, is considered the sweetest. These extracts are 250-300 times sweeter than a 0.4 percent table sugar solution. More time is required to taste the sweetness of stevioside, but the sweetness of stevioside lasts longer than sugar. At high concentrations, stevioside has a bitter aftertaste.



Stevia, which is native to Paraguay, can be used as a sweetener.

Stevia is widely used in many parts of the world. In the early 1970s, the Japanese began cultivating stevia as an alternative to artificial sweeteners and have produced stevia sweeteners commercially since 1977. Stevia accounts for 40 percent of the Japanese sweetener market, making Japan the largest consumer of stevia. Brazil approved *S. rebaudiana* products in 1980. In the United States, powdered stevia leaves and refined extracts from the leaves have been sold and used as a dietary supplement since 1995. In the U.S. stevia cannot be sold as a sweetener, but can be purchased at health food and grocery stores. It is generally found where artificial sweeteners are sold. Today stevia is cultivated and used in China, Korea, Taiwan, Paraguay and Israel. China is the world's largest exporter of stevioside.

### Health Issues

In 1991, stevia was totally banned by the FDA because "toxicological information on stevia is inadequate to demonstrate its safety." This ruling was very controversial. In 1995, the FDA revised its ban against stevia and allowed it for sale as a dietary supplement. The FDA has refused to allow stevia to be sold as a sweetener because several animal studies have linked the use of stevia to potential health problems. Although the studies are few, there are enough for the FDA to not allow it to be sold as a sweetener. According to some researchers, if stevia is used sparingly, once or twice a day, the risks are low. If stevia was marketed widely and used in diet sodas, it could

**Table 1. Conversion chart for sugar (sucrose) and stevia.**

Sugar (Sucrose)	Stevia Blends in Packets (Number of Packets)	Stevia Blends	Clear Stevia	Pure
		(Spoonable Stevia) Bulk Form (teaspoons)	Liquid (teaspoons)	Stevioside (teaspoons)
2 teaspoons	1	1/2	About 1/4	1/16
1/4 cup	6	3	About 1/2	3/8
1/3 cup	8	4	About 3/4	1/2
1/2 cup	12	6	1 1/4	3/4
3/4 cup	18	9	1 3/4	1
1 cup	24	12	2 1/2	1 1/2
2 cups	48	24	5 1/4	3

be a potential health threat. Currently, Australia and Canada also have approved stevia as a dietary supplement. Stevia proponents point out that stevia has been used by millions of consumers in countries such as Japan for 30 years, with no reported or known harmful effects on humans. Stevia does not promote dental cavities, does not raise blood glucose levels and is safe for persons with phenylketonuria (an inability to breakdown the essential amino acid, phenylalanine).

### Cooking with Stevia

In Japan some of the food items used with stevia include soy sauce, beverages, yogurt, ice cream, table sweeteners and bread. Stevia is stable at high temperatures and can be used with high and low acid foods. These properties give stevia a variety of uses in the kitchen.

When cooking with stevia, it is important to use the exact amount specified in the recipe. Too much stevia in a product may result in a bitter aftertaste. Stevia works well with most fruit or dairy recipes. It may, however, pose a problem for baked items. Stevia lacks the ability to add texture, caramelize, feed the fermentation of yeast and help tenderize a batter, all properties that sugar possesses. Cakes made with stevia may not rise as well, and achieving a soft, chewy cookie may take some practice.

Stevia is available as stevioside, stevia blend or packets and can be purchased at most health food stores. The first thing to remember is that stevia is sweet but not exactly like sugar. To determine the amount of stevia you like, start by adding a few drops of extract to a glass of water. Taste it. Add one drop of clear liquid extract at a time, tasting after each one until the mixture becomes bittersweet. When the solution tastes bitter, cut back one or two drops. Some people take awhile to adjust to the taste of stevia. One way to make the transition is to add a little sugar to the stevia sweetened mixture until your taste buds adjust.

**Cookies:** Always preheat the oven to the recommended temperature. Crisp, shortbread type cookies give the best results. For chewier cookies, add canned pumpkin, uncooked oatmeal or peanut butter.

**Cakes:** Always preheat the oven to the recommended temperature. Separating the eggs and whipping the egg whites until you have super-stiff peaks helps to increase the cake

volume. Also, immediately invert the pan onto a cooling rack. This helps to prevent the cake from falling.

**Yeast and quick breads:** Without sugar, yeast will only have the flour to feed on and breads will take longer to rise. Quick breads tend not to rise as well as those sweetened with sugar. You may need to increase the amount of baking powder and baking soda.

One packet of stevia is almost 1/2 teaspoon. Although the strength of stevia sweeteners vary from one brand to the next, brands high in steviosides will yield a sweeter taste without the bitterness. When using stevia with less than 90 percent steviosides reduce the amount listed in the chart by 30 percent. The final product will not be as sweet, but you'll avoid a bitter taste. Most stevia products are labeled with the percent to stevioside.

**NOTE:** Although there are reports of the medicinal properties of stevia, there is no scientific evidence to prove these claims.

### Strawberry Smoothie

#### Ingredients:

- 1 cup fresh or frozen strawberries, whole
- 1 very ripe banana
- 1 (6-ounce) container plain nonfat yogurt
- 1 packet or 1/2 teaspoon stevia
- 1/4 teaspoon vanilla
- 1/2 cup orange juice

Blend all ingredients together.

Serves 4.

#### Nutrient Information:

Calories – 70; (Calories from fat – 0); Total fat – 0g; Sodium – 25mg; Carbohydrate – 16g; Dietary fiber – 2g; Protein – 2g

### Chocolate Chip Cookies

#### Ingredients:

- 2/3 cup plus 1 Tablespoon all purpose flour
- 4 packets stevia or 2 Tablespoons plus 2 teaspoons bulk
- 2 Tablespoons honey
- 1 egg
- 1/2 teaspoon vanilla
- 4 Tablespoons butter
- 1/4 teaspoon baking soda
- 1/4 cup semi-sweet chocolate chips
- 1/4 cup pecans, toasted

#### Directions:

1. Preheat oven to 325°F.
2. Mix stevia, honey and egg until creamy.

3. Soften butter in microwave until almost melted. Add to mixture.
4. Add all other ingredients and mix.
5. Stir in chocolate chips and nuts.
5. Bake at 325°F for 8 to 10 minutes.

Yield: 1 dozen cookies.

*Nutrient Information:*

Calories – 110; (Calories from fat – 60); Total fat – 7g; Saturated fat – 3.5g; Cholesterol – 30mg; Sodium – 60mg; Carbohydrate – 11g; Dietary fiber – <1g; Protein – 2g

**Soft and Sweet Dinner Rolls**

*Ingredients:*

- 1 cup milk
- 5 Tablespoons butter
- 2 eggs
- 3 teaspoons stevia blend or 6 packets of stevia
- 1 teaspoon salt
- 4 cups all purpose flour
- 2 1/2 teaspoons yeast

*Directions:*

1. In a large mixing bowl, combine 2 cups of the flour and all the yeast.
2. In a small sauce pan, mix milk, stevia, butter and salt. Stirring constantly, heat until warm and butter is almost melted. Add to flour mixture. Add eggs to flour mixture. Beat with an electric mixer on low for 30 seconds, scrap-

ing bowl constantly. Beat on high speed for 3 minutes. Using a wooden spoon or dough hook, add enough of the remaining flour to make a slightly sticky dough. Turn dough out onto a lightly floured surface. Knead in enough flour so that dough is no longer sticky. Shape into a ball. Place dough into a greased bowl; grease dough completely. Cover and let rise in a warm place until double in bulk, about 1 hour.

3. Punch dough down. Turn out onto a lightly floured surface. Divide dough in half. Cover and let rest for 10 minutes. Shape dough into desired shape. Cover and let rise in a warm place until nearly double, about 30 minutes.
4. Bake in a 375°F oven for 12 to 15 minutes or until golden brown.

Yields 18 rolls.

*Nutrient Information:*

Calories – 130; (Calories from fat – 35); Total fat – 4g; Saturated fat – 0.5g; Cholesterol – 25mg; Sodium – 150mg; Carbohydrate – 21g; Dietary fiber – 1g; Protein – 6g

**Acknowledgment**

Information for this NebGuide was partially compiled by UNL student Trina Goodrich. Recipes were tested by Ruby Mo, a UNL dietetics student.

UNL Extension publications are available online at <http://extension.unl.edu/publications>.

**Index: Foods & Nutrition**

**Nutritive Value of Foods**

Issued September 2006

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

University of Nebraska–Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.