



## **STEVIA REBAUDIANA : A RAY OF HOPE FOR DIABETICS**

**Dhokchawle .B., Roji Koshy Chandy., Divya Vijayan., Chotia .S.,**

### **Abstract**

In the present review, a well-known medicinal herb, \*Stevia rebaudiana\*, is studied. \*Stevia\* is cultivated more in East Asia, including China. It possesses antibacterial, antifungal, anti-inflammatory, and hypoglycemic properties. This herb has been used in Ayurveda in India for centuries. \*Stevia\* is a perennial herb belonging to the family Asteraceae. The leaves of this plant produce zero-calorie, high-potency sweetener which is a substitute for sucrose, being about 300 times sweeter than sucrose. Stevioside and rebaudioside give \*Stevia\* its taste. Additionally, India is the largest consumer of sugar in the world. It is safe for diabetics, as it does not affect blood sugar levels and has no neurological or renal side effects. Steviol is the basic building block of \*Stevia\*'s sweet glycoside rebaudiosides. In the digestive tract, rebaudiosides are metabolized into stevioside. Then, stevioside is broken down into glucose and steviol. The glucose released in this process is used by bacteria in the colon and not absorbed into the bloodstream. Steviol cannot be further digested and is passed from the digestive system in urine or feces. It is used in beverages, bakery, and confectionery. Along with this, \*Stevia\* also has the potential to cure several ailments like hypertension, diabetes, and antimicrobial. So, \*Stevia\* can be used as a substitute for several sweeteners like sugar and aspartame, which have several drawbacks."

### **Introduction**

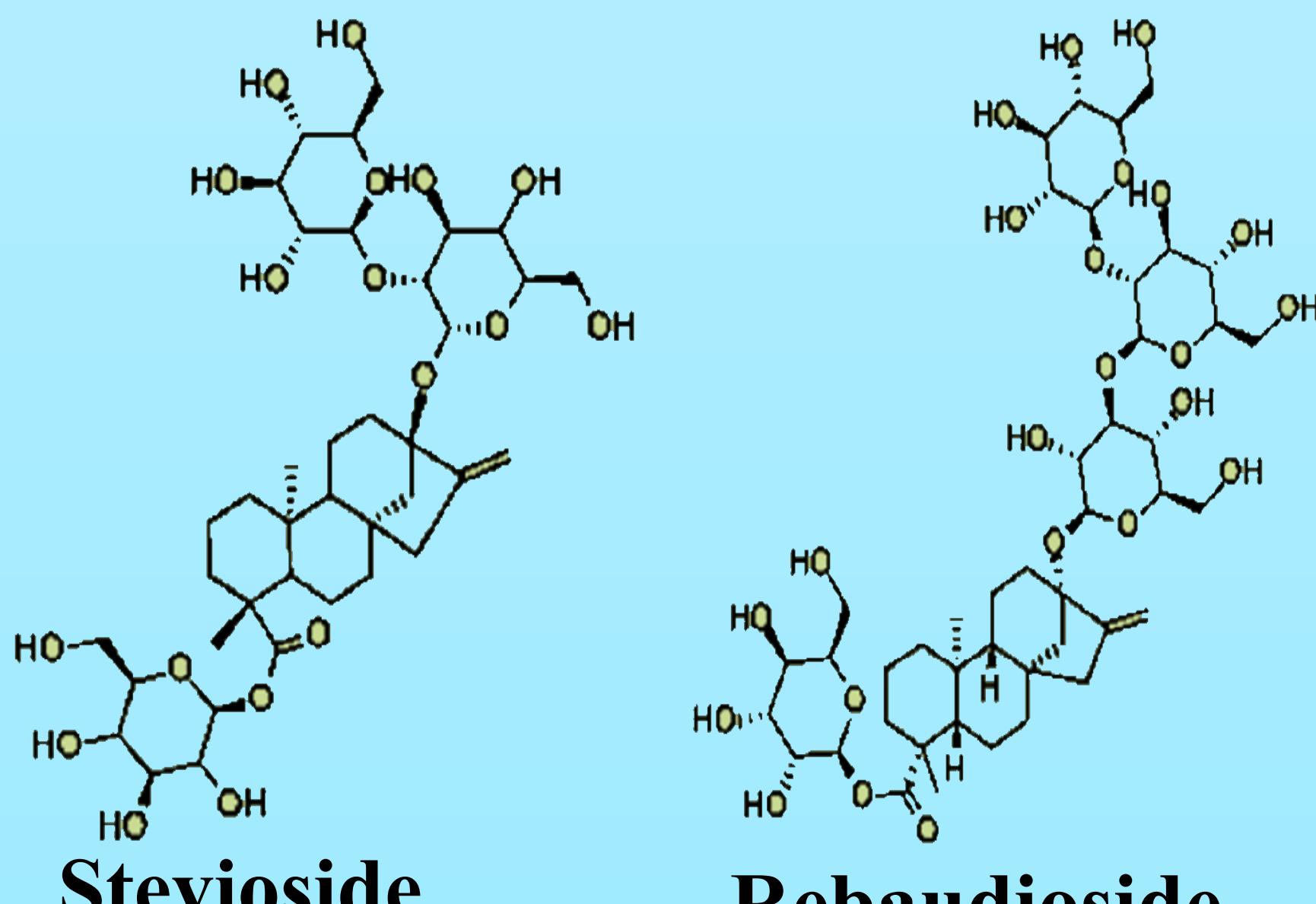
- Stevia is 300 times sweeter than sucrose
- Stevioside & Rebaudioside gives stevia the taste
- It contains 10 – 12% stevioside
- 50grms of stevia can replace 1000grms of cane sugar.
- Member of Asteraceae (Sunflower Family)
- Grows 65-80 cm tall
- Typically found in semi-dry mountainous environments & grasslands
- Simple, opposite green sessile leaves
- Stem, branches, & leaves are covered with short, fine whitish hairs
- All green parts taste sweet
- Prefers well-drained non-saline soil with pH 6.5-7.5
- *Antibacterial, antifungal, anti-inflammatory, and hypoglycaemic*
- Current Status In India Hahnemann Charitable Mission Society has started cultivation of stevia in Rajasthan in Nov 2012

### **Extraction and isolation**

1 L boiling water + 50g stevia leaves  
 Room temp for 1 hr ↓ INFUSION  
 Vacuum Filtered  
 ↓  
 Take in separating funnel + isobutanol (1:1)  
 ↓  
 Phase Separation  
 ↓  
 Butanolic extract is centrifuged at 3500 rpm for 15mins  
 ↓  
 Percolated from bed of carbon at 80°C  
 ↓  
 The Extract is then concentrated by rotary evaporator to obtain crude product  
 Recrystallized with methanol finally



### **Chemical constituents**



### **Comparison Chart**

Granulated sugar	Stevia leaf powder	Stevia white extract
1 teaspoon	1/8 teaspoon	Dust on spoon
1 tablespoon	3/8 teaspoon	1/2 pinch
1/4 cup	1/2 teaspoon	Pinch
1/2 cup	1 tablespoon	1/8 teaspoon
1 cup	2 tablespoons	1/4 teaspoon
3.75 pounds	7.2 ounces	0.3 ounces
10 pounds	19.2 ounces	0.8 ounces

### **Mode of action**

- ❖ In the digestive tract *rebaudiosides* are metabolised into *stevioside*. Then stevioside is broken down into *glucose* and *steviol*. The glucose released in this process is used by bacteria in the colon and not absorbed into the blood.
- ❖ Stevia, induces the *beta cells* of pancreas to produce more insulin..

### **Application**

- Soft drinks and fruit juice Jams, sauces and pickles
- Table top sweetener for tea, coffee and beverages
- Weight-watchers diets Pastries, pies, baking
- Ice cream, yoghurts, sherbets , Alcoholic beverage
- Jellies and desserts , Chewing gum
- Candies and confectioneries
- Diabetic diet
- Sea foods and vegetables



### **Advantages**

- ❖ Natural sweetener
- ❖ it can also Maintains the blood pressure
- ❖ It has no risk of causing cancers
- ✓ Why not to use **sucrose (cane sugar)** ?
- ❖ Cane sugar increases blood glucose level and causes Diabetes .
- ✓ Why not to use **Aspartame** and **Saccharin** ?
- ❖ Aspartame is *neuro-toxic drug* .
- ❖ Saccharin is *carcinogenic* .

### **Conclusion**

Presently Stevia finds its use as a natural sweetener, hence replacing the chemical sweeteners and even table sugar. With huge share of population being diabetic, food industry will be entirely focused on stevia sweeteners. In the years to come, the sweet honey leaf herb is likely to become the major source of high potency sweetener

### **Reference**

- ❖ Goyal, S. K., Samsher, and Goyal, R.K. 2010. Stevia (*Stevia rebaudiana*) a bio-sweetener: a review. *Intl. J. Food Sci. and Nutr.* 61(1): 1-10.
- ❖ Guens, J. C. 2003. Stevioside. *Phytochemistry*. 64(5): 913-921.
- ❖ Health Canada. 2011. Frequently Asked Questions "FAQs" on Stevia [online]. Available from <http://www.hc-sc.gc.ca/>. [accessed 10 March 2011]