

## Review Article

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## A Review on Stevia (*Stevia rebaudiana*): A Medicinal Plant

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### ABSTRACT

Plants are one of the most important source of medicine. Stevia is perennial herb that belongs to Astaraceae family. It is natural sweetener plant & is 300 times sweeter than cane sugar. It is native to Paraguay & Brazil. It is also called as the sweet herb of paraguay. The major constitutes identified were the steviol glycosides. Its nutritional value benefits both the young & old ones. Stevia is belived to have antiglycemic antiseptic antibacterial, antimicrobial, anticancer activity & also be used in stomach upset, indigestion, weight loss, heart burn, etc. It is expected that it will generate hope for diabetic people who have craze to eat sweet.

**Key-words:** Stevia leaves, Natural, Sweetner, stevioside rebaudioside, medicinal use.

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## Introduction

Stevia, the nature's delightfull gift belongs to the family Asteraceae. *Stevia rebaudiana* Bertoni, is a naturally sweet plant without calorie content, becomes an effective alternative to sugar especially with in diabetic population across the world. (WHO, 2011). Stevia is a native to South America (Paraguay, Brazil). *Stevia rebaudiana* is a small bush growing up to 65- 80 cm tall, oppositely arranged leaves. Stevia is a semi-humid subtropical plant that can be easily grown like other any vegetable crop . The pH required for stevia plant should be 6.5-7.5; well-drained red soil and sandy loam soil. There is increase in demand for stevia plant in india for cultibvation purpose. Diterpene glycosides are the group of glycoside that have been extracted from Stevia. The leaves of Stevia plants contain 0.3% dulcoside, 0.6% rebaudioside C, 3.8%rebaudioside A and 9.1% stevioside. From most of the previous study, Stevia has been reported to have no any adverse effect on humans <sup>[1,2]</sup> Stevia rebaudiana (Bert.) Bertoni has recently found use in the food and pharmaceutical industries. Historically, Stevia is an endemic herb that grown in the highlands of Paraguay and the Brazilian for use as a sweetener and herbal remedy <sup>[3]</sup>

## Common Name of Stevia rebaudiana

Stevia, candy leaf sweet leaf of Paraguay, sweet-herb, honey yerba, honey leaf, yaawaan,

## Vernacular Names

Hindi: meethi patti

English: Sweet leaf, Honey leaf, Sweet herb

French: Stévia or Stévie

Marathi: Madhu Parani

Sanskrit: Madhu Patra

Tamil: Seeni Tulsi

Telugu: Madhu Patri



Figure 1: *Stevia rebaudiana* (Leaves, Flower, Fruit )

## Geographical Distribution

Stevia is originating to the northern regions of South America. Stevia is still found growing wild in the highlands of the Iguacu and Amambay districts (area between Brazil and Paraguay). It is estimated that 200 species of Stevia are indigenous to South America; however, no other Stevia plants have exhibited the same intensity of sweetness as *S. rebaudiana*. It is grown widely in many parts of Uruguay, Paraguay, Brazil, Thailand, Central America, China, and Israel

### **Taxonomical classification**

Kingdom: Angiospermae  
Class: Dicotyledons  
Group: Monochlamydae  
Order: Asterales  
Family: Asteraceae  
Subfamily: Asteroideae  
Tribe: Eupatorieae  
Genus: Stevia  
Species: rebaudiana

### **Cultivation**

*Stevia* is mainly propagated by stem cuttings procedure. Stem cuttings of plant should be 3-4 inches long and having two or three buds arises from plant axis. Rooting of plant can be increased by using various rooting hormones. *Stevia* prefers a well-drained fertile sandy loam soil high in organic matter. It prefers lighter acidic to neutral (pH 6-7) soil for better growth. It requires a constant supply of water but excessive amount of water causes stem disease. *Stevia* during very hot and long summer days requires shade. Summer season favours the growth of *stevia*. Temperature range required for plant is 24 to 35 degrees with suitable soil. It is a short day plant & flowering from January to March.<sup>[4]</sup>

### **Plant description**

*Stevia* is a perennial shrub that grows up to 1m tall and has leaves 2-3 cm long. Fig 1

Leaves –Sessile Green in colour.

Odour- odourless.

Taste- sweetish

Size- 5 cm in length and 3 cm in width

Shape- ovate

Extra features- leaves acuminate petiolate, faces are glabrous

Flower- white, throats funnel form lobes 5.

### **Chemical Constituents**

*Stevia* it contains 100 phytochemicals. It is rich in terpenes and flavonoids. The two glycosides of *Stevia* are stevioside (5% - 10%) and rebaudioside-A (2% - 4%). Due to the non-caloric and sweetening properties, stevioside has increased their use.<sup>[5]</sup> Other sweet constituents include steviolbioside, rebaudiosides A-E, dulcoside A, and. *Stevia* has some bitter taste due to presence of tannins, flavonoids, essential oils. The chemicals presents with in *stevia* are: apigenin, austroinulin, avicularin, caffeic acid, beta-sitosterol, , caryophyllene campesterol, chlorogenic acid centaureidin, daucosterol, chlorophyll, cosmosiin, cynaroside, diterpene glycosides, dulcosides A-B, foeniculin, formic acid, , gibberellin, gibberellic acid, indole-3- isoquercitrin, acetonitrile, isosteviol, jhanol, kaempferol, kaurene, lupeol, polystachoside, luteolin, quercitrin quercetin, rebaudioside A-F, sterebin, scopoletin, A-H, steviol, steviolbioside, steviolmonoside, stevioside, stigmasterol, umbelliferone, stevioside a-3, and xanthophylls.

### **Pharmacological Profile**

A scrutiny of literature gives some important pharmacological activities of the plant such as hypotensive, heart tonic action, antidiabetic, antimicrobial antioxidant anti-inflammatory, antihypertensive, anticancer, antibacterial, anti-lipid & anti-Obesity

#### **1) Hypotensive**

*Stevia* has hypotensive activity. Studies suggest that crude stevioside having antihypertensive effect on previously untreated mild hypertensive patient. The results suggest that oral crude stevioside is safe for tolerability during long term use as a sweetener in Brazil.<sup>[6]</sup>

## 2) Heart Tonic Actions:

Stevia shows heart tonic activity on smooth muscle of isolated guinea pig ileum by using a hot water extract of the stem of *Stevia rebaudiana* [7]

## 3) Anti-diabetic Actions & Antioxidant Action

*Stevia rebaudiana* Bertoni has been used in the treatment of diabetes in Brazil. The result gives a reduction in blood glucose, ALT and AST, and increase in insulin level. Stevia leaves protect rats against diabetes, decreases the risk of stress and ameliorate liver and kidney damage. It also shows antioxidant action [8]

## 4) Antimicrobial & Larvacidal Actions:

It also revealed, the antimicrobial activity of *Stevia rebaudiana* Bertoni leaf extracts against a large number of microorganisms (*Streptococcus* (n= 12) and *Lactobacillus* (n= 4)) by the well diffusion method. In case of this zone of inhibition also studied. [9]

**5) Anti-inflammatory & Immune Modulation Actions:** Taken together, our results suggest that anti-inflammatory effect of stevioside against the LPS-induced acute lung injury occurs due to of inhibition of the NF- $\kappa$ B signaling pathway. Stevioside may be used as a therapeutic reagent for acute lung injury treatment [10]

## 6) Antiobesity effect

This study suggested that effect of stevia extract on lipid profiles in C57BL/6J mice. For this purpose forty mice were divided into four groups: N-C (normal diet and distilled water), H-C (high-fat diet and distilled water), H-SC (high fat diet and sucrose, 1 mL kg<sup>-1</sup> per day), and H-SV (high-fat diet and stevia extract, 1 mL kg<sup>-1</sup> per day). Stevia extract has an anti-obesity effect on high-fat diet induced obese mice [11]

**7) Anticancerous Actions:** The leaves of *Stevia rebaudiana* contains stevioside as a diterpene glycoside which shows the antitumour activity. This is the first report which indicates that Stevia is acting as anticancerous agents especially against the breast cancer. [12]

## Marketed preparations

- 1) So Sweet 400 Stevia Tablets
- 2) So Sweet 200 Stevia Tablets
- 3) SPFF Stevia (25ML) natural sweetner drops.
- 4) Stevia Based Powder - 50 Sachets (Pack of 4)
- 5) Stevia Rebaudiana Sweet leaf Sugar Herb Flower Seeds (20 Nos) V-093 x 2
- 6) Truvia® Stevia Leaf Extract
- 7) Truvia® Stevia Leaf Extract Agglomerated Blends
- 8) Truvia® Stevia Leaf Extract Agglomerated

## Conclusion

Stevia leaves are leafy vegetable that belongs to family Asteraceae. The various important pharmacological activities of the plant such as antibacterial, anti-inflammatory, antihypertensive, anti fertility, antidiabetic, antiseptic, anticancer, Anti-lipid & Anti-Obesity activities. The chemical composition of the fresh leaves of the Stevia consists of glycosides, terpenes and flavonoids have been isolated from leaves & roots of sweet herb. Thus Stevia leaves are effective natural medication to develop new lead compound by clinical investigation.

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