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Review Article

STEVIA AS A NATURAL SWEETENER

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ABSTRACT

Stevia is dried roots and leaves of *Stevia rebaudiana*, Family-Asteraceae, native to Paraguay and Brazil. It is commonly known as sweet leaf of Paraguay, honey leaf, candy leaf etc. The leaf is 10 times sweeter that refined sugar but contains no carbohydrates or calories. Steviol is sweet diterpenoid glycosides and 300 times sweeter than sucrose. Steviol is safer when used as sweetener. It is suited for diabetic and obese person. It may be advantageous in the later of type 2 diabetes. It also showed antibacterial, antiseptic, anti-inflammatory, anti-fertility, hypotensive, diuretic and cardiotonic property. It has shown good results in clearing up skin problems like acne, dermatitis, eczema etc. Steviol regulate blood glucose level by enhancing not only insulin secretion but also insulin utilization in insulin deficient animal. It is also used as digestive tonic. It is expected that it will bring a hope for diabetic people who have craze to take sweet.

Keywords: Glycosides, Sweetener and Diabetic.

INTRODUCTION

Stevia is a natural sweetener and it is cholesterol free. India's total sugar demand is likely to go up to 235 million tone this year as against the estimated output of 16 million tone for 2009-10 season. The recurring shortage scenario for sugar point is needed to focus on Stevia cultivation in India in a big way.

Of the total demand for sugar in India, around 70% of the sugar is reported to be used for industrial purposes namely soft drinks, chocolates, beverages, ice creams etc. this means that only around 30% of the sugar is used for household consumption.

Stevia can certainly be used as substitute for sugar particularly for industrial purpose. One kilogram of Stevia is around 200 times sweeter than one kilogram of granular sugar and Stevia provides zero calories.

The refined extract of Stevia contain 85% to 95% 0f stevioside which is in liquid or natural creamy off white colour powder form which is 200 to times sweetner than sugar.

Global Scenario

It is native of Paraguay and brazil. Stevia is cultivated primarily in south America and asia. Countries growing Stevia include Paraguay, brazil, Canada, USA, china, korea, taliwan, japan, and united kingdom.

Worldwide, more than 100000 hectares are reported to be covered under Stevia cultivation of which china has a major chunk.

In September 1995 the USA FDA allowed Stevia and it is extracted to be imported as a food supplement but not as a sweetner.

Major food companies like coca cola and beatric foods used Stevia extracts to sweeten the foods for sale in japan, brazil and other countries.

Indian Scenario

Stevia has huge demand potentials in india, since it is a natural sweetner without calories, particularly considering the huge diabetic population in india.
Though Stevia is cultivated in india at present, but it is only in a few hundred hectares and the production is very negligible.
All india import of Stevia exart is around 5 tonnes per annum.
Stevia production, particularly considering the fact that it is at least 200 times sweetner than sugar, will elegantly meet the requirement of pharmaceutical industries and soft drink industries in india.

PLANT PROFILE
These are the plant obtained from the dried roots and leaves of plant ***Stevia rebaudiana*** belongs to the family asteraceae.
About 240 species are found,

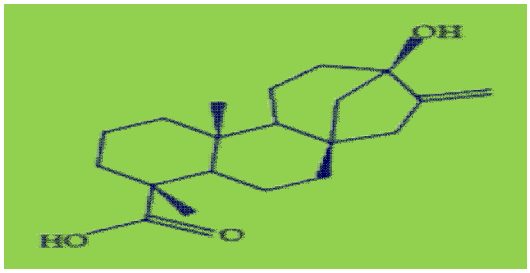
1. S. anisostemma
2. S. bertholdii
3. S. crenata
4. S. dianthoidea
5. S. enigmatica
6. S. eupatoria
7. S. lemmonii
8. S. micrantha
9. S. ovate
10. S. plummerae
11. S.salicifolia
12. S. serrata
13. S. vircida

Common Name of Stevia rebaudiana
Stevia, sweet leaf of Paraguay, kaa jheéé, azucacaa, eira-caa, sweet-herb, honey yerba, honey leaf, yaa waan, candy leaf

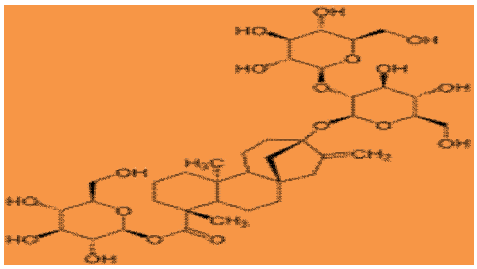
Taxonomical classification
Kingdom- plantae
Order- asterace
Family- asterceae
Tribe- eupatoricae
Genous- Stevia

Plant description
Stevia is a perennial shrub that grows up to 1 m tall and has leaves 2-3 cm long. Fig 1
Leaves colour- Green
Odour- none
Taste- sweet
Size- 5 cm in length and 3 cm in width
Shape- ovate
Extra features- leaves petiolate, acuminate, faces are glabrous, planted cross wise
Flower- white, throats funnel form lobes 5.

Chemical constituent of stevia rebaudiana
Over 100 photochemical have been discovered in Stevia now. but it is rich in terpenes and flavonoids. It consists of eight glycosides named as stevioside, steviolbioside, rebausiosides A-E, and dulcoside A. total sweet glycoside concentration as stevioside(5-10%), rebaudioside(1-2%), pulcoside-A(0.4-0.7%). Of these eight glycoside one called stevioside which is 300 times sweeter than sugar.



Steviol



stevioside (glucose molecules attach with steviol structure)

Tribal and herbal medicine uses
For hundred of year, indigenous peoples in Brazil and Paraguay has used the leaves of Stevia as a sweetener. The Guaraní Indians of Paraguay call it kaajhee and have used it as sweeter their yerva mate tea for centuries. They have also used Stevia to sweeten other teas and food and have used it medicinally as a cardio tonic, for obesity, hypertension and heartburn and also to help lower uric acid level.
In addition to being a sweetener, Stevia is considered to be hypoglycemic, diuretic, cardio tonic and tonic. The leaf is used for diabetics, obesity, hypertension, fatigue, depression, sweet cravings and infection.

PHARMACOLOGY PROFILE

Diabetes Animal Data

Stevia may be helpful in treating diabetes. Steviol, isosteviol and glucosteviol decreased glucose production in rat renal cortical -- Stevioside lowered blood glucose in type-II diabetic in fatty rats when given orally.

Hypertension

Stevia effects on blood pressure have been reported. The plant may have cardiotonic actions, when normalize blood pressure and regulate heart beat. The plant displayed vasodilatory actions in both normotensive and hypertensive animals. Stevia has also produced decreased in blood pressure and has increased diuretic and natriuretic effects in rats.

Functional Use

1. It is used as a natural sweetener, for diabetics, for high blood pressure.
2. For cavity prevention, as a weight loss aid.
3. It also shows antibacterial, ant fertility, anti-inflammatory, antiseptic properties.
4. It has also digestive tonic properties and also shows good results in cleaning up skin problems like acne, seborrhea, dermatitis, eczema etc.

Traditional preparation

Sugar substitute (About 1/4 teaspoon of the natural ground leaves is the equivalent to about 1 teaspoon of sugar).

CONCLUSION

There is need for creating awareness among the people about the availability / nutritional and therapeutic values of natural low calorie Sweetener "*Stevia rebaudiana*". The consumers demand for herbal foods may encourage Stevia cultivation and production and would help to enjoy the sweet taste with minimal calories for those who have to restrict carbohydrate / sugar in their diet.

Fig. 1: Stevia Herb

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