

Bio-Sweetener (*Stevia Rebaudiana Bertoni*): Boon for Rural India



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Abstract

Sugar and its products are the most important additional part of our diet (taste) especially in rural areas. The increase, sugar amount in body causes several diseases such as diabetes. To, the taste addicted person, it is very difficult to replace tasty products particularly sweets but some medicinal plant parts are used as alternate of sugar; *Stevia rebaudiana* (Bertoni) is one of them. It is an herbaceous perennial plant which belongs to family *Asteraceae*, contains stevioside, natural sweetener. This plant is cultivated in some parts of India and is a rich source of crude protein i.e 16% in leaves and 6% in stem with low fat content. This plant can be a very good source of health and income.

Keywords: Rural; *Stevia*; Stevioside; Diabetes; Medicinal Plants

Introduction

Sugar is one of the most important components of daily life which is obtained from two major sources. One source is sugarcane which is cultivated in tropical or sub-tropical regions of the world and another one is sugar beet, in temperate regions. In the production of sugar, dominance of sugarcane is noteworthy. India is the second most country of globe in the production and consumption of sugar which is approximately 16 percent of world. Apart from these aspects sugar is also known for causing diseases, especially diabetes. Moreover Nancy Appleton has reported 141 diseases caused by sugar due to suppression of immune system [1], increase in reactive oxygen species (ROS) [2] and reduction of stability of body against bacterial infection [3]. Excess consumption of sugar can also lead to several conditions such as ovarian cancer [4], causes copper deficiency [5], hypoglycaemia [6] and heart diseases [7] etc. The aforesaid risk of sugar can be reduced by using some natural alternatives. *Stevia rebaudiana* is one of the alternatives to that of sugar. *Stevia rebaudiana* Bertoni is a well-known medicinal plant and has unique properties.

Cultivation

It is mostly used in diabetes and belongs to family *Asteraceae*. The plant is native of South America specially Paraguay and Brazil [8]. *Stevia* can be grown easily in semi-humid subtropical condition, red and sandy loam soil with pH 6.5 to 7.5. In India, *Stevia* is cultivated in some parts of Rajasthan, Maharashtra,

Kerala and Orissa [9]. The seeds of this plant remain viable for a restricted time and having a very low germination rate with heterozygous species.

Classification/Taxonomical Position



Figure 1:

Kingdom: *Plantae*

Class: *Dicotyledons*

Sub class: *Polypetalae*

Series: *Thalamiflorae*

Order: *Asterales*

Family: *Asteraceae*

Genus: *Stevia*

Species: *Rebaudiana* (Figure 1).

Uses of *Stevia rebaudiana* Bertoni

Stevia leaves are big source of stevioside and rebaudioside [10] in which stevioside; a chief source is 300 times sweeter than sucrose at 0.4% solution [11]. The *Stevia* leaves can be used as a potential source for substitution for sugar in the form of stevioside and extract of *Stevia* leaves. South American people have been using leaves of *Stevia* in place of sugar [12]. So, for the human welfare and clinical microbiology, there is a need to have enhanced production of *Stevia* plants. The required yield can be achieved by huge production of *Stevia* to meet the current demand. *S. rebaudiana* cultivation in large scale can be produced by the use of some eco-friendly bio inoculants.

Conclusion

A majority of people are facing the problem of diabetes which has been a big issue in present scenario, ultimately drawing the attention towards its management. Available traditional remedies are either costly or having severe side effects. Few medicinal plants provide better cure as they are inexpensive, less-toxic, reliable and efficient when compared to others and *S. rebaudiana* is one of them which exhibited very good antioxidant activity too.

References

1. Sanchez A, JL Reeser, HS Lau, PY Yahiku, RE Willard, et al. (1973) Role of Sugars in Human Neutrophilic Phagocytosis. *Am J Clin Nutr* 261: 1180-1184.
2. Mohanty, Hamouda W, Garg R, Aljada A, Ghanim H, et al. (2000) Glucose Challenge Stimulates Reactive Oxygen Species (ROS) Generation by Leucocytes. *J Clin Endocrin Metab* 85(8): 2970-2973.
3. Ringsdorf W, Cheraskin E, Ramsay R (1976) Sucrose, Neutrophilic Phagocytosis and Resistance to Disease. *Dental Survey* 52(12): 46-48.
4. Takahashi ET (1982) University School of Medicine. *Wholistic Health Digest*. 41.
5. Fields M, Ferretti RJ, Smith JC Jr, Reiser S (1983) Effect of Copper Deficiency on Metabolism and Mortality in Rats Fed Sucrose or Starch Diets. *J Nutr* 113(7): 1335-1345.
6. Dufty W (1975) *Sugar Blues*. New York: Warner Books.
7. Yudkin J (1971) Sugar Consumption and Myocardial Infarction. *Lancet*. 6: 1(7693):296-297.
8. Sivaram L, Mukundan U. (2003) *In vitro* culture studies on *Stevia rebaudiana*. *In Vitro Cell Dev Biol Plant* 39: 520-523.
9. Goyal SK, Samsher, Goyal RK (2010) *Stevia (Stevia rebaudiana)* a bio-sweetener: a review. *Int J Food Sci Nutr* 61(1): 1-10.
10. Ahmed MB, Salahin M (2007) An efficient method for *in vitro* clonal propagation of a newly introduced sweetener plant *Stevia rebaudiana* in Bangladesh. *Am J Sci Res* 2: 121-125.
11. Geuns JMC (2003) Molecules of interest stevioside. *Phytochemistry* 64: 913-921.
12. Chatsudthipong V, Muanprasat C (2009) Stevioside and related compounds: therapeutic benefits beyond sweetness. *Pharmacol Ther* 121(1): 41-54.



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