GreenariA
Go Green, Learn Green
An Agricultural Monthly e-Magazine

Volume 03, Issue 07, 2025
ISSN: 2584-153X
Article ID: G-25-0711

STEVIA – THE SWEET GIFT OF NATURE FOR HEALTH AND WELLNESS

Neeraja A[1] and Yuvaraj K.M[2]

[1]Ph.D. Scholar, Department of Plantation, Spices, Medicinal and Aromatic Crops, Dr. YSRHU – College of Horticulture, Anantharajupeta, Annamayya Dist, A.P. 516105

[2]Principal Scientist and Head, Horticultural Research Station, Dr. YSRHU- College of Horticulture, Anantharajupeta, Annamayya Dist, A.P.516105

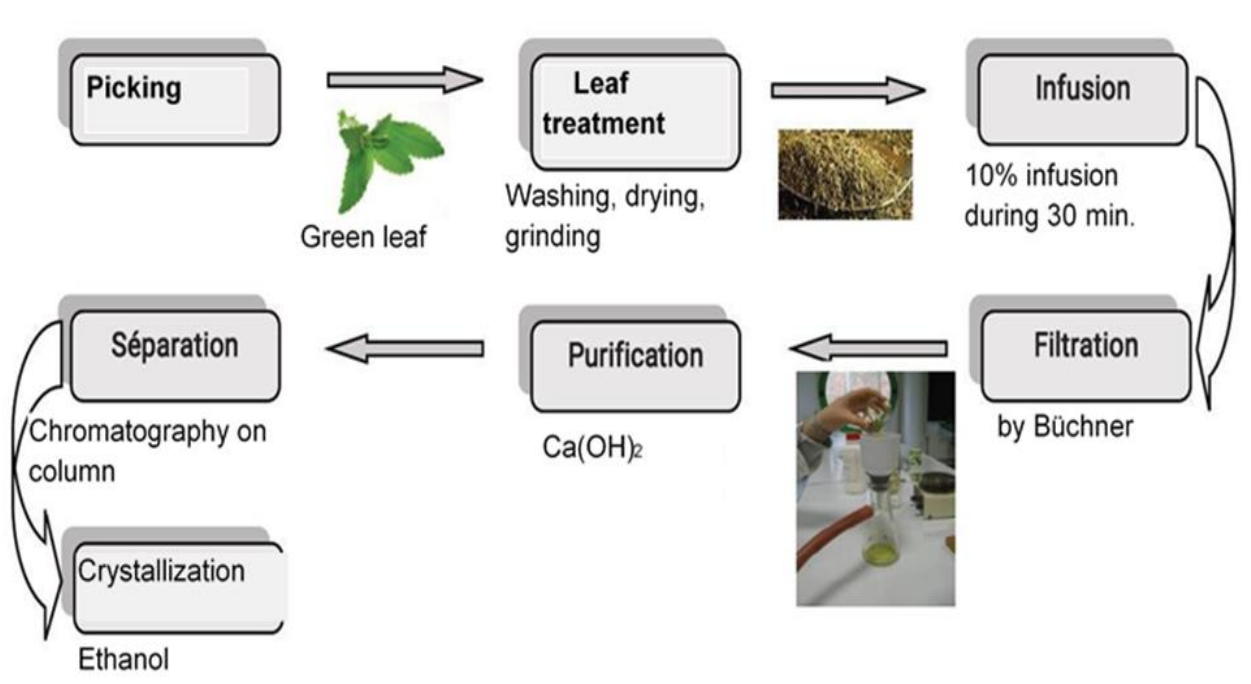
Stevia rebaudiana (Bertoni) Hemsl. (Syn. Eupatorium rebaudiana) is a slender, perennial herb belonging to the family Asteraceae. Commonly known as "honey plant" due to its natural sweetness, it is native to northeastern Paraguay, Brazil and Argentina. Over time, its cultivation has expanded across various regions in Asia, Europe and North America, including Canada. Traditionally, sugarcane (which accounts for about 60% of global production) and sugar beet have been the main sources of sugar. However, these conventional sugars are generally not recommended for people with diabetes because they influence blood glucose levels. In this context, Stevia has emerged as a highly suitable natural alternative. The leaves of *Stevia rebaudiana* are rich in potent sweetening agents such as stevioside (3–10%) and rebaudioside A (up to 13%), along with other rebaudiosides (B, C) and minor glycosides. These compounds not only impart intense sweetness—about 250 times that of table sugar and nearly 300 times sweeter than sucrose—but also possess potential insulin-modulating properties. Due to its non-caloric nature and high sweetening power, Stevia is increasingly replacing artificial sweeteners like Saccharin, Aspartame, Acesulfame-K, etc, in the food and beverage industries. Hence, stevia has been named as 'calorie-free bio-sweetener of high quality'.

USES:

- Stevia is widely used in various industries including confectionery, beverages, baking, medicines etc.,
- Used in the preparation of chocolates, biscuits, ice creams & candies.
- All types of cooked and baked foods, including puddings and desserts, can be sweetened using small amounts of stevia as a natural alternative.
- It has non-fermenting & non-browning property.
- Utilized in the production of chewing gums, breath mints and mouth fresheners.
- Used in the preparation of herbal medicines and tonics for diabetic patients.
- It promotes the healing of blemishes, wounds, cuts and minor abrasions.
- It also helps in reducing high blood pressure and the occurrence of colds and flu.

Harvesting:

The first harvest of the crop can be done three months after planting, leaving 5–8 cm of stem above the ground to support regrowth. Subsequent harvests can be made every 90 days, allowing for up to four harvests annually. After harvesting, leaves are stripped from the branches and shade-dried until a constant weight is achieved. Each harvest yields about 3.0–3.5 tonnes of dry leaves per hectare, totaling 10–12 tonnes annually. The stevioside content in dried leaves ranges between 3–10%.



Extraction of steviol glycosides:

The majority of commercial stevia leaf processing takes place in Japan, where numerous patents exist for extracting steviol glycosides. These extraction methods are broadly classified as solvent-based extraction, solvent combined with decolorizing agents, adsorption chromatography, ion exchange techniques and selective precipitation of specific glycosides.

Extraction process:

1. **Picking:** Picking or harvesting leaves is an important step that significantly influences the quality and yield of the final product.
2. **Washing:** After harvest, the leaves undergo careful inspection to eliminate any foreign matter. They are then thoroughly rinsed with clean tap water to ensure the removal of impurities and obtain a hygienic raw material.
3. **Drying:** The washed leaves are carefully arranged on aluminum trays and initially dried in the shade. To ensure complete removal of moisture, they are then exposed to a steady flow of air. This airflow not only facilitates thorough drying but also induces natural oxidation, leading to a change in the color of the leaves.
4. **Grinding:** The dried leaves are ground into a fine powder to facilitate further use or processing.
5. **Infusion:** A 10% infusion, made by steeping the leaf powder in water at 70 °C for 30 minutes, is recommended for optimal extraction of the sweetening compounds. For instance, 10 grams of leaf powder can be steeped in 100 milliliters of water.
6. **Filtration:** Buchner filtration is preferred, as it uses a vacuum to draw the liquid through the filter, efficiently separating the solid from the solution poured into the top chamber.
7. **Purification**: The resulting filtrate contains many suspended particles. To remove them, calcium hydroxide [$Ca(OH)_2$], commonly known as lime, is added as a flocculating agent.
8. **Separation:** Two ion exchange chromatography steps are required. The first is used to remove pigments and other soluble impurities, while the second specifically targets and binds the steviol glycoside molecules from the purified solution.
9. **Crystallization**: The extracted steviol glycoside powder is further purified through crystallization in ethanol, resulting in a solid, high-purity product. These processes rely solely on natural substances—calcium hydroxide, alcohol and water—without the use of synthetic solvents or chemical additives. As a result, the final product is free from residual solvents and any foreign chemical compounds.