

Sugar Leaf *(Stevia rebaudiana)*

**“A New Born Baby
of Sugar World”**

Dr. Shahid Afghan
Director SSRI, Jhang
shahid.afghan@shakarganj.com.pk



Outline

- **Background Information**
- **Story of Sweet**
- **What is Sugar Leaf (Stevia)**
- **Botany**
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- **Challenges**
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- **Global Trends**



PARB has funded a collaborative research project for worth of Rs. 25 millions

Project Title:

Development and Dissemination of Production technology of Sugar Leaf (Stevia reboudiana)

***Collaborating Institutions: ARI Faisalabad
 SSRI Jhang***

Duration of the Project: 05 Years (2010-15)

Story of Sweet

- Innate preference for sweet
- Sweet ingredients throughout history:
 - Fruits and vegetables
 - Honey
 - Maple syrup
 - Sugar cane, sugar beets
 - Agave
 - Rice
 - Corn



What is Stevia?



- **Natural, plant-based,**
- **Common names include:** stevia, sweet leaf, sweet herb of Paraguay, honey leaf, & sugar leaf
- **Used in Paraguay for centuries, Japan for decades (1889)**
- **Plant native to South America**
- **Naturally sweet compounds within the leaves**

What is Stevia?

Stevia sweeteners are:

- **100% natural**
- **Zero calories**
- **300-to 400 times sweeter than sugar**
- **Heat stable**
- **Does not promote tooth decay**
- **Safe for people with **diabetes****



Botany .

- Simple, opposite green sessile leaves
- Stem, branches, & leaves are all green & are covered with short, fine whitish hairs
- All green parts taste sweet
- Inflorescences are tiny white & purple disk florets



Field Crop Production



Challenges

Stevia seeds can't be used for cultivation, due to phenotypic variability and reduced leaf quality.

Stevia is highly susceptible to weeds in its first years due to its water requirements.

There are no effective herbicides for stevia, and weeding has to be done manually.

Stevia plants are vulnerable to a host of insects and diseases.

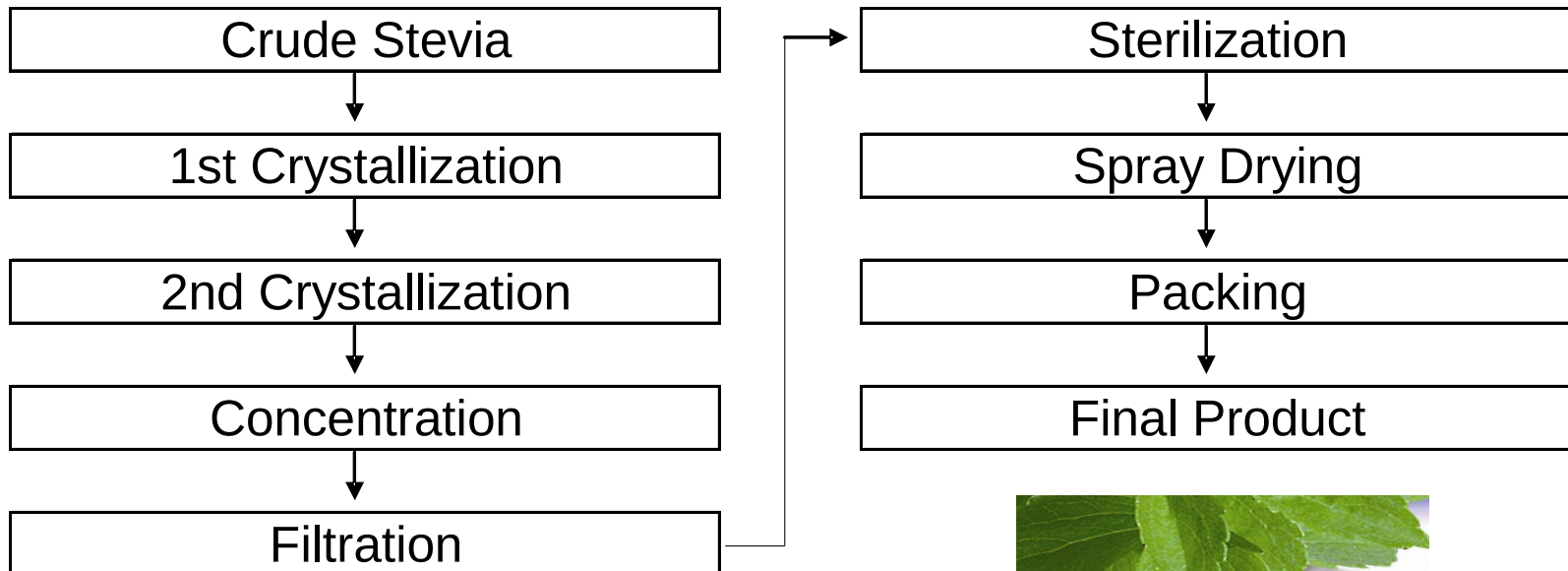
Stevia leaves have to be harvested carefully, to avoid stressing the plant.

Global Distribution



Paraguay, Brazil, Japan, China, Korea, Mexico, USA, Indonesia, Tanzania, & Canada

Extraction Process



Stevioside Introduction

An ideal sweetener in place of cane sugar.

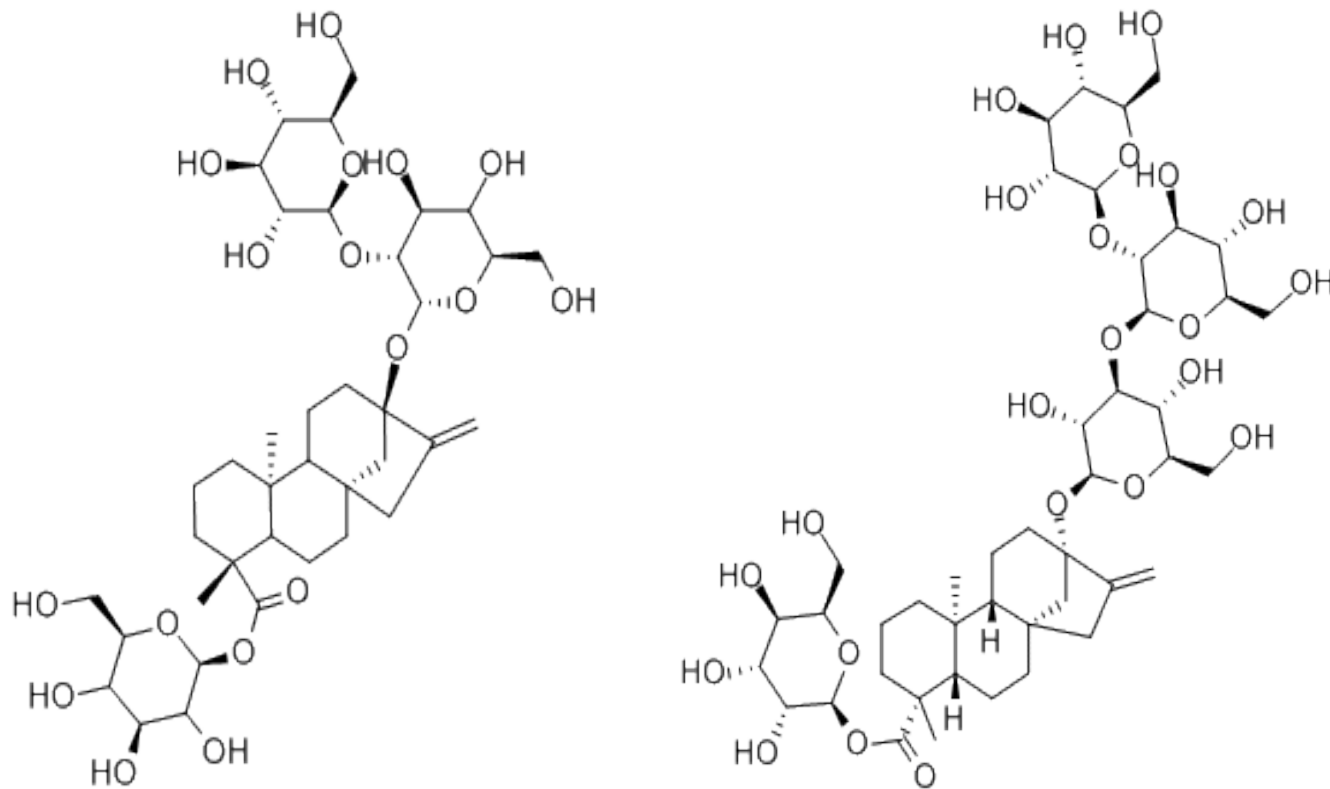
- >A natural low calorie sweetener
- >Taste is closest to that of cane sugar.

How come

- >> Natural sweetener
- >> Specifically for those in pursuit of health



Chemical structures



Chemical structure of stevioside (left)
and rebaudioside A (right)

Characteristics

SAFE : **Approved by WHO**

HEALTHY: **A nutritional food health supplement**

EFFICIENCY: **High stability to acid, alkali, heat and light**

Preservatives: **Inhibits bacterial growth.**



Commercial products



Coca-Cola®



Potential Uses

- **Soft drinks, tea**
- **Hot and cold cereals**
- **Yogurt**
- **Flavored milk**
- **Ice cream**
- **Salad dressing**
- **Baked goods**
- **Chewing gum**
- **Canned fruit and jams**

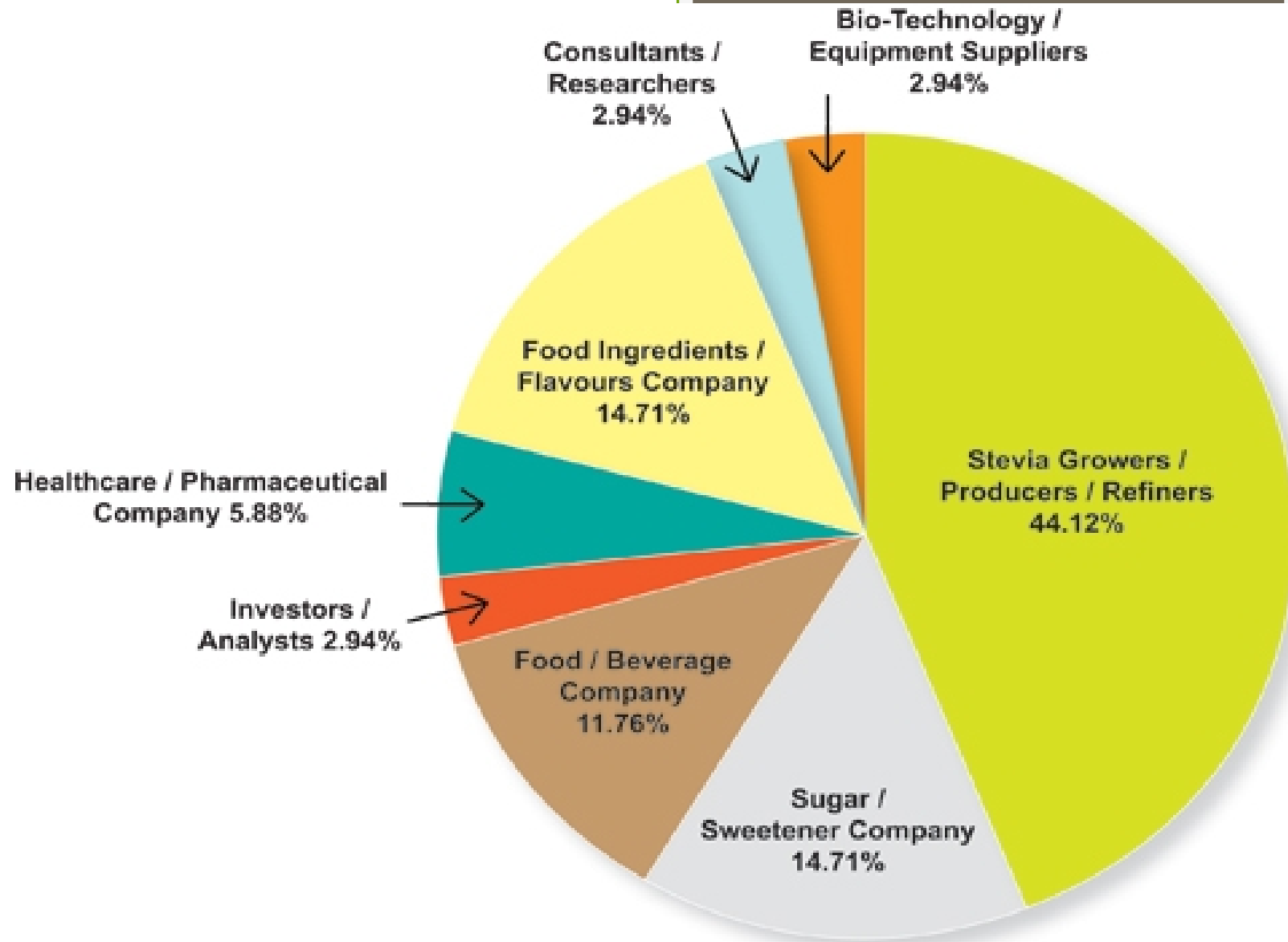


Safe for Diabetic Patients

Stevia is safe for animal and human.

Patients with diabetes found no changes in blood pressure and blood glucose.

Stevia is shown to have no effect on blood sugar and can replace sweet carbohydrate calories in the diet of Diabetic's.



Acknowledgments

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Questions ???