



# Working with Natural High Potency Sweeteners in New Product Development

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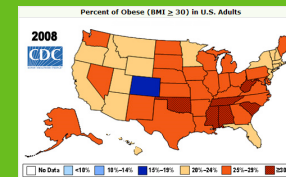
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“Naturally Sweetened” and  
“Reduced Calorie” are strong consumer drivers in  
recent years

- ❑ Health & Wellness
- ❑ Obesity & Weight Management



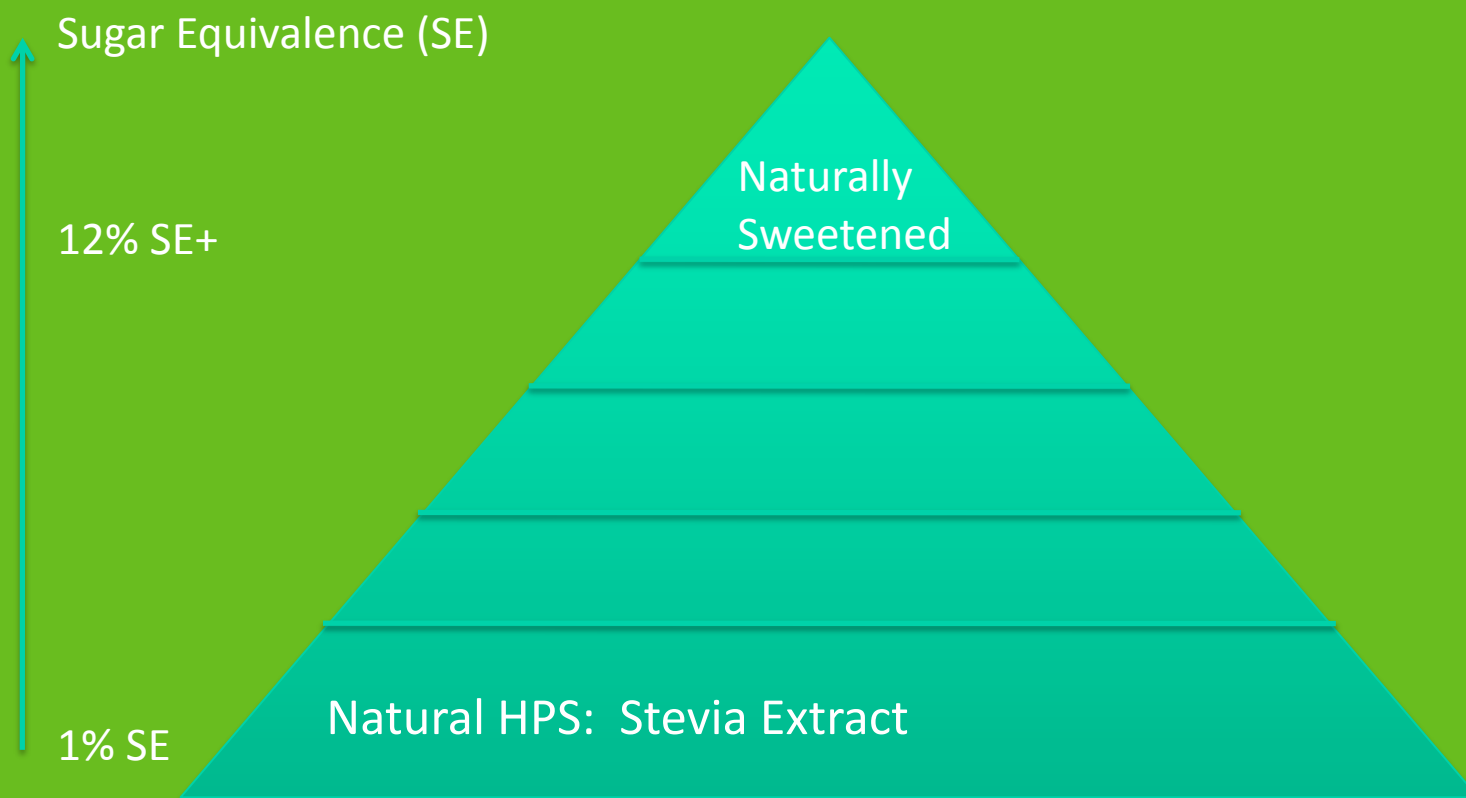
“Naturally Sweetened” is the best of both worlds  
which previously was not technically feasible with  
artificial high potency sweeteners



- ❑ Sugar: Great taste but caloric
- ❑ High Potency Sweeteners (HPS): Non caloric, but artificial

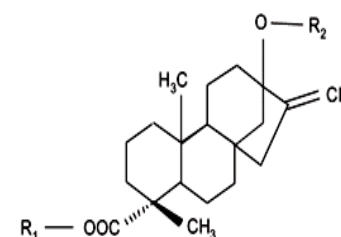


Start formulating “naturally sweetened” foods and beverages with high purity stevia extract which is currently the best natural HPS



# Rebaudioside A (Reb A, Stevia Extract): We can achieve moderate level of sweetness with high purity Reb A 97

- Natural
- GRAS: FDA No Objection Letter 2008
- Up to 300X as sweet as sugar
- Non caloric
- Low Glycemic Index
- Heat Stable
- pH Stable above 3
- Licorice and bitter when too much used
- Non GMO
- Kosher & Halal Certified
- Exceeds FDA GRAS Specifications (SGF Reb A97, >97% RA)



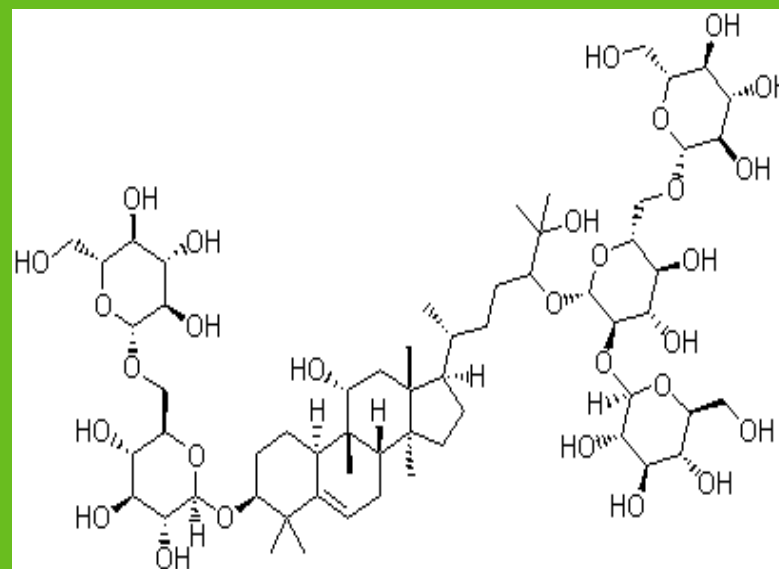
Diterpene glycoside	R <sub>1</sub> <sup>a</sup>	R <sub>2</sub> <sup>a</sup>	Sweetening potency (sucrose = 1)
Steviolbioside	H	glc <sup>2</sup> - <sup>1</sup> glc	100 – 125
Rubusoside	glc	glc	100 – 120
Stevioside	glc	glc <sup>2</sup> - <sup>1</sup> glc	150 – 300
Rebaudioside A	glc	glc <sup>3</sup> - <sup>2</sup> - <sup>1</sup> glc   glc	250 – 450
Rebaudioside B	H	glc <sup>3</sup> - <sup>2</sup> - <sup>1</sup> glc   glc	300 – 350
Rebaudioside C (dulcoside B)	glc	glc <sup>3</sup> - <sup>2</sup> - <sup>1</sup> rhg   glc	500 – 120
Rebaudioside D	glc <sup>2</sup> - <sup>1</sup> glc	glc <sup>3</sup> - <sup>2</sup> - <sup>1</sup> glc   glc	250 – 450
Rebaudioside E	glc <sup>2</sup> - <sup>1</sup> glc	glc <sup>2</sup> - <sup>1</sup> glc	150 – 300
Dulcoside A	glc	glc <sup>2</sup> - <sup>1</sup> rhg	50 – 120

<sup>a</sup> glc, β-D-glucopyranosyl; rhg, α-L-rhamnopyranosyl.

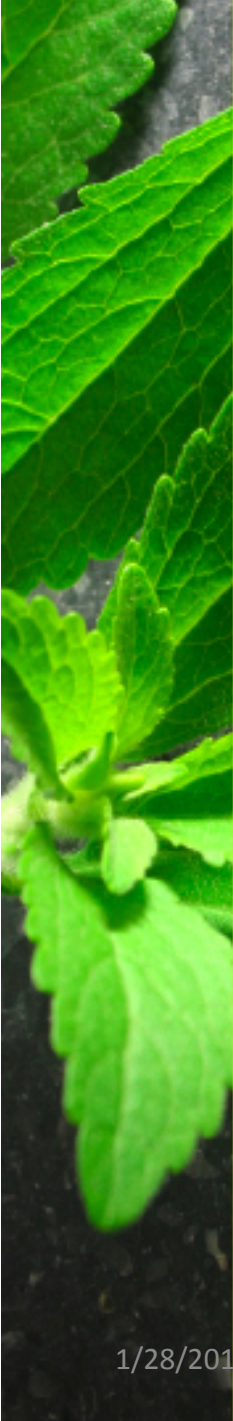
Figure 1: Structure of some stevia glycosides (Crammer and Ikan, 1987).

# Lou Han Guo (Monk Fruit Concentrate) was GRAS approved in 2010 as a natural sweetener

- Natural
- GRAS FDA No Objection Letter
- Up to 150X as sweet as sugar
- Non caloric
- Low Glycemic Index
- Heat Stable
- Non GMO
- Kosher Certified
- Licorice and ginger-ale like when too much used
- Biovittoria Fruit Sweet: Mogroside V 50%







It is possible to create great tasting naturally sweetened reduced sugar and sugar free products with SGF's Reb A 97

- Beverage
  - Enhanced Water and Fitness water
  - Juices
  - Coffee and teas
  - Carbonated soft drinks
  - Milk drinks
- Dairy
  - Ice cream and soft serve
  - Frozen novelties
  - Yogurt
- Confections
  - Chocolate
  - Chewing gum
  - Hard candies and mints
- Bakeries
  - Muffin
  - Cookie
  - Popcorn

# 50% Sugar Reduction Lemon Iced Tea

Water

Sugar

Tea powder

Citric acid

Lemon Lime Extract

SGF Reb A 97%



- Naturally sweetened
- 50% sugar reduction: 11 g vs. 22 g per 8 oz serving
- 40% calorie reduction: 45 cal vs. 80 cal/8 oz serving
- Taste: Lemon, tart, sweet, black tea

# Diet Lemon Lime Carbonated Soft Drink

Water

Citric acid

Lemon Lime Flavor, NAT WONF

Potassium citrate

Potassium benzoate

SGF Reb A 97%

Lou Han Guo



- Naturally sweetened
- Sugar free: 0 g vs. 26 g per 8 oz serving
- Zero calorie: 0 cal vs. 100 cal per 8 oz serving
- Taste: Sweet, tart, lemon, lime, refreshing



# Sugar Free Peppermint Chewing Gum

Erythritol

Chewing gum base

Flavors, NAT WONF

Glycerin

SGF Reb A 97%

Soy lecithin

Plasticizer

Menthol

Blue #1, Colorcon Lake

- Sugar free
- 5 calorie per stick or 2.7 g serving
- Naturally sweetened
- Taste: Sweet, minty, cooling

