



**Steviva**  
INGREDIENTS  
Where Sweeteners Come Naturally



# NATURAL SWEETENING

## New Developments

New Proprietary  
Purification Process for  
High Intensity Natural  
Sweeteners



# NEW DEVELOPMENTS

## in Natural Sweetening

*Food development can be like playing whack-a-mole. Just as one problem is solved, another rears its head. Experience and intuition may help the food scientist quickly send offending flavors or textures back off the bench. But ingredients can be quirky, especially in combination. Some ingredients just don't perform as expected. Substitutions are not easy.*

This is particularly true of sweeteners. Each has its own nuance. Every consumer has their own perception of the ideal sweetness profile. Developers must understand the functional differences.

Sugar, or sucrose, has long been the standard by which sweetness is judged. It is simply disaccharides of glucose and fructose units. In solution its flavor release is rounded and full in body. Sugar browns readily via caramelization or the Maillard reaction. Sugar is categorized as nutritive because it provides four calories per gram; however, it could be argued that it is empty nutrition since its only value is in calorie provision. Reducing added sugar is an important approach against obesity, as we know, too many Americans consume a surplus of calories.

Though the trend now assumes the number one position, it has been evolving over the last several years. The market research firm notes that clean supply chain claims have shown a CAGR growth of 72% from 2011-2015. Sugar reduction is also trending upward. Innova places sweeter balance third as the industry is challenged to reduce added sugars, create indulgent experiences and present clean label products.

Stevia and monk fruit are high intensity, plant-derived sweeteners that are positioned to help developers meet these challenges. Although stevia and monk fruit products might look alike on the surface, there are many differences. Variations begin with growing conditions. Their Flavor is determined by the actual components extracted from the plant and the ratios in which they are present in the final sweetener. Methods of extraction can also impart flavor, particularly when chemicals are used.

The sweetness of stevia, derived from the South American plant *Stevia rebaudiana*, is dependent on steviol glycosides, primarily, stevioside and Rebaudioside A (Reb A). Chemically, the primary difference between these two is the presence of glucose. Reb A has three glucose moieties attached at C13. While Stevioside has two. Both the balance and the purity of these compounds will impact flavor.

Clean supply chain claims have shown a CAGR growth of 72%

Replacing sugar with high intensity sweeteners is one tactic to fight against obesity. Some consumers, who have become accustomed to artificial sweeteners, accept beverages that lack body and may not sense an aftertaste that is off-putting to other consumers.

These customers are at ease with chemicals like acesulfame K or aspartame on the ingredient statements of the foods and beverages they consume, and yet, those consumers likely represent a dwindling market.

Innova Market Insights calls clean and clear label the new global standard in its top five trends of 2017.



Monk fruit is the fruit of the Asian vine *Siraitia grosvenorii*. The sweetness is derived from a group of glycosides called mogrosides. Mogroside V, extracted from the pulp of the fruit, is the sweetest of these.

Both stevia and monk fruit provide high intensity, calorie-free sweetness. Stevia is about 250 times sweeter than sugar. Monk fruit is roughly 200 times sweeter than sugar. Due to the fact they are so potent, only very small amounts are required and unlike sugar, they do not add bulk or mouthfeel to foods or beverages. They are also incapable of browning reactions.

There are ways to emulate sugars non-sweet properties such as combining these sweeteners with a bulking agent such as erythritol helps to build mouth feel. Incorporating a natural sweetener such as agave in the formula will enhance browning in baked goods and enhance humectancy. While either sweetener can work alone, they work very well together. Synergies improve overall flavor at lower levels than if each is used singly. The result is a tighter, least cost formulation.

Although present in formulations in very low percentages, the flavor impact of stevia and monk fruit is powerful and unpleasant off notes may be associated with both sweeteners. The sweetness of stevia may be accompanied by a slightly bitter licorice note, while melon rind is the term frequently used to describe the off note that can come with monk fruit.



Product developers are challenged with carefully pairing these sweeteners with compatible flavors, such as stevia with cola or monk fruit with berry or citrus. Masking flavors are a common work around to overcome any hint of unpleasantness. These ingredients engage the food developer in a classic case of whack-a-mole as levels of the entire food matrix must be adjusted.



Purity of high intensity sweeteners is the key to the future of efficient reduced sugar formulation. New PuRefine technology employed by Stevia Ingredients removes all after-taste and off notes. This unique and proprietary double purification process utilizes a two stage ion-exchange resin bed filtration system. In line with Stevia Ingredient's commitment to the natural sweetener category, the ion exchange resins employed in this process come from naturally occurring polymers. These resins are capable of exchanging ions with ions in a monk fruit solution. As this solution is passed through them, compounds from monk fruit extract that carry a slight off note are removed, resulting in superior flavor. Stevia Ingredients is working with this technology with their SteviaSweet 95-60, SteviaSweet RA98, SteviaSweet RA99 stevia extracts.

While PuRefine Purification Technology is poised to revolutionize the natural sweetener market, ion-exchange resins have been used for decades in the manufacturing of fruit juices to remove bitter-tasting components. Additionally, Ion-exchange resins have been used in the manufacturing of sugar from various sources. This purification process represents a sea change to the natural sweetener category as these new, exceptionally clean flavored natural sweeteners open the door to a new wave of clean label reduced sugar foods; especially since these ingredients are competitively priced.

The payoff comes to the company that captures the mainstream audience by setting a new standard for low calorie sweetness. The developer shortens development time by beginning with ultra-pure, clean tasting ingredients. The need for layering on ingredients to cover up off notes is eliminated, leading to the big win for clean label. Simplicity.

## ABOUT

Steviva Ingredients works with food manufacturers to create plugin and custom sweetening systems of all particle sizes that function as a replacement for sucrose, 10x sugar, invert sugar and high fructose corn syrup. When you collaborate with Steviva Ingredients, you can be assured of chemical-free processing and 100% natural products with ingredients that are clean label, GMO-free, gluten-free diabetic safe and kosher.

Steviva Ingredients has an extensive system in place for ensuring the highest possible standards for quality control and food safety. These standards include stringent ingredient oversight, adherence to good manufacturing practices with strict microbiological standards and ongoing heavy metal and pesticide testing. Steviva Ingredients is a Level II SQF facility.

For spec sheets, documentation and samples of Clean Label Sugar Replacements, call your Steviva Ingredients sales representative at 310-455-9876 or email [sales@steviva.com](mailto:sales@steviva.com).



Available in both conventional and organic

Steviva- Where Sweeteners Come Naturally