

Why Coke's 'Cane Sugar' Soda May Seem Just Like the High Fructose Kind

By ACSH Staff — April 8, 2016



Natural marketing campaigns are omnipresent across the food industry so it is no surprise Coca-Cola recently rolled out [Coca-Cola Life](#) [1]. The company obviously seeks to appeal to people who are looking for an alternative to high-fructose corn syrup (HFCS), which has suffered a number of black eyes from [controversial health concerns](#) [2], or consume fewer calories. The new brand is sweetened with a combination of cane sugar (sucrose) and the artificial sweetener stevia.

As a sweetener, [HFCS](#) [3], a mixture of fructose and glucose—the two sugars that when chemically attached make up sucrose— has advantages over cane sugar to beverage makers. It is much easier for companies store and work with, and is usually less expensive. The amount of fructose in the syrup is usually either 42 percent or 55 percent.

But, some people who think that sucrose-sweetened Coke tastes better, or simply want to avoid HFCS, buy their Coke from Mexico, where only sucrose is used, despite that fact that the Mexican variety costs more.

Why should a border make any difference in a product? The answer is economic. Mexico is highly protective of its sugar industry. It does not want HFCS used, and in 1997 even tried to ban the its import. So, if Coca-Cola was going to manufacture its soda in Mexico, the company would have to use only sugar.

But, there has been speculation about whether there is a real difference between the American and Mexican products by the time they reached consumers. Is this true? The answer turns out to be more complicated than you'd expect.

In 2010, [Professor Mike Goran's team at the University of Southern California tackled the issue in Obesity](#) [4] by looking at the difference in composition between Coke made with high fructose corn syrup (U.S.A.) and Coke made with cane sugar (Mexico).

Strangely, when Goran's team tested the Mexican Coke they found no sucrose; there was only

glucose and fructose, just like you'd find in HFCS soda. So, what happened?

Once ingested sucrose, a disaccharide (double sugar) is rapidly converted to a 50-50 mixture of its components glucose and fructose (monosaccharides, single sugars) by an enzyme called sucrase. In the absence of sucrase, sucrose does not split apart, so finding a mixture of glucose and fructose in the can (where the enzyme is not present) was puzzling.

Based on Goran's findings, the Mexican Cokes should not have tasted either better or worse than their American counterparts. Was the difference just a taste-bud placebo? The answer lies in chemistry.

HFCS, a mixture of two single sugars is stable in soda, despite its relatively high acidity (pH [5] 2.5—roughly the same acidity as vinegar). But, under these acidic conditions, sucrose slowly decomposes back to its monosaccharide components. The rate of this decomposition depends greatly on temperature. At room temperature, 90 percent of the sucrose will be gone in 100 days.

If the soda was not stored or transported properly, and was allowed to get hot, this would happen even faster, so despite being made with cane sugar, the soda, by the time it reached your table, would contain a mixture of glucose and fructose—just like HFCS.

So if you like the taste better, enjoy that "hecho en mexico" Coke. Just keep it cold if you want to tell people it's different than the cheaper HFCS kind. You never know when a chemist might stop by for a drink.

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Links

[1] <http://www.coca-colaproductfacts.com/en/coca-cola-products/coca-cola-life/>

[2] <http://ajcn.nutrition.org/content/79/4/537.full>

[3] <https://www.beverageinstitute.org/article/understanding-high-fructose-corn-syrup/>

[4] <http://goranlab.com/pdf/Ventura%20Obesity%202010-sugary%20beverages.pdf>

[5] <http://www.ncbi.nlm.nih.gov/pubmed/21606619>