

# The coca leaf revolution

Gregory Aharonian, founder of KukaXoco LLC (Boston, Lima, La Paz) explains how coca leaf can be used to make chocolate without fat, sugar or sweeteners



*A cup of coca tea*

**A**bstract: In a remarkable discovery, tiny quantities of alkaloids in coca leaf completely de-bitter cacao. Chocolates can now be made with no sugar, <2 percent sweeteners, and <10 percent fat. 1000 pounds of sugar and some fat can be removed from a ton of chocolate with about two ounces of coca leaf extract, saving \$500. I first briefly review this discovery, which in the hands of chocolate professionals will revolutionise the industry, transforming chocolate from a candy to a health food. The article focuses on a fascinating biological, financial and legal dilemma for the chocolate industry: what is worse for the human body – hundreds of grams of sugar and fat consumed in current chocolates, or replacing that toxic health threat with micrograms of coca leaf alkaloids? Resolving this dilemma will allow the \$100 billion chocolate market to double, while reducing trillion dollar health costs for global diabetes, obesity and cancer, which undeniably involves the chocolate industry.

### Coca alkaloids debitter cacao

Cacao is very bitter consumed substance. So bitter that the average chocolate is 80 percent sugar and fat, with some palm-oil “chocolate?” products (Tesco’s Original Chocolate, Nutella) reaching 95 percent sugar and fat. Despite many health benefits (e.g, reducing blood pressure), theobromine’s interactions in cacao produce bitterness

that has defied debittering, short of tons of unhealthy sugars (or sugar alcohols) and/or treatments that destroy phytonutrients (Dutch process). But solve this problem, especially removing toxic sugar, and chocolate starts becoming a health food, a competitive quest as seen in patent filings of huge chocolate companies. Remove all sugar, and a \$2 candy bar becomes a \$4 chocolate health food, from hurting to helping diabetics.

Amazingly, a cultural heritage of Peru and Bolivia, the coca leaf (*Erythroxylum coca*), has an unexpected, non-obvious property (despite its negative association with cocaine). The non-addictive, non-water soluble, native alkaloids in coca leaf completely de-bitter cacao. No longer is addictive, water-soluble sugar needed to make cacao palatable. Examples of how to make coca-chocolate are seen: [www.kukaxoco.org/#Making-KukaXoco](http://www.kukaxoco.org/#Making-KukaXoco), including a simple table-top recipe (from our Oct. 2016 presentation at Kennedy’s World Chocolate Forum [1]). One formula? 220 grams (one can) of Hershey’s unsweetened cacao, 40 grams whey, 40 grams of cacao butter, a bag of coca tea in two cups of water. Some SugarTwin. Mix. Eat. Enjoy. License!

No impact on chocolate taste and texture! Powerful? Two ounces of leaf extract eliminate 1000 pounds of sugar (and some fat) from a ton of chocolate – only microgram amounts per bar. Safety? Extracts are safer than table salt and vanilla (LD50 levels), there is no aftertaste, no gastric distress, it is less addictive than caffeine, non-alkaline, and has been safely consumed in South America for hundreds of years. Production savings? \$500/ton just reducing sugar. Profit boost? Unhealthy \$2 candy bar, minus toxic sugar, becomes a \$4 health food bar with concentrated phytonutrients. Immediate market? 300 million diabetics needing sugar-free deliciousness.

For chocolate companies, send your food chemists to Peru and Bolivia (where coca tea is legally sold), and experiment with coca-chocolate formulations, to see how easy and delicious the resulting chocolates are. I am not going to further discuss our formulations – Nestle, Mars, Hershey, Callebaut and many others have food chemistry experts to do wonders with coca and cacao. What follows is a discussion of financial and legal dilemmas for the chocolate industry and investors: which is worse for human health – hundreds of grams of addictive sugar and fat consumed due to current chocolates (a tort liability), or replacing that toxic threat with micrograms of coca leaf alkaloids?

*The addictive nature of sugar*



### Sugar as toxic as cocaine – are chocolate companies petty drug traffickers?

First, coca alkaloids are vastly different from street cocaine. Quoting Bolivian president Evo Morales: “Coca tea is to cocaine as grape juice is to wine.” Ever gotten drunk-by/addicted-to grape juice? No. Will you get high-by/addicted-to coca tea (and our use of it in coca-chocolate)? No. Coca tea has been so safely consumed in South America for over 500 years that there are no health records on ill effects.

But sugar? Science shows that sugar is the world’s third most deadly, addictive drug, after nicotine and alcohol. A 2015 study reports that 25,000 Americans die each year from

cumulative effects of drinking sugary beverages such as CocaCola [2]. 70,000 Americans die each year from diabetes (<http://www.cdc.gov/nchs/fastats/diabetes.htm>), due in part to excessive amounts of added-sugar in foods (including in chocolate). The global health bill for diabetes and other ailments is around \$500 billion dollars, caused in part by sugar. Increasingly, science documents that sugar addiction is comparable to cocaine addiction. [3]

Lately sugar (some from your chocolate) is being linked to increase rates of: breast cancer, kidney disease (even in pre-diabetics), dementia, digestive problems due to sugar alcohols (a popular sugar replacement in chocolate), heart failure, and more.

This poses a financial and legal threat to (chocolate) companies using sugar in food products. Publicly-traded food product companies that use tons of sugar (including the chocolate industry) will have to include warnings similar to *Coca-Cola's 2014 10-K Annual Report*, Risk Section (CocaCola can – 39 grams sugar, Hershey bar – 22 grams – add to their 10-K?): “Concerns about health and wellness, including obesity, could further reduce the demand for some of our products. Consumers and public health and government officials are highly concerned about the public health consequences of obesity, .... In addition, some researchers, health advocates, and dietary guidelines are suggesting that consumption of sugar-sweetened beverages is a primary cause of increased obesity rates and are encouraging consumers to reduce or eliminate consumption of such products. Increasing public concern about obesity and additional governmental regulations concerning the marketing, labelling, packaging, or sale of sugar-sweetened beverages may reduce demand for or increase the cost of our sugar-sweetened beverages. .... Limitations on our ability to provide any of these types of products ... could adversely affect our financial results.” (see: <http://1.usa.gov/1Z2FcJ4>) They can't mention diabetes, because to admit that risk association is to open the door to tort lawsuits that forced hundreds of billions of dollars of payments for diseases due to nicotine and asbestos. Indeed, KukaXoco is working with IP Insurance Services

([www.ipisc.com](http://www.ipisc.com)) to develop an Added Sugar Insurance Policy for the chocolate industry.

Alternatives to sugar? Most artificial sweeteners taste bad and/or are toxic (anything with sulfur or phosphorus), cause gastric distress (sugar alcohols), or are expensive (sugar proteins). Sugar is just one very addictive drug, hard to replace in food chemistry, a bane to 300 million diabetics.

Are coca leaf extracts that replacement? Do experiments for yourself! Verify that coca leaf extracts completely de-bitter cacao, with no aftertastes, no gastric distress, just delicious chocolate taste. Cost? Nothing! Replacing half of the sugar in regular chocolate with coca leaf extract leads to a net savings of \$500 per ton. Manufacturing? Using coca leaf simplifies the process (requiring little heating, conching or tempering). Organic coca leaf farmers? Don't need subsidies, just legal opportunities. Legality? Our use fully satisfies national laws and 1961 SCoND.

Completely safe! The LD50 safety level for coca leaf extracts is greater than that for table salt and vanilla. Risk? There is no physiological risk consuming extracts. Native alkaloids are non-water soluble, mostly broken down in the stomach. A 1995 WHO study on coca leaf chewing (you absorb more alkaloid than drinking tea) had no health recommendations for coca leaf chewing, finding no problems across South America ([www.cienciadelacoca.org/](http://www.cienciadelacoca.org/))

*Gregory Aharonian inspecting leaves in the Bolivian countryside*



*UNCoca1995.html*). Medical studies in the last 100 years in American scientific journals report no problems with coca tea. Indeed, some psychologists use coca tea to treat cocaine addiction.

Thus the dilemma for the chocolate industry – which is riskier? Since leaf extracts, safer than sugar, are wrongly equated with cocaine under (inter) national drug laws, they are viewed as a drug that needs to be controlled (on Schedule II in the U.S., though should be Schedule VI – and addictive, medically useless, cancer metastasizing fructose should be as Schedule I as marijuana). Thus, for now, we are launching our sales efforts in South America, where our coca-cacao products are just one more consumer choice in the supermarkets – fully legal. We look forward to petitioning governments around the world (starting with Portugal and Spain, hopefully Ireland) to allow imports of our coca-cacao products, if for nothing else, than to help the millions of diabetics around the world that deserve a delicious dessert that won't kill them.

Our reply to investors, government officials, and the chocolate industry, is the same: “What's a worse risk, micrograms of non-addictive coca alkaloids, or hundreds of grams of a highly addictive, toxic, diabetes-contributory, socially destructive drug – sugar?” The answer will determine if the chocolate industry grows from \$100 billion/year to \$200 billion/year, or starts getting sued.

[1] “Chocolate becomes Medicine, a Functional Food”, Gregory Aharonian, Kennedy's World Chocolate Forum, Oct. 2015, <http://www.kukaxoco.org/ChocForum2015-En.pdf>

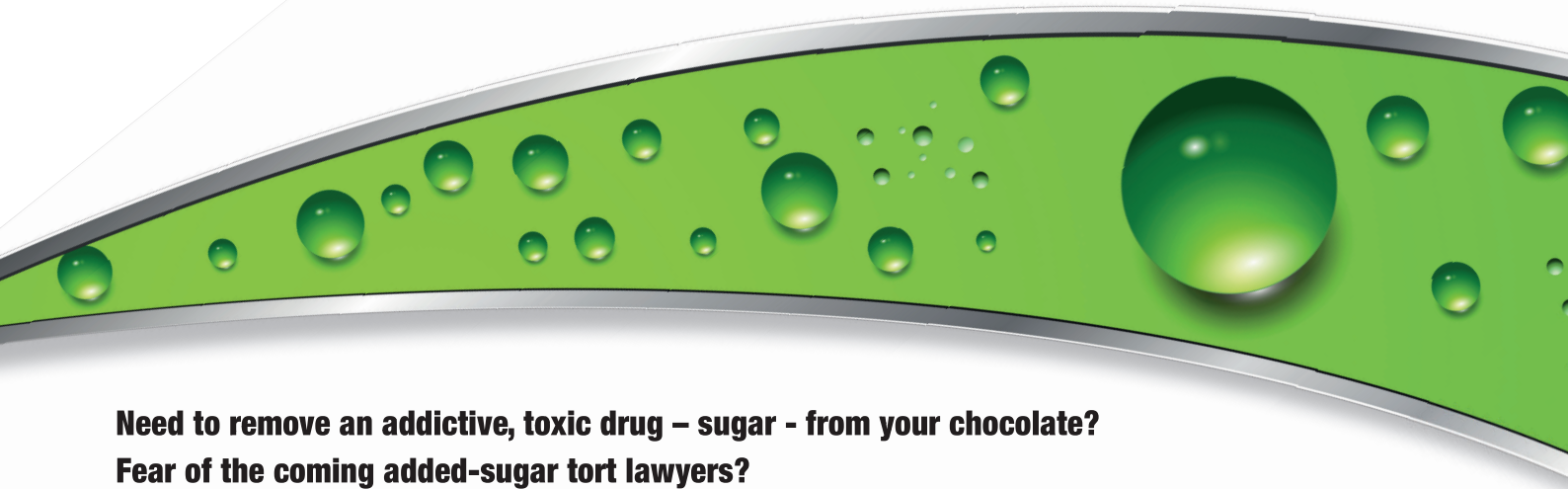
[2] “Sugary drinks linked to 180,000 deaths a year”, Gitanjali Singh, *Circulation*, 2015 <http://circ.ahajournals.org/content/early/2015/06/25/CIRCULATIONAHA.114.010636>

[3] “Intense sweetness surpasses cocaine reward”, M. Lenoir, *PLoS One*, 2007, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0000698>

*For more information contact Gregory Aharonian, Founder, KukaXoco LLC on [greg.aharonian@kukaxoco.org](mailto:greg.aharonian@kukaxoco.org), Tel 415-981-0441*



# Total De-Bittering of Cacao with Coca Leaf Extracts



**Need to remove an addictive, toxic drug – sugar - from your chocolate?**

**Fear of the coming added-sugar tort lawyers?**

KukaXoco announces an inexpensive, consumer safe, exotic discovery – coca leaf extracts as a complete de-bittering agent for unsweetened cacao.

**Impact on chocolate taste and texture?** None! True chocolate taste unleashed!

**Powerful?** Two ounces of extract eliminate 500 to 1000 pounds of sugar (and some fat) from a ton of chocolate - only microgram amounts per bar.



**Safety?** Extracts are safer than salt and vanilla, no aftertaste, no gastric distress, less addictive than caffeine, non-alkaline, safely consumed in South America for hundreds of years.

**Production savings?** Hundreds of dollars per ton.

**Profit boost?** Unhealthy \$2 candy bar, minus toxic sugar, now sold as a \$4 health food bar with concentrated phytonutrients.

**Immediate market?** 300 million diabetics wanting sugar-free deliciousness.

For samples, manufacturing guidance (the “Yungas process”), and licensing opportunities, contact Greg Aharonian at [greg.aharonian@kukaxoco.org](mailto:greg.aharonian@kukaxoco.org), or at 415-981-0441.