



CANNASWEET

Nature's Sweetener for Cannabis Edibles

May 2018 | www.iconfoods.com



We are in the midst of a healthy revolution. Food companies across the globe are experiencing an upheaval as consumers change the way they approach food. They are reading labels carefully, not only to maximize nutrition but to be certain they understand what ingredients are in their foods. They are looking for products made from nature, including plant-based foods. At the same time, they are limiting their sugar intake to reduce calorie consumption and to manage the glycemic response. Increasingly, today's consumers are more aware of what they can do to maximize their energy levels and when it's time, to enjoy relaxation.

Another sea change is also underway. Cannabis is now legal, in some fashion, in thirty states and the District of Columbia. Some states, such as California, Washington, Colorado, and Maine legalized marijuana for recreational purposes. Others, such as Arkansas, New Mexico, and Florida have broadly legalized marijuana for medical use. Alabama and Mississippi are more stringent. They permit medical marijuana for severe epileptic conditions. While states are defining their own scopes, federal law considers marijuana a Schedule 1 drug that cannot be legally prescribed. Continued action by the states and a lawsuit filed in Federal District Court in Manhattan may change that.

Cannabis brings unique opportunities and challenges to the food industry. As the market for edible cannabis products expands beyond homemade brownies, regulators must identify and control food safety and quality concerns. Concurrently, food developers are creating other baked goods, ice creams, candies, sauces and just about any type of product imaginable to not only deliver appropriate amounts of cannabis, but also to satisfy healthful appetites post pot consumption.

Finding the sweet spot in foods is another challenge. Meaningful sugar reduction is the goal to manage weight and promote health. Reducing added sugar is top of mind for food scientists, in part because of consumer demand; but those same consumers aren't necessarily willing to compromise flavor. Not only are developers pressured to deliver the sweetness that consumers expect, they are meeting a deadline. Beginning January, 2020, FDA will require a new format of the Nutrition Facts that tacks on a line for added sugars. Consumers will have a deeper lens to examine the foods they are eating.

A new product from Icon Foods, Portland, OR adds the sweet simplicity that consumers and developers are looking for. CannaSweet is a game changer. This proprietary blend of natural sweeteners is designed specifically for the cannabis industry to employ clean label sugar reduction in the medicinal and recreational edible category.

Allulose is at the heart of the formulation. This rare sugar occurs naturally in wheat, figs, raisins, jackfruit and more. For instance, 100 grams of ketchup naturally contains nearly 40 milligrams of allulose. One hundred grams of brown sugar naturally contains

approximately 71.1 milligrams of allulose. Also called d-psicose, allulose is a low-energy monosaccharide sugar. It is a C-3 epimer of fructose, and has the same molecular formula as fructose and glucose. But unlike fructose and glucose, allulose is not rapidly digested and absorbed making it safe for diabetics, those who follow a low sugar or low carb diet, and even those who have adopted a ketogenic lifestyle. It's noncaloric with 70 percent of the sweetness of sucrose.

Allulose passes through the body without being metabolized, similarly to the polyol, erythritol. Unlike some polyols, allulose does not have a laxative effect. Although it is comparable to erythritol in calorie delivery, allulose does not present the cooling effect of erythritol, making it another option in many applications. Allulose is already used in a number of product formulations, it holds GRAS-status as a sugar substitute.

A recent study conducted by Matsutani Chemical Industry and researchers at Japan's Nagasaki University suggests that d-allulose may help users manage weight by enhancing post-meal fat oxidation and decreasing carbohydrate oxidation. Animal studies have shown d-allulose to decrease body weight, adipose tissue weight and sugar absorption via enzymatic mean.

In the study published in the journal Nutrition¹, researchers investigated the effects of a single ingestion of d-allulose on postprandial energy metabolism in 13 healthy individuals. Using a randomized, single-blind crossover design with a one-week washout period, the subjects consumed an aqueous solution of either 5 g of d-allulose or 10 mg of an aspartame control following an overnight fast. Thirty minutes after consuming the solution, subjects ate a standardized breakfast and then underwent blood sampling for relevant biomarkers and energy-metabolism evaluation using a breath-by-breath method.

Results showed that subjects in the d-allulose group oxidized more fat for energy than did the control subjects, whereas control subjects oxidized more carbohydrate. Plasma glucose levels were also significantly lower in the d-allulose group and free fatty acid levels were significantly higher. These factors indicate boosted fat metabolism. The authors conclude by suggesting a role for d-allulose as a sweetener effective at controlling and maintaining healthy body weight.

Icon Foods' new sweetener CannaSweet utilizes allulose as a powerful, low-calorie sweetener balanced with stevia and monk fruit to develop optimum sweetness, cost benefits, and sugar reduction in reduced, low, or calorie-free foods and beverages. Stevia and monk fruit are widely used, high-intensity sweeteners derived from plants. The company's methods of extraction yield exceptionally clean-tasting glycosides from the leaves of the South American plant *Stevia rebaudiana* (stevia) and mogrosides from fruit from the *Siraitia grosvenorii* plant (monk fruit). Product developers can rely on superb flavor with the benefit that consumers recognize these ingredients as natural.

CannaSweet may be used in a wide range of food products including: carbonated and non-carbonated beverages; baked goods such as frostings, cakes, pies, pastries, biscuits and rolls, frozen dairy desserts, jams and jellies; sweet sauces; syrups; gummies, chewing gum, hard and soft candies; and puddings and fillings. Suggested maximum use levels range from 3.5 percent in non-alcoholic beverages to 5 percent in yogurt, frozen dairy desserts, and salad dressings. Up to 50 percent may be used in hard candies or chewing gum or gummies.

Because CannaSweet functions like sugar, it is easily used in food applications. Important to bakers, it has a number of functional benefits. In aerated food systems, foaming properties of egg whites are improved. Participation in the Maillard reaction supports browning and adds a golden hue to breads and rolls. Moisture-binding contributes to extended shelf-life, so brownies and cookies will not harden over time.

In frozen desserts, texture, palatability and scoopability are dependent on the dynamics between ice and water. CannaSweet aids the process by depressing the freezing point. In high-solid systems, the sweetening system has a low tendency to crystallize. It is highly soluble at low or high temperature solutions.

Calorie savings in products formulated with this allulose blend are dramatic compared to full-sugar versions. Sugar has 4 calories

per gram. CannaSweet has only 0.2 calories per gram. Yet there are other health benefits as well. Blood glucose or insulin levels are not affected. This may be essential to developers of cannabis edibles for the medical industry. It's critical to those suffering from diabetes. This is nearly 10 percent of the U.S. population. Maintaining moderate blood glucose levels is also important to a wider audience. The American Heart Association considers high blood glucose a factor in metabolic syndrome and increased risk of heart disease, stroke, and other health problems.

There is another reason why glucose and calorie management are important to cannabis consumers — the munchies. Increased appetite, one of the well-known effects of marijuana consumption, is due to tetrahydrocannabinol (THC). A study in *Nature Neuroscience*² finds that in mice, THC fits into receptors in the brain. This heightens sensory perception, and in mice, it increased the animals' ability to smell food and it increased their consumption. Since smell and taste are so closely related, the researchers suggest that humans may eat more food after using marijuana because the senses of smell and taste are more acute.

Research published in the *Journal of Biological Chemistry*³ finds that cannabinoids stimulate the hypothalamus causing release of the hormone ghrelin, which signals fuel deprivation.

In medical use, the ability to stimulate hunger is helpful for those who have lost their appetite due to illness, chemotherapy, or other prescribed drugs. For recreational users, unwanted weight gain could be a consequence, making the need for lower-calorie products even sweeter.

Because cannabis stimulates hunger as well as intensifying the sensory systems in all users, it's especially important that the product delivers. Consumers are likely to repeat the eating experience only if the food is enjoyed. CannaSweet has a sweet profile that tastes just like sugar, and it acts like sugar, so it satisfies even the most finicky consumers and food developers.

1. Tomonori Kimura et al, (2017), D-Allulose Enhances Postprandial Fat Oxidation In Healthy Humans, *Nutrition*, 43-44 (Nov-Dec), 16-20

2. Edgar Soria-Gómez et al, (2014), The Endocannabinoid System Controls Food Intake Via Olfactory Processes, *Nature Neuroscience*, 17 (3), 407-415

3. Blerina Kola et al, (2005), Cannabinoids and Ghrelin Have Both Central and Peripheral Metabolic and Cardiac Effects via AMP-activated Protein Kinase. *The Journal of Biological Chemistry*, 280, (26), 25196 -25201



ABOUT

Icon Foods 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 Icon Foods, you can be assured of chemical-free processing and 100% natural products with ingredients that are clean label, in most cases, gluten-free diabetic safe and kosher.

Icon Foods 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. Icon Foods is a Level II SQF facility certified organic by Oregon Tilth and certified kosher by Oregon Kosher.

For spec sheets, documentation and samples of Clean Label Sugar Replacements, call your Icon Foods sales representative at 310-455-9876 or email sales@iconfoods.com.

