

## **FRUIT CONTAINS FRUCTOSE – IS IT OK???** *by Ann Gerhardt, MD*

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Last issue's article about fructose, in "Not All Calories are Created Equal", stimulated readers' interest and questions. This comment sums up most of them:

**Q:** If honey, fruit, maple syrup and corn all contain fructose, does that overrule the familiar advice to eat lots of fruits and vegetables? Does it overrule my understanding that honey is a better sweetener than refined sugar in cereal or bread? Should I avoid eating polenta? I eat a lot of whole fruits...should I be concerned about eating too much fruit? I'm confident these are healthier than eating an equal weight of Oreos, but your point seems to say that eating a lot of fruit isn't such a good idea either. I would suppose this is a matter of degrees.

**A:** In the last issue of DrG'sMediSense newsletter, I explained that the sugar fructose behaves differently from other sugars in the body. It contributes to insulin resistance and diabetes and increases uric acid production, leading to hypertension and kidney stones. **The U.S. epidemic of obesity and diabetes may in part be related to the abundance of cheap, high fructose corn syrup in sweetened beverages and foods.**

During processing of all-glucose corn syrup, glucose is turned into fructose. The resulting high fructose corn syrup (HFCS) contains 90% fructose. In North America it is diluted to a final concentration of HFCS-55 (55% fructose) or HFCS-42 (42% fructose). HFCS-55 has a just slightly higher fructose content than table sugar (sucrose), which is 50% fructose.

Because natural corn, corn syrup and corn sugar is 100% glucose, foods like polenta, popcorn and corn on the cob raise blood sugar and caloric intake without the extra, adverse, metabolic effects of excess fructose.

Foods like fruit, honey, syrup and table sugar also contain fructose, leading to the above question. Fruits contain both free fructose and fructose that is part of sucrose. **Fruit's sugar (and fructose) content varies, depending on the variety, season and geographic area in which the fruit is grown.** An apple's total fructose content ranges from 59 – 72%. Pears contain 63 – 84% fructose and peaches are 50% fructose, while plums, grapes and cherries generally have more glucose than fructose. Even berries are not consistent, with strawberries having the least fructose, raspberries the most and blackberries in between.

**Excessive fructose from fruit can and does raise triglyceride levels.** It also contributes to insulin resistance in susceptible individuals. People exhibit different sensitivities to fructose, depending on their genetic make-up. **Some people, with absolutely no tendency to metabolic syndrome, can eat fruit, honey and syrup all day and suffer no hyper-triglyceridemia or sugar problems.** Others need to limit their intake to 2 fruits per day and consume minimal sweets, desserts, juice, honey, table sugar and syrup.

A trim, physically active, male patient of mine, consuming a very healthy diet and > 5 fruits per day, had fasting triglyceride levels of ~ 500 mg/dl (truly normal = <60, American normal = <150). His sugar was rising and he was headed for diabetes. Limiting the fruit brought the triglyceride level down to 150 mg/dl. He has a genetic make-

up that makes him particularly sensitive to fructose and prevents his triglycerides from approaching normal without starvation.

We all ingest some fructose. Not all people will react to it by developing high triglycerides, metabolic syndrome or diabetes. Those require a certain genetic predisposition and lifestyle factors like being a couch potato, obese or a sugar addict. People with ‘diabetes genes’ probably differ in their sensitivity to fructose. Most will tolerate modest amounts; others more or less.

**Maple sugar contains sucrose, with 50% fructose. Honey’s sugar composition varies according to geographic location, type of flower the bees visited and even the individual hive.** Cotton honey contains the least fructose (51%) and tupelo honey the most (65%), with common clover honey in between, at 53%. Small differences in fructose-to-glucose ratios in various honeys do not substantially impact the amount that they raise blood sugar levels.

With a roughly equivalent fructose:glucose ratio to HFCS-55, we might assume that honey similarly affects insulin sensitivity and promotes the metabolic syndrome. I don’t know that that study has been done. As with HFCS and other sources of fructose, I would expect the metabolic effect would be related to quantity consumed. One soda contains as much fructose as 2.5 tablespoons of honey. Three sodas per day is not uncommon: Consuming ½ cup of honey every day is.

**A typical soda contains 39 – 48 grams of sugar, more than twice the sugar content of most fruits.** The problem with HFCS isn’t an extraordinary fructose *percentage*, but that it has so much fructose per serving and is so much cheaper and easier to consume than natural foods.

**Bottom Line: The alternative to HFCS? Fruit, honey and maple syrup are not pure sugar. Plant saps, honey and fruits contain vitamins, bioflavonoids and even amino acids, which add considerably to health value. Choose fruit, syrup and honey over sugar as sweeteners, and limit the total quantity.**