Chow Line

News from the College of Food, Agricultural, and Environmental Sciences

Caramel candies: More than caramelized sugar

Over the holidays, my sister and I were eating caramel candy, and she mentioned how much she loves caramel flavoring. I thought caramel wasn't really a flavoring added to the candy, but a byproduct created from cooking sugar. Who is right?

You're both sort of right.

Caramel flavoring is a real product. If you can't find it in your grocery store, you can buy it online. Whether the candies you were eating had caramel flavoring in them is impossible to say without looking at the ingredients. But, odd as it sounds to some people, caramels don't need caramel flavoring as an ingredient because caramelization does, in fact, occur when sugars are cooked the right way.

Harold McGee's quintessential "On Food and Cooking: The Science and Lore of the Kitchen" (Scribner, 2004) offers a detailed description of the food chemistry behind both the flavor and texture behind caramelization, caramel syrup and caramel candies. The first step in making caramel candy is combining sugar and water to make syrup: Candy makers need to combine them in the right proportion, heat the resulting syrup to the right temperature, and then cool the hot syrup properly to create the chewy caramel texture.

When sugar (or salt, for that matter) is dissolved in water, the solution boils at a higher temperature than plain water does. But as the syrup heats up, the water evaporates more quickly, and the syrup becomes more concentrated, browning as it heats and producing new flavors as a result. As the syrup thickens, the solution can become hotter and hotter very rapidly, and the whole thing can scorch if you're not careful. Generally, a syrup with

photo: iStock

a higher water-to-sugar ratio will result in a softer candy. If you boil too much of the water off, you'll end up with harder candy.

To make caramels, the solution should be one that boils at 245 to 250 degrees F. When it reaches that stage, the solution is between 85 and 90 percent sugar — just the right concentration for caramels.

But then it has to be cooled properly so the sugar doesn't crystalize. If crystals form, you'll get a grainy instead of a smooth caramel. The formation of crystals depends on a lot of things: how quickly the solution is cooled; what is added to the syrup, such as milk products and butter; and even the temperature of the solution when you start to stir it.

Purified versions of caramel syrup are commonly used as both a flavoring and as a deep brown food coloring for soft drinks, prepared foods and many other products.

Adding milk to the syrup does a few things: the casein from milk helps make the caramel chewy, and the whey proteins brown easily, helping provide that characteristic flavor. Butterfat also helps provide both the proper texture and familiar flavor of caramels. Other flavor agents, such as vanilla, can also be added.

Making caramels, or any sort of candy, really, is both an art and a science. That should give you something to chew on the next time you enjoy caramel candies.

Jan. 16, 2015

By Martha Filipic
614-292-9833
filipic.3@osu.edu