

A Continuing Series

from Greg Hackenberg (5/2014)

This month's topic is sugar. I'm not talking about the Molasses, Panela, Piloncillo, Cane Syrup or those other exotic and interesting types that require a trip to the ethnic market. This month I'm going to talk a bit about that nasty, cheap ingredient that we all know has no place in the brewing of good beer; sugar. Yes, the white (and not quite white) stuff. If you've read my diatribes before, you can probably guess that I'm about to tell you that, in fact, sugar is not nasty and cheap, but is an incredible resource for the brewer, adding flavors, color and consistency. But, sadly it is one that's use has been largely ignored and openly derided.

To start we (or at least, I) must ask; why does the average home brewer or craft brewer sneer when sugars in beer is brought up? A couple of reasons, I would suppose. First we have all heard the stories of early home brewing and those beginner kits which paired large quantities of white sugar with malt extracts and the "cidery" flavors that result. Next I think there are some subliminal effects of the Reinheitsgebot and that idea of all-malt being the only "real" way to brew. In addition there continues to be an attitude that anything the big FYS brewers do, we must do the opposite! Therefore adjuncts of any sort must be reviled and discarded.

And then there's this, which seems to be embedded in the DNA of home brewers. As my tattered copy of *The Complete Joy of Home Brewing* attests, sugar is used to save money, boost alcohol and "lighten" the flavor of beer. So, is that really the case? Let's take a look.

In commercial brewing sugar is not used to cut costs. Any cost savings are negligible, and depending on malt prices, sugar might actually cost more per pound of extract. It certainly is true sugars can produce alcohol without imparting much in the way of flavor, and sometimes that is a worthy goal (Belgian Tripple, anyone?). But rice would do the same a lot more economically. And that cidery flavor? Outside of one of those basic sugar bomb kit beers, has anyone really tasted that "cidery" flavor? And if you did, are you really sure it was caused by sugar, or is that just what you've always been told caused it? Questions, questions...

So as you might expect this installment will deal with the British use of sugar (I'll have more about other traditions along the way). Wait? You're suggesting that there's sugar in British beer? Certainly, not! Why, look at these recipes, look at these guidelines, there's no sugar anywhere, just as it should be! Yes, that might be, but there's a reason. When those beer style guys phoned in their research, sugar was denounced as Mass Marketed Capitalist Beer Decadence, and the apparatchik diligently began expunging it from recipes and brewing history. They never bothered to look at exactly what all these British brewers had been adroitly including in their beer since the "Free Mash Tun Act" of 1880 removed the restrictions on sugar and adjuncts in beer.

And all those old brewing records they conveniently ignored clearly and unequivocally show the widespread use of brewing sugars, right on up to the present day. And they show very particular types of sugar...No. 1, No. 2, and No 3. What are these? It's not white sugar. These are invert sugar syrups. Invert syrups involve a bit of chemistry. Sucrose (regular old sugar) is two simpler sugars glucose and fructose joined together. Unlike maltose which is two glucose molecules, yeast need to flip the glucose-fructose bond to break it and get at those simple sugars. That takes time and extra effort by the yeast and if you've read my bit on British yeasts, they hate extra effort. But the good news it can be easily done on its own in with heat in an acid environment, which we call "inverting" the sugar which will result in a syrup at room temperature. In my opinion the "extra effort" by the yeast is overstated for two reasons. No one has ever really quantified exactly what this extra effort actually produces that would be bad. And that acidic environment and heat? That would be your boil. Boil the sugar in the wort and it will be inverted. So why bother with a syrup? Well there's a lot going on in making the actual syrup the inversion.

First thing that needs to be shouted from the ramparts is these Invert syrups are and were not the simple syrups made from white sugar, which are used mostly in baking. In baking a shelf stable clear invert sugar syrup finds a home, in beer...not so much. So don't fall for the apparatchik substituting refined sugar for the old school inverts.

These syrups begin with the slightly unrefined Demerara, or "Sugar in the Raw" as it's sold in the US. Yes, a light brown cane sugar with a subtle molasses quality. David Line (I've mentioned this guy before, wrote an incredibly visionary book on home brewing in the 1970's) employed Demerara sugar in a number of his recipes, but he kind of missed the boat on this. Given the somewhat secretive nature of British brewers this is understandable, but he was pretty close. Demerara was only the base of these syrups, and a pretty good base it is.

But it's those numbers; they indicate varying shades: No. 1 is a not so light 12-16 SRM, No. 2 30-35 SRM, No 3. a molasses like 60-70 SRM. There are even notes to "black invert" and a No. 4. Many logs contain references to proprietary types of which we can only guess. But they open a world of flavor contributions.

We know, or you should know, that it is through the Maillard Reaction (browning) and process of caramelization that a lot of the flavors we love in beer come about. This occurs in the raw ingredients; the base malts, specialty malts, sugars, etc. and again in the brew kettle. Same applies to sugar all by itself, and that's how invert syrups are produced. The acidified sugar is heated and "cooked" at 240 degrees. The inversion part happens pretty quickly, but in these those Maillard and caramelizing reactions are allowed to run riot. These are the notes from an invert sugar experiment (not mine, but rather descriptive) for tasting at set intervals.

7 minutes: Frosted flakes, biscuity? caramel?

10 minutes: Chocolate! and caramel

15 minutes: Chocolate, seriously all I can taste is tootsie roll

20 minutes: Chocolate, some hints of coffee

25 minutes: Lighter chocolate flavor, strong toffee and caramel flavors

30 minutes: Toffee, chocolate, some slight hints of burnt sugar like creme brulee...

Sounds like something that might be good in one of your beers? You bet, and it is a big component in a number of British beers, with good reason. They represent a consistent flavor. Malt will vary by year. These are a controllable flavor constant, and a number of commercial beers, along with their particular yeast depend on precisely that flavor.

So where does one get these syrups? Unless you ready to place an industrial sized international order you can't. You have to make them. I've been working on that.

More next time.