

PER STACKS

TALK to your BEER

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BETTER BEER FROM YOUR MALT EXTRACT TIN

At the AHA meeting at Boulder in June, I was asked to speak on the subject of making better beer from malt extracts. Since much of what I write is aimed at home brewers who are beyond simple beers I was forced to take a serious look at malt extract beers for the first time in a long while. I was quite amazed at what I found because malt extracts have really been improved in the last five years. There are some really great products out there these days.

When I first started writing about beer most people had little choice in products. There was "Blue Ribbon" and little else. It is true that some places sold English and Canadian Malt Extracts, but they weren't widely available in this country. They were better than Blue Ribbon, but not all that much better. Now there are fifty or more brands available, but only two companies (Fleishmann and Superbrau) still manufacture malt extract in this country, and Blue Ribbon is now Premier and it too is made abroad (England). The product is very much better these days, and there are some Canadian, Australian and Continental malts available too. This is a greatly improved picture.

First let me remind you that any procedure which improves any of your beers will also help your malt extract beers. In Talk 9-00 (Jan) I went into the "Five Ways to Improve Your Beer". Start with them: 1), clean and sterilize everything, repeatedly, 2), ferment as cool as you can manage it, 3), keep air out of contact with your beer after ferment is going strongly, 4), use less sugar and other adjuncts in your brewing, keep clost to all-malt brewing for best results, and 5), use only the highest quality ingredients.

Let us now examine what can ruin the quality of a malt extract beer. Bacterial spoilage, of course, is number one. Use the finest yeast and take special care to avoid contamination. That goes without saying. Most complaints we have about malt extract beers stem from what is called the "cidery" or "winey" taste. In AB #9 I went into the fermentability question rather thoroughly. I showed that good traditional beer had an attenuation (fermentability) rate of around 65-70%. The remainder consists mostly of unfermentable sugars called dextrins. These are what give the beer its good taste and if your beer doesn't have enough of them, it will taste tart or cidery almost in direct proportion that dextrins are lacking in the finished product. This tart taste comes from the fact that as the ferment progresses, the pH is lowered from 5.8, at the start, to 3.5 or thereabouts in some low malt:sugar beers. The pH of a normal all-grain beer is somewhere around 4.2. The distinctly lower pH in the average malt extract beer is what causes the problem. There is a further complication in that the concentration process, which is used to make malt extract syrup or dry malt extract, seems to produce a lower pH in that product than would be the case in a normal beer wort from the same grains. I am not sure why this occurs, but I believe that the concentration process cuts down the buffering effect that regular beer wort has on the pH drop. At any rate, experiments with a pH meter show that, and of course it only adds to the problem.

Malt extracts, dry and syrup are 75-85% fermentable compared to 65-75% for malted barley worts and 92% for dextrose or corn sugar. Put in simple terms this means that a wort from reconstituted malt extrace (an all-malt home brew) would have a minimal, but still satisfactory 15-25% unfermentable segment resulting in a beer gravity of 1012 or thereabouts on a beer with an OG of 1048 (12°). An all-grain beer with that OG would finish out around 1016, while the typical kit beer would finish at 1008 or even lower. Thus an all-malt extract beer would have 35% higher dextrin content than the kit beer, and the all-grain beer more than twice as much.

The answer then, to making better malt extract beers, is to make an all-malt beer. Unfortunately, this means that you must spend twice as much on two tins of malt extract which can result in paying \$2.28 or more for a six-pack of your own beer. More expensive than cheap commercial beer! Homebrew suppliers correctly insist that it is very difficult indeed to sell that extra

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tin of expensive malt extract. The customer, especially the new or novice homebrewer, thinks that the merchant is trying to rip him off. Thus we have the eternal "beer kit". It is a real fact that most people start their home brewing career with one of these kits. This is still an improvement over the "old" days because now the malt extract tin has 3.3-lbs (1.5-kg) of malt extract, while the old homebrewer would have had only two lbs of malt extract. Today's homebrewer will make 5-USgallons with his 3.3-lb tin. For an OG of 1048 this means 2-lb, 13-oz (1.3-kg) of dextrose or corn sugar, which is 50.4% of the total fermentable extract. His earlier soulmate would have made ten gallons of beer by adding 9½-lbs of sugar for the same OG. That much sugar would constitute 85% of the fermentables which tells us one reason why prohibition homebrew was so bad. Alcohol is only a minor ingredient of beer, although one of the most important. The good taste of beer needs those dextrins. How to get them is the question.

Today's kit beer is still a poor example of the homebrewer's art, and many people try one batch of beer and drop the whole idea. It is my guess that we lose over 75% of first time homebrewers, because cheap alcohol is not enough for them, they also demand taste in their beer. One way to get more dextrins in kit beers is to add malto-dextrins as one of the ingredients.

MALTO-DEXTRINS

Malto-dextrin is commercially prepared and soluble dextrin. It is available as glucose-polymer or malto-dextrin. I don't know which merchants carry this product, but you can inquire. It is available from Wine-Art Oregon (see our classifieds) in both retail and wholesale quantities. Malto-dextrin or Glucose Polymer has the same effect on the original gravity of your beer as does dextrose (corn sugar). You use it like sugar (except for carbonation). One pound dissolved in water to a volume of 1-USgallon (120-gm/litre) will yield a gravity of about 1044, and it is only 15% fermentable. Your kit beer could be made much more palatable if you substituted about 8-oz (my absolute upper limit--1.6-oz/USgal, 12-gm/litre) malto-dextrin (cost about \$1.25) for the same amount of sugar. The final gravity should be around 1012. This is very close to that of the all-malt extract beer, but at a much lower price. This is what I recommend to improve those kit beers. The taste of the finished product is much better than that of the regular kit, but still not as good as that all-malt extract model. However we have kept the price down. Lactose is another sugar that may be used, but it effects the taste of the finished product and I certainly would not add over 1-oz/USgallon.

Of course, in commercial breweries the brewmaster controls the dextrin content of his beer by the time and temperature of the mash. The same is possible for the malt extract manufacturers, and if they chose to do so they could produce a special malt extract for kit beers (i.e. low

malt:sugar ratio). At least two manufacturers have expressed an interest in this possibility. I view the use of malto-dextrins as being the same as using sugar, I would prefer not to do so, and therefore I will continue to promote the all-malt beer for Amateur Brewers and other serious home brewers.

OTHER WAYS TO IMPROVE YOUR EXTRACT BEER

Your extract beers may be improved in several other ways. Perhaps the most important single step you can take is to boil your wort. Some homebrew textbooks tell you not to boil your hopped extract beers and others say that a ten-minute boil is all that is needed for extract beers where you add hops. Some malt extract manufacturers tell you that it is not necessary to boil their product, and at least one manufacturer (Duane Imports) has declared that they cannot be responsible for their product if you boil it. (hopped ext)

To all that I say nonsense. Many of the malt manufacturers produce their hopped malt extracts by mashing the liquor in the usual fashion and then adding pre-isomerized hop extract, thus incorporating the hops without the necessity of boiling the beer wort with the hops as is usually done at the brewery. Such products may be labeled: Contents--malt extract, hop extract. At any rate there is either no wort boil or only the briefest of boils before concentration to syrup takes place. The reason for boiling YOUR extract wort is to reduce the unusable proteins in the beer. If you add your malt extract to water, and then bring that to a boil, you will see an interesting effect. As the wort comes to a boil, there is an intense agitation in the briskly boiling concoction, and that has the effect of forming brownish or yellow flakes in the wort, and these are thrown against the edge of the kettle, where they may adhere. These flakes are insoluble proteins, and if you boil any malt extract-water mix you will probably see that effect. The fact that it happens almost every time is proof enough that the procedure is sound and even necessary. Elimination of these protenatious materials before the ferment starts will improve your beer and help avoid off-tastes which are possible if you do NOT boil your wort, although the effect may not always be noticeable. You are eliminating one more possible cause of bad taste in your beer. Every little improvement helps. Hopped malt extract worts should be brought to a rolling boil and boiled for at least ten or fifteen minutes for the above reasons, and will constitute an insurance against one more cause of trouble. In the case of brewing beer from plain malt extracts to which you add your own hops or pellets, a boil of at least an hour and a quarter is very beneficial, although shorter periods of boiling may not have an adverse effect, the longer boil is still good insurance.

MORE TIPS

Your extract beers may be improved in several other ways, notably by using some grains to dextrins along with a richer and fuller taste to your beer. Some of these

may be added to the boiling wort, but it is probably better to add them in a modified mashing sequence. Up to 2-lbs of malted barley and other grains may be mashed in this fashion. Place the grains (2-lb, or 1-kg, max.) in a cheesecloth or nylon bag, and put them in about a gallon (250-gm/litre) of hot water at about 155°F (68C) and maintain this temperature for about an hour or longer, agitate occasionally. The grains are then discarded, and the infusion used as the base for your malt extract wort. Some of the grains you might use in this fashion are listed below. Incidentally for added enzyme power and increased grain usage, you might make use of the only Diastatic Malt Syrup on the market (Edme DMS) which may be dissolved in about 2-gallons of water (see above), after which you may add up to 3-lbs of grains listed below (2-lb max of any one grain).

1. Caramel or Crystal malt should be crushed, but that may be done in a blender, and it is possible to use them without crushing, but better if you do. You can also add crystal malt directly to the wort, but you risk off-flavors by boiling these grains for any length of time. Crystal or caramel malts can always add good flavor to your beer by increasing the dextrin content, and they will improve any beer. The terms are used interchangeably although caramel malt is supposed to be darker than crystal. Crystal malt has no enzyme activity.

2. Chocolate malt (not candy chocolate) and/or Black Patent malt and/or Black roasted barley. These may be added as a prestep (as described here), or during the last fifteen minutes of boil. If added as a pre-step, they should be crushed to extract maximum color as that is the purpose for using them. If added to the boil they need not be crushed. Use them sparingly, half pound or less until you have some familiarity with them.

3. Pale Malted Barley, or Munich Malt. These must be crushed and must be mashed or you will risk damaging the finished beer. In the case of this rather small amount (2-lbs), the crush may be done in a blender, although a grain grinder or mill is much better for that purpose. Pre-ground malts are now available (see our classifieds). Munich Malt has enzyme power and color power as well.

4. Cara-Pils or Cara Crystal malt may be used 1:1 with pale malted barley as described for flaked cereals below. Cara-Pils will add dextrins to your beer without effecting the color of your beer. This is the preferred and natural way to add dextrins to your beer.

5. Flaked cereals. Flaked cereals such as flaked maize or flaked rice may be used in limited amounts. I have seen flaked maize with directions telling the brewer to add it directly to the wort boil, but this is definitely a no-no. Flaked cereals have been prepared so that the starches are readily available to conversion to fermentable sugar which is not true when using ground corn, rice or wheat. You should use these on a one to one ratio with pale malted

barley (which has the sugar conversion enzymes--remember the 2-lb limit) and follow the mashing process carefully (an hour to an hour and a half at 155F), failure to do so can result in cloudy (starch-haze) beer. Flaked cereals may also be used with amylase enzymes available through some home brew suppliers. Be sure to follow the manufacturers directions. Edme DMS (above) may also be used for enzyme power. A test for starch conversion is advisable when using pale malted barley and the enzymes. (Iodine test: add a drop of iodine to a drop of liquor and if it turns blue, continue the mash.)

Judicious use of grains can add real life to your extract beers with a minimum of fuss, and the use of selected hops and hop pellets can also add a wondrous effect to your extract beers. Use natural ingredients whenever possible. Malt extract and your hops will be better than hopped malt extracts. Grains with malt extract boiled with good hops are better yet. Keep sugar to less than 20% (a pound or so) of the fermentable extract, and the less you use the better. Cereal grains are better than sugar, especially if you prefer lighter beers than is possible with all-malt profiles. Pay attention to details. You can skip some steps and procedures, but not too many and not too often. You can probably get away with anything once, but be careful or you'll get caught in Murphy's Law, which is ALWAYS waiting for the unwary brewer, and the more chances you take, the more likely you'll have troubles.

STILL MORE TIPS

1. Yeast--use two packets instead of one, use cultured yeasts if you can.
2. Cool your beer wort as quickly as possible to fermenting temperature especially if you live in warm climes.
3. Hops. Really fresh hops that have been properly stored are the best and if you cannot be certain that fresh hops you get are truly fresh and well stored it is better to use properly packaged (moisture proof) hop pellets. The best idea is to buy your year's supply of fresh hops while they are fresh in the fall (October or November), wrap them in moisture proof plastic and store in your freezer until you use them.
4. I repeat that the more shortcuts you take the more likely you will have problems. The more you use fresh grains and hops with your malt extract beers the better will be the end-product. The cooler you can keep your ferment the better will be the end product (within yeast temperature tolerances, of course). The more you sterilize your equipment the less chance you will have of inviting infections. Charlie Papazian says, "Relax, have a homebrew and don't worry." I couldn't agree more.

The AHA conference was very well attended, and the winner of the competition was Nancy Vinyard (Mrs By Burch) of San Rafael, CA, send for free newspaper, 50¢ to AHA, Box 287, Boulder CO, 80306.

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BOOK REVIEW

Home Beermaking, The Complete Beginner's Guidebook, by William Moore. Second Ed., 1983 Ferment Press, Oakland CA 94604. paperbound, 72pp, Illus \$3.95.

This book is just what it says it is, The Complete Beginner's Guidebook! Bill Moore has reworked his original booklet and made it into a real book. Superbly illustrated with beautiful line drawings by Jean Carlson, and an eye catching color cover, this book belongs in every brewer's library. It has my unqualified endorsement. Bill Moore writes a knowledgeable monthly column on homebrewing in Home Fermenter's Digest. He takes the reader through the brewing process with careful descriptions of each step and the equipment required to carry it out properly. His descriptions are careful and succinct, and Ms Carlson's line drawings bring the whole process to crystal clarity in the reader's mind. I wish I'd had a book like this when I started brewing. Available from ABIS, \$4.50 with postage, or from Ferment Press, Box 1866, Oakland CA 94604 (wholesale).

TEXAS FINALLY LEGAL

You probably never thought it could happen, but Texas, yes the GREAT State of Texas, finally made home beermaking legal! The bill had been bottled up in committee by some bluenose slob of a legislator, but it was attached as a rider to another bill, and passed at the last minute before they adjourned to their whiskey and soda. I presume the governor signed the bill and that I'm not lying to you about the whole thing. Big Government, which has proved time and time again to be the one-true-enemy of all of us, had been able to confiscate homebrew supplies at will. The fact that they could have done that (but probably didn't) acted as a wet blanket on folks selling supplies. Since there were a lot of good Texas homebrew illegals, we can now expect the numbers to increase rapidly. You can send congratulatory notes and get further information from Scott Birdwell and the TEXAS FOAM RANGERS at DeFalco's, 5611 Morningside, Houston, TX, or any other home brew supplier, such as The Home Winery, 3906 Old College Rd, Bryan TX 77801.

Texas commercial brewers (one Texas owned brewery Spoetzl at Shiner making Shiner Beer) will now have competition from the good beer makers of Texas. (You'll notice I didn't mention that several national breweries operate in Texas, because they don't count in the good beer stakes). We all hope that one day the Shiner folks will find it in their hearts to make real beer and let Texans enjoy good commercial beer again as they had done before prohibition. Let's hear it for Texas! Now if we could get the Great State of Utah....

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