



The Northern Craft Brewers

"We Live We Brew"



Beer Flavours: MBT or "Light-struck"

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In the Hops article, I explored the flavours contributed by hops, noting that when alpha acids go into solution as isomerized-alpha acids, to provide bitterness to balance the sweet malt, they do so in an unstable form that can be converted into an unpleasant flavour. So, let's look into this a bit more here.

When beer is exposed to certain frequencies of ultraviolet and blue light, for example that present in sunlight and fluorescent lighting (incandescent light is less problematic), it causes changes to these unstable isomerized alpha acids. In the presence of a photosensitiser, such as riboflavin, a photochemical degradation of the iso-alpha acids occurs, allowing a combination with sulphur to form the compound 3-methyl-2-butene-1-thiol (MBT). Thiols used to be referred to as mercaptans and most but not all are unpleasant. MBT in beer is problematic for two reasons; firstly, its flavour threshold is very low, variously rated at 0.1 to 1 part per billion.

Secondly, MBT is bad news because it has a distinctive and very unpleasant flavour which the Americans describe as "skunky", as it is chemically similar to the obnoxious spray produced by threatened skunks. Anyone remember the line from the 1973 Loudon Wainwright song about a "dead skunk in the middle of the road, stinking to high heaven"? I remember being driven from Chicago airport to Milwaukee and in my jet-lagged state (OK, aided by a visit to what was then the Goose Island brew-pub) falling asleep, only to be woken up by an awful smell and on enquiring, was told it was a skunk, which we passed several hundred yards up the road! Apparently, the spray's odour can be smelled up to one mile downwind. For those unfamiliar with skunks think cat pee – only worse. It can also appear like burnt rubber in its aroma; other descriptions include leeks, garlic, rotting cabbage or rotten eggs: Yuk. MBT is probably present in all beers to a certain level and is arguably part of the flavour of beer and interestingly, coffee. The level at which it can be detected and be identified as unpleasant will vary. Some Americans even associate European Lagers that are sold in green bottles with a degree of skunkiness and have come to expect this! However too much can be very unpleasant and spoil the beer, making it undrinkable.

So, how to avoid coming across beer spoiled by MBT? Drinking Real Ale in a pub is the easy answer as the beer should not have come into contact with light (but don't take too long over drinking it if you get the chance to sit outside in a beer garden on a sunny day). The reason bottled beer has traditionally been sold in brown bottles is because brown glass provides a good level of protection against penetration by the harmful light. Green provides



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some but not much protection and clear glass none at all. It does not take much time being exposed to light to cause the problem, we are talking minutes rather than hours here and only one iso-alpha acid molecule per million needs to be converted into MBT to cause a noticeable off-flavour.

But what about all those green and clear bottles in the supermarkets? Well one way of avoiding the problem is to brew using preisomerized hop extracts rather than traditional whole hops or pellets. This is likely to be done by large breweries mass-producing the type of beer/lager that most NCB and CAMRA members would not be interested in. However some of the medium sized brewers of Real Ale do put some of their beer into clear bottles although this is more likely to be brewery conditioned beers, rather than bottle conditioned, “Real Ale in a Bottle” beers, that appeal to CAMRA members. Alas there is no easy way of knowing how the beer, Real Ale or otherwise, was brewed and whether it is at risk of being damaged by light, if it is in green or clear bottles.

The current trend towards the use of cans rather than bottles is one way of avoiding this problem and is one of several advantages of canning but not one open to home brewers. If bottling rather than kegging it is necessary to use brown bottles (I sometimes use one clear bottle per batch for a clarity test) and keep them in a dark place.

Where I see a beer I might otherwise buy being sold in clear or green bottles, I think that either it has been brewed with processed hop extract (and if the brewery is doing that what other short-cuts and practices that I would not approve of are they up to?); or it has been brewed traditionally and is at risk of tasting skunky. Generally speaking if a beer is placed where it is exposed to sun or fluorescent light, I will not take the risk and refuse to buy it. Is it just me or have others noticed that stores often seem to place their most interesting beers on the top shelf where they are exposed to most light? Maybe I’ll just grab a home brew from the cellar...