HOPSTEINER – NEWSLETTER AUGUST 2012

TECHNICAL SUPPORT

Hopsteiner®

COMMITTED TO THE BREWER.

New definition of lightstruck-flavour in beer

When exposed to sunlight, i.e. if bottled in green or white glass, beer quickly develops an off-odour usually referred to as "sunstruck-flavour". For about 50 years, 3-methyl-2-butenthiol (MBT) has been assumed to be the only cause of lightstruck-flavour, particularly due to its very low odour threshold. Several past studies suggest that the formation of thiol is a result of isohumulone coming into contact with light, riboflavin and cysteine. New studies show that it is not only MBT which causes sunstruck-flavour in beer. To assess the impact of hops and light on sunstruck-flavour, both hopped and unhopped beers were analysed before and after illumination.

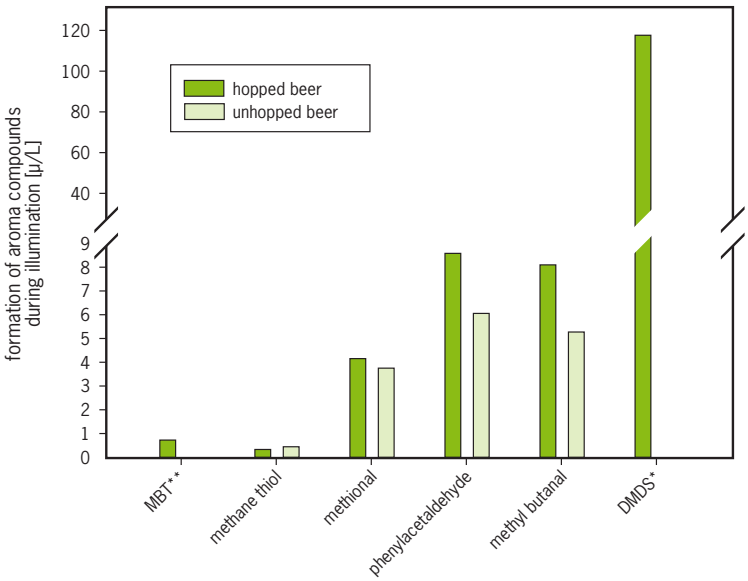

Fig. 1: Formation of several aroma compounds during illumination

* Dimethyldisulfide (DMDS) has not been quantified in unhopped beer.
** MBT was only detectable in hopped beer

In order to evaluate the quantitative difference of these aroma compounds, breakthrough thresholds in non-illuminated beer were determined. The compounds with formation ratios beyond the threshold impact the sunstruck-flavour of beer sufficiently to be noticed in illuminated beer.

Aroma compound	Aroma description	Formation during illumination [µg/L] (hopped beer)	Breakthrough threshold [µg/L]
MBT	skunky, sulphury	0.73	0.12
methane thiol	sulphury, cabbage-like	0.35	6.6
3-(methylthio)propanal	cooked potato-like	4.2	1.9
phenylacetaldehyde	honey-like, flowery	8.7	30
3-methylbutanal	malty	8.2	50
dimethyldisulfide	sulphury, cabbage-like	117	60

Table 1: Light-induced formation of aroma compounds and their breakthrough thresholds

The aroma compounds 3-(methylthio)propanal (methional) and dimethyldisulfide, as well as MBT, all contribute to the sunstruck-flavour of beer. The 2 former compounds are derived from malt, which means that hops are not the only sources of sunstruck odours in beer.

More detailed information will soon be published. In the meantime do not hesitate to contact us if you need any further information!

HOPSTEINER
Newsletter, August 2012