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# HOP SCIENCE

KNOWLEDGE FOR YOUR SUCCESS

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## BE A DETECTIVE – FIND THE ONION IN YOUR BEER!

This Japanese research team put a lot of effort in finding the relevant compound for the onion flavour in beer. 2-mercapto-3-methyl-1-butanol (2M3MB) has an onion, sweaty type aroma, at a threshold of only 13ppb. Its origin is most likely hops. Firstly this team has shown that low or no wort aeration reduces the formation of this off-flavour, secondly they found that 2,3-epoxy-3-methyl-butanol (EMB) is the responsible precursor. Next to aeration, the yeast plays an important role on the final level of this compound in beer and will be investigated further. We hope for a happy ending!<sup>1</sup>

## SPEBU – A NEW ALTERNATIVE METHOD FOR BITTERNESS?

A combination of Solid Phase Extraction (SPE) to the BU method was established already in 2011 by Wietstock. Now after further optimisation and more ring studies, this method is presented by a U.S. researcher team. The accuracy is comparable to current methodology and with no need for iso-octane is more environmentally friendly and also economical.<sup>2</sup>

## IS THE PROFILE OF HOP POLYPHENOLS VARIETY SPECIFIC?

Yes, it is. At least that is the conclusion of a Japanese research team. They investigated six different hop varieties from Germany, Czech Republic and USA from three different crop years. The polyphenol profiles of all varieties show that the composition of monophenols, flavonols, flavanones, prenylflavonoids, flavanols, proanthocyanidins is different for each crop year but within limits. The composition of the polyphenols correlates with the genetic background of the varieties. Further they found that the content of each polyphenol in beer was similar to that in hops used. Fresh beer samples using six hop varieties showed flavour differences for sweetness and astringency. The data suggest that the contents of proanthocyanidin

is important for the intensity of sensory fullness while the content of flavanones and prenylflavonoids are in context with astringency.<sup>3</sup>

## HEY-WHO IS RUINING MY BEER FOAM?

It is an interesting observation that dry hopped beers often have less stable beer foam. Why is this? Comprehensive testing by this research team has found that with dry hopping, the amount of iso-alpha acids slightly decreases in the beer due to precipitation. Increases in humulinones and alpha acids were observed but both are rather foam positive so they are likely not the cause. Beta acids are foam negative, but due to low concentration in beer, they are also not guilty. But two parameters were found to be of importance: 1) Temperature - the foam stability is very sensitive to temperature change, and 2) Hop lipids - they are known to be gushing suppressing, so it is no surprise they are foam negative. Problems with foam stability? Contact us at Barth-Haas to discuss!<sup>4</sup>

### REFERENCES:

1. Shigekuni, N.: Identification of a precursor of 2M3MB in Beer <http://www.asbcnet.org/events/archives/2016/proceedings/Pages/default.aspx>
2. Lafontaine, S.: update: Solid Phase Extraction of Isomerized Alpha Acids in Beer and Subsequent Spectrophotometric Measurement <http://www.asbcnet.org/events/archives/2016/proceedings/Pages/default.aspx>
3. Hasegawa, J.: Comparison of characteristics of taste and polyphenols in beer using different hop varieties <http://www.asbcnet.org/events/archives/2016/proceedings/Pages/default.aspx>
4. Maye, JP: Dry hoppings effect on beer foam <http://www.asbcnet.org/events/archives/2016/proceedings/Pages/default.aspx>

## EVENTS



### Outlook for 2017:

Now that the year is almost completed, plan your Hopping Conferences for next year:

- February 10-12, **Braukunst Live**, Munich, Germany
- April 10-13, **Craft Brewers Conference**, Washington DC, USA
- May, 14-18, **EBC Congress**, Lubiljana, Slovenia
- June 4-7, **ASBC Annual Meeting**, Ft. Myers, FL, USA
- July 26-28, **2nd International Brewers Symposium**, Corvallis OR, USA
- October 12-14, **MBAA Annual Conference**, Atlanta, GA, USA