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# HOP SCIENCE

KNOWLEDGE FOR YOUR SUCCESS

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**BARTH-HAAS GROUP**  
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## NEW INTERNATIONAL CALIBRATION STANDARD (ICS-R3) FOR HPLC ANALYSIS OF RHO-ISO- $\alpha$ -ACIDS

The International Hop Standards Committee (IHSC) announces the release of a new calibration standard, ICS-R3, for the HPLC analysis of Rho-iso- $\alpha$ -acids.<sup>1</sup>

## WHAT IS THE AROMA POTENTIAL OF SPENT HOPS?

This question was asked by this US research team. They tested several enzymes as well as a lager and an ale yeast in an aqueous extract of spent hops of 18 different hop varieties. Aqueous extracts of spent hop material (50 g/L) were shown to contain less than 1 g/L (0.1°P) of fermentable carbohydrates. They found that slight increases in monoterpene alcohol concentrations are influenced by the non-oil components present in hops. So it is clear that aglycones are indeed liberated from glycosides upon treatment with exogenous enzymes. However the overall contribution of glycosides to conventionally hopped beers should not be overstated. Dosage rates used in this study were 10 to 50 times higher than those typically used in brewing, yet only modest increases toterpene alcohol concentrations were observed.<sup>2</sup>

## MEET SIMCOE'S COUSIN - MOSAIC

Mosaic is a relatively new hop variety, however it is already world famous and used in many different beers. This article written by Mosaic's creators gives an extensive overview of this variety, its genetic pedigree and its sensory and analytical properties. I personally could not imagine how my life would be without Mosaic!<sup>3</sup>

## HALLERTAÜ MITTELFRÜH WANTS TO BREATHE!

For years we have learned in university that oxygen is the enemy of beer and hops, but maybe it isn't in all cases. These US researchers did dry-hopping trials with Hallertau Mittelfrüh that was oxidised (2 weeks at 38°C with oxygen) at two levels of hopping (1,5g/L and 3,8g/L). The impact on the lower hopping rate was not so significant, but with the higher hopping rate, the beer was rated more citrusy, floral, herbal and spicy in comparison to the same beer with non-oxidised hops. There was no huge difference in preferences either... So if you brew with Hallertau Mittelfrüh, let it breathe once in a while.<sup>4</sup>

### REFERENCES:

1. Biendl, M; Foster, R.: [http://www.brewingscience.de/index.php?tpl=table\\_of\\_contents&year=2017&edition=0003%2F0004&article=89542](http://www.brewingscience.de/index.php?tpl=table_of_contents&year=2017&edition=0003%2F0004&article=89542)
2. Sharp, D.: Examination of Glycoside Hydrolysis Methods for the Determination of Terpenyl Glycoside Contents of Different Hop Cultivars, <http://www.asbcnet.org/publications/journal/vol/2017/Pages/ASBCJ-2017-2071-01.aspx>
3. Probasco, G: Mosaic (HBC 369): A New Flavor Hop Variety, <http://www.asbcnet.org/publications/journal/vol/2017/Pages/ASBCJ-2017-1720-01.aspx>
4. Vollmer, D.: Aroma Properties of Lager Beer Dry-Hopped with Oxidized Hops, <http://www.asbcnet.org/publications/journal/vol/2017/Pages/ASBCJ-2017-1287-01.aspx>

## EVENTS



### Ready for Slovenia?

The EBC congress takes place 14th-18th of May in Ljubljana. Find out more here: <http://www.ebc2017.com>

### Get ready for the ASBC Annual Meeting,

June 4-7, Fort Myers, FL USA. <http://www.asbcnet.org/events/2017Meeting/Pages/default.aspx>

Or join the VLB conference in Bangkok, 11-13th of June, <https://www.vlb-berlin.org/bangkok2017>

Make also sure to attend the 2nd International Brewers Symposium on Hops, July 26th to 28th, Corvallis, OR USA. <http://hopsflavor2017.com/>