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HOP SCIENCE

KNOWLEDGE FOR YOUR SUCCESS

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CO₂ EXTRACT FOR BETTER FLAVOUR STABILITY!

This German research group is looking into beneficial components in hops to improve flavour stability. In their latest publication, they summarize their trials using CO₂ extract in context with reducing the iron content in beer. In comparison to dosing the extract at the beginning of boil they tried different versions of dividing the hop dosing throughout the boil. With this they were able to reduce the iron content by about 30%, resulting in improved flavour stability not only based on analytical values but also on sensory evaluation.¹

ABOUT THE STABILITY OF BITTER COMPONENTS IN HOPS DURING STORAGE...

These German researchers are specialists in identifying and quantifying bitter components in hops. In this project, heat maps were developed for all bitter components during the storage of several years. The data presented gives profound insight into the molecular bitter compound variability of certain hops. Quantitative analyses of hops stored with and without the influence of oxygen revealed that the decline of distinct hop constituents cannot be explained by an increase in transformation products formed during beer aging, thus implying unknown degradation mechanisms in hops. In a controlled, cool and oxygen free environment, the relevant bitter components proved to be stable for a period of 2 years.²

THE TRUE BITTERNESS OF HUMULINONES

A couple of recent studies revealed that the increased bitterness in dry hopped beers is greatly influenced by the formation of humulinones (oxidized hop α -acids).

Using previously established synthesis methods and preparative liquid chromatography, high-purity extracts of humulinones and hulupones were prepared for sensory testing. A trained flavour descriptive panel found humulinones to be 66% as bitter as iso- α -acids, and hulupones to be 84% as bitter as iso- α -acids. This study also found that the bitterness intensity of humulinones and hulupones are substantially higher than previous estimates of 35% and 50%, respectively. Whereas iso- α -acids were confirmed to be more bitter than oxidized α -acids and β -acids, both hulupones and humulinones were bitter enough to potentially have a significant impact in beer, especially in dry hopped beers. The threshold value of humulinones was found to be around 8 mg/L in unhopped beer.³

REFERENCES:

1. Wietstock, Ph. et al: Influence of Hopping Technology on Oxidative Stability and Staling-Related Carbonyls in Pale Lager Beer, *Brewing Science*, November / December 2016 (Vol. 69) http://www.brewingscience.de/index.php?tpl=table_of_contents&year=2016&edition=0011%2F0012&article=88944
2. Dresel, M.: The Bitter Chemodiversity of Hops (*Humulus lupulus* L.), *J. Agric. Food Chem.* 2016, 64, 7789–7799, <http://pubs.acs.org/doi/abs/10.1021/acs.jafc.6b03933>
3. Algazzali, V.; Bitterness Intensity of Oxidized Hop Acids: Humulinones and Hulupones <http://www.asbcnet.org/publications/journal/vol/2016/Pages/ASBCJ-2016-1130-01.aspx>

EVENTS



Upcoming Barth-Haas Hop Academy:

April 21-22, CERB, University of Perugia, Italy.
All About Hop Flavour (lectures in English/Italian).
Registration at giuseppe.perretti@unipg.it

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

Other hoppy events:

- April 10th–13th, **Craft Brewers Conference**, Washington DC, USA
- May 14th–18th, **EBC Congress**, Lubiljana, Slovenia
- June 4th–7th, **ASBC Annual Meeting**, Fort Myers, FL USA