

Abstracts and Links to Papers of Interest from Other Journals

This section contains links to recent papers, published in a number of Journals considered of interest to our readers.

Journal of the American Society of Brewing Chemists

Volume 67(3), 2009

Links to the full abstracts from the papers below can be found at

<http://www.asbcnet.org/Journal/>

Structural Features of Barley Malt Polysaccharides Inducing Premature Yeast Flocculation. H. Koizumi, Y. Kato, and T. Ogawa. JASBC, Vol. 67(3), 2009, pp. 129-134.

High Expression Levels of Cell Wall Protein Cwp2p Decrease the Turbidity of Fresh Lager Beer by Reducing the Size of Haze Particles. F. Omura, Y. Nakao, T. Teranishi, and A. Fujita. JASBC, Vol. 67(3), 2009, pp. 135-140.

Investigation of the Effects of Ultrasound on Extraction of alpha-Amylase from the Flour of Malted Barley. M. Yaldagard, S. A. Mortazavi, S. M. Mousavi, and F. Tabatabaie. JASBC, Vol. 67(3), 2009, pp. 141-145.

The Effect of Ethanol-Sucrose Interactions on Specific Gravity. J. J. Hackbarth. JASBC, Vol. 67(3), 2009, pp. 146-151.

Thermal Isomerization of Cohumulone. P. L. Ting, S. Kay, and D. Ryder. JASBC, Vol. 67(3), 2009, pp. 152-156.

Amino Acid Uptake and Yeast Gene Transcription During Industrial Brewery Fermentation. B. R. Gibson, C. A. Boulton, W. G. Box, N. S. Graham, S. J. Lawrence, R. S. T. Linforth, and K. A. Smart. JASBC, Vol. 67(3), 2009, pp. 157-165.

A Comparative Study of Two Analytical Methods for Fat Content Determination in Brewer's Grits. M. M. Pojić, J. S. Mastilović, M. V. Pestorić, and S. M. Daković. JASBC, Vol. 67(3), 2009, pp. 166-169.

Ability of Novel ATP-binding Cassette Multidrug Resistance Genes to Predict Growth of *Pediococcus* Isolates in Beer. M. Haakensen, V. Pittet, K. Morrow, A. Schubert, J. Ferguson, and B. Ziola. JASBC, Vol. 67(3), 2009, pp. 170-176.

Master Brewers Association of the Americas Technical Quarterly

Volume 46(3), 2009

Links to the full abstracts from the papers below can be found at

<http://www.mbaa.com/TechQuarterly/>

122nd Anniversary MBAA Convention Abstracts of Oral and Poster Presentations. MBAA TQ Vol. 46(3), 2009, doi:10.1094/TQ-46-3-0923-01 (OPEN Access)

Fatty Acids Composition Differences Between Beers Made with All-Malt and Brewer's Corn Grits and Malt. E. Bravi, M. Sensidoni, S. Floridi, and G. Perretti. MBAA TQ Vol. 46(3), 2009, doi:10.1094/TQ-46-3-0916-01

A Robust Template for Calculating Greenhouse Gas Emissions for the Brewery, Encompassing Two Production Scales. Jenny M. Yang, Klarika K. Douvas, and Elsa W. Birch. MBAA TQ Vol. 46(3), 2009, doi:10.1094/TQ-46-3-0914-01

Go with the Flow: Pumps, Pipes, and Paranoia. Michael J. Lewis. MBAA TQ Vol. 46(3), 2009, doi:10.1094/TQ-46-3-0827-01

Beer and Health: A Review. A. C. Ogonna. MBAA TQ Vol. 46(3), 2009, doi:10.1094/TQ-46-3-0821-01

Proteolytic Enzymes and Protein Modification in Malting Sorghum: A Review. A. C. Ogonna. MBAA TQ Vol. 46(3), 2009 doi:10.1094/TQ-46-3-0714-01

Brewing Science – Monatschrift für Brauwissenschaft

Fachverlag Hans Carl, Nürnberg, Germany

Vol 62 (July–Aug), 2009

Reduced Xanthohumol Recovery after Solid Phase Extraction of Dark Beers. S. Wunderlich, M. Biendl, A.

Zürcher and W. Back. *Brewing Science (Monatsschrift für Brauwissenschaft)*, Vol. 62, July/Aug 2009, pp. 95-99.

In wort and beer, the hop polyphenol xanthohumol (XN) is often determined after solid phase extraction (SPE). Recently researchers described substances in roasted malts that help to enrich XN in dark beers. The carrier effect that reduces losses during beer production may influence the SPE as well. We investigated the XN recovery in dark beer samples with and without SPE sample preparation. In SPE eluates the XN recovery significantly decreased with increasing XN content compared to directly injected samples. Experiments on XN recovery in SPE passes repeatedly treated by SPE showed that this is not due to an overload of the sorbent. The use of SPE prior to XN determination in samples containing roasted substances proved to be inefficient compared to direct injection.

New Gushing Mechanism Proposed by Applying Particle Size Analysis and Several Surfactants. M. Christian, V. Ilberg, A. A. Aydin, J. Titze, A. Friess, F. Jacob and H. Parlar. *Brewing Science (Monatsschrift für Brauwissenschaft)*, Vol. 62, July/Aug 2009, pp. 100-107.

The complex phenomenon of gushing occurring in carbonized beverages has been investigated in order to better understand the mechanism and to give input for further research to introduce preventive measures for the industry. The knowledge that microbubbles are stabilized through surface active substances, and in this form can induce gushing, was used to examine a selection of representative surfactants. For the analysis, a particle size distribution method was used which enabled to detect particles at nanometer level, starting from 0.8 nm onwards. The experiments using pure aliphatic surfactants (DTAC, TTAC, CTAC, ODTABr, CPC, SDS, and Tween 20) revealed that only CTAC, solved in CO₂ containing table water at 2 g/l (above the critical micellar concentration), induced gushing. CTAC therefore was characterized as gushing typical by its structure (length of hydrophobic part and kind of head group). Gushing caused by CTAC was not only observed through shaking of the bottles, but also without any shaking at all. The latter observed fact was not explainable by the mechanical incorporation of CO₂ bubbles stabilized by CTAC monomers, but generally through stabilized microbubbles formed by a mechanism that is yet unknown. The particle size analysis revealed that particles grow, starting from ca. 10 nm to reach several 100 nm, if sufficient amounts of CO₂ molecules are present. The growth was accelerated by a mild shaking of the bottles. The results pointed out that CTAC micelles grow by diffusion of CO₂ molecules into the hydrophobic core. Thereby, microbubbles are formed and stabilized through CTAC monomers at the interface gas/liquid, and can grow to gushing-relevant sizes of several 100 nm.

Specific Flavor Compounds Derived from Nelson Sauvin Hop and Synergy of these Compounds. Takoi, K., Degueil, M., Shinkaruk, S., Thibon, C., Kurihara, T., Toyoshima, K., Ito, K., Bennetau, B., Dubourdieu, D. and Tominaga, T. *Brewing Science (Monatsschrift für Brauwissenschaft)*, Vol. 62, July/Aug 2009, pp. 108-118.

Nelson Sauvin (NS) is a unique hop cultivar that gives a specific flavor (exotic fruit-like, Sauvignon Blanc wine-

like) to finished beers. We have attempted to identify the specific flavor compounds derived from NS. First, isobutyric esters, including 2-methylbutyl isobutyrate (2MIB), have been found in the beers used with NS (NS product). These compounds had a green apple-like and/or apricot-like flavor. We next focused on certain volatile thiols that are well known to contribute to wine flavors, especially Sauvignon Blanc, and identified two new volatile thiols, 3-sulfanyl-4-methylpentan-1-ol (3S4MP) and 3-sulfanyl-4-methylpentyl acetate (3S4MPA), having a grapefruit-like and/or rhubarb odor, similar to that of Sauvignon Blanc. Among these compounds, 3S4MP was contained twice of its thresholds and 3S4MPA and 2MIB were contained below their threshold, in the NS product. However, it was confirmed that 3S4MP enhanced the flavors of 3S4MPA and 2MIB by synergy. In addition, we also confirmed that 3S4MP enhanced the flavors of terpene alcohols (linalool and geraniol). Therefore, we concluded that 3S4MP might contribute to the specific flavor of the NS product as a key compound having two roles, its own characteristic flavor and its function as a flavor enhancer.

Proso Millet (*Panicum miliaceum* L.) a Sustainable Raw Material for the Malting and Brewing Process: A Review. Zarnkow, M., Mauch, A., Burberg, F., Back, W., Arendt, E. A., Kreis, S. and Gastl, M. *Brewing Science (Monatsschrift für Brauwissenschaft)*, Vol. 62, July/Aug 2009, pp. 119-140.

On going research further substantiate that consumption of whole grains and grain-based products is associated with health benefits and risk reduction of chronic diseases. Epidemiological studies on these cereals continue to generate an increasing interest on cereal products. This attention also concerns the beverage industry and in the present study, more specifically, malt and beer production, connected with an expansion of the market for gluten free beers. A declaration as an ecological and natural produced good is willingly carried out by the producers. Malted cereals will be appropriate for that kind of declaration because, for brewing purposes, suited malt will offer a good fermented product derived from a simple and well-known technology. More importantly, easy availability is an essential advantage. Proso millet (*Panicum miliaceum* L.) has a high potential as an alternative food ingredient especially in regions, where the appropriate growing conditions for cereals like wheat, barley, among others, are not met. This paper reviews publications and technical literature on *P. miliaceum*. By doing so, it provides an overview of the cereal composition and, if found, of its structures' behaviour when used for malt, wort and beer production. Many of the verified publications deal with the study of the use of proso millet for foodstuffs. Nevertheless, the compiled data show a good correlation to those cereals that are well known to be good raw brewing material and are therefore used for malting and brewing purposes.

The *cis*-resveratrol Concentration is Proposed as a New Indicator of the Hop Freshness. Jerkovic, V. and Collin, S. *Brewing Science (Monatsschrift für Brauwissenschaft)*, Vol. 62, July/Aug 2009, pp. 141-146.

The *trans*-piceid, *cis*-piceid and *trans*-resveratrol contents of hop cones and hop pellets from six American varieties (harvest 2004) were monitored by RP-HPLC-

APCI(+)-MS/MS over 12 months of storage and *trans*-resveratrol, *cis*-piceid and *trans*-piceid were found in all samples. After 8 months of storage, the overall stilbene content was decreased in the same range whatever the

conditioning. Absent in fresh hop cones or pellets, *cis*-resveratrol was released from *cis*-piceid in all stored samples. The *cis*-resveratrol concentration was revealed as very interesting for assessing hop freshness.