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(4), 2009

Links to the full abstracts from the papers below can be found at http://www.asbcnet.org/Journal/

Proteomics Study of Silica Eluent Proteins in Beer. B. Jin, L. Li, B. Li, B.-G. Liu, G.-Q. Liu, and Y.-K. Zhu. JASBC, Vol. 67(4), 2009, pp. 183-188.

Beer Photooxidation Creates Two Compounds with Aromas Indistinguishable from 3-Methyl-2-butene-1-thiol. L. T. Lusk, A. Murakami, L. Nielsen, S. Kay, and D. Ryder. JASBC, Vol. 67(4), 2009, pp. 189-192.

Efficient and Quantitative Measurement of Malt and Wort Parameters Using FTIR Spectroscopy. J. Titze, V. Ilberg, A. Friess, F. Jacob, and H. Parlar. JASBC, Vol. 67(4), 2009, pp. 193-199.

The Human Bitterness Detection Threshold of Iso-alpha-acids and Tetrahydro-iso-alpha-acids in Lager Beer. K. M. Kolpin and T. H. Shellhammer. JASBC, Vol. 67(4), 2009, pp. 200-205.

A Comparison of Barley Malt Osmolyte Concentrations and Standard Malt Quality Measurements as Indicators of Barley Malt Amylolytic Enzyme Activities. S. H. Duke and C. A. Henson. JASBC, Vol. 67(4), 2009, pp. 206-216.

Relationships Among Throat Sensation, Beer Flavor, and Swallowing Motion While Drinking Beer. H. Kojima, H. Kaneda, J. Watari, Y. Nakamura, and T. Hayashi. JASBC, Vol. 67(4), 2009, pp. 217-221.

Effect of Fermentation Conditions on Staling Indicators in Beer. D. Saison, D. P. De Schutter, W. Overlaet-Michiels, F. Delvaux, and F. R. Delvaux. JASBC, Vol. 67(4), 2009, pp. 222-228.

Purification and Characteristics of Feruloyl Decarboxylase Produced by Lactic Acid Bacteria from *Awamori* Mash. S. Watanabe, M. Kanauchi, K. Takahashi, and T. Koizumi. JASBC, Vol. 67(4), 2009, pp. 229-234.

Publication no. G-2009-1217-ABS

Investigation of the Malting Behavior of Oats for Brewing Purposes. F. Hübner, B. D. Schehl, F. Thiele, and E. K. Arendt. JASBC, Vol. 67(4), 2009, pp. 235-241.

Master Brewers Association of the Americas Technical Quarterly

Volume 46(4), 2009

Links to the full abstracts from the papers below can be found at http://www.mbaa.com/TechQuarterly/

Case Study: Implementation of a Brewing Information System at Sleeman Breweries Ltd. Peter A. Macwilliam. MBAA TQ Vol. 46(4), 2009, doi:10.1094/TQ-46-4-1130-01

Carbon Footprints in Breweries. C. W. Bamforth. MBAA TQ Vol. 46(4), 2009, doi:10.1094/TQ-46-4-1112-02

A Warehouse Automated Storage and Retrieval System (AS/RS) Case Study. Laura Worker and Daniel Labell. MBAA TQ Vol. 46(4), 2009, 10.1094/TQ-46-4-1112-01

Effect of Boiling Parameters on the Ratio of *trans*-Iso-alpha-acids and *cis*-Iso-alpha-acids in Wort. Chunfeng Liu, Mingping Zong, Jianjun Dong, Feiyun Zheng, Yongxian Li, Qi Li, and Guoxian Gu. MBAA TQ Vol. 46(4), 2009, doi:10.1094/TQ-46-4-1027-01

Comparison of Different Wort-boiling Systems and the Quality of Their Worts and Resulting Beers. Udo Kattein and Markus Herrmann. MBAA TQ Vol. 46(4), 2009, doi: 10.1094/TQ-46-4-1012-01

Commissioning and Optimization of the Wits Microbrewery Plant. Sunny E. Iyuke and Ezekiel M. Madigoe. MBAA TQ Vol. 46(4), 2009, doi:10.1094/TQ-46-4-0930-01

Brewing Science – Monatsschrift für Brauwissenschaft

Fachverlag Hans Carl, Nürnberg, Germany

Vol 62 (Sept–Oct), 2009

New oxidation destructive analysis (NODA). J. Savel, P. Kosin and A. Broz. Brewing Science – Monatsschrift für

Brauwissenschaft, 62 (September/October 2009), pp. 155-163.

Beer pigments compose of caramels, melanoidins and polyphenols pigments, which can be prepared by heating or boiling of mild colored or colorless precursors, such as sugar or (–)-epicatechin. The natural pigments behave as natural pH and redox indicators. During preparation of caramels by sugar heating at 175°C in oven, various sugars came into slight yellow (maltose), brown (glucose, mannose, ribose, xylose), or dark brown (arabinose, fructose) products. At heating, reductones were formed prior to caramel pigments. Redox indicators were added to beer and the absorbances (at 666 nm for methylene blue, 520 nm for methyl red and 610 nm for indigocarmine) were recorded before and after illumination with visible light (5 min) under aerobic and anaerobic condition. Natural or synthetic indicators can change their color reversibly or irreversibly. Reducing compounds can initialize oxygen free radical formation as well as their scavenging. 1,2-diaminobenzene addition supported the oxygen consumption in beer.

A Review on Fusel Alcohol Formation by Yeast. L. A. Hazelwood, J.-M. Daran, A. J. A.van Maris, J. T. Pronk and J. R. Dickinson. Brewing Science – Monatsschrift für Brauwissenschaft, 62 (July/August 2009), pp. 147-154. Based on a lecture given at the 32nd European Brewery Convention Congress in Hamburg, 10–14 May 2009.

Fusel alcohols and the esters derived there from are important flavour and aroma constituents in beers. Consistent batch-to-batch maintenance of the desired concentrations of these compounds is essential. The formation of fusel alcohols is one of the longest-studied biochemical processes: investigations having been begun by Ehrlich in 1907. The aims have been (i) to define the steps of the biochemical pathway (the 'Ehrlich pathway'), (ii) to identify the enzymes involved and the genes which encode them, and (iii) to understand the biochemical and genetic regulation associated with changes in yeast's growth and environmental conditions. The methods included the use of amino acids specifically labelled with ^{13}C followed by ^{13}C NMR spectroscopy to identify the metabolic sequences, specific mutants suspected or known to encode particular enzymes/isoenzymes, overexpression of structural genes and transcriptome profiling. Leucine, isoleucine, valine, phenylalanine, tyrosine, tryptophan and methionine that are present in wort serve as the starting materials for the formation of isoamyl alcohol, 'active' amyl alcohol, isobutanol, 2-phenylethanol, tyrosol, tryptophol and methionol (respectively). The steps of the Ehrlich pathway are transamination in which the amino acid is converted into an α-keto acid, then decarboxylation in which the α-keto acid is converted to an aldehyde. The aldehyde is then reduced resulting in formation of the appropriate fusel alcohol. In aerobic conditions (not found in beer production), the aldehyde could be oxidized to the corresponding fusel acid. Four transaminases, 5 TPP-dependent decarboxylases, 16 alcohol dehydrogenases, 6 aldehyde dehydrogenases and 2 broad-spectrum reductases have roles in the pathway depending mainly upon the amino acid, growth phase of the yeast and other cultivation conditions. Transcriptional regulation of the structural genes explains most, but not all of the regulation observed. Posttranslational modification(s) of enzymes remain to be discovered. Timely use of the Ehrlich Pathway likely offers both metabolic and developmental advantages to a yeast. Recent work has led to a far more complete understanding of fusel alcohol formation and its regulation. Consequently, the development of elite strains dedicated to specific processes and with greatly-improved consistency of performance is now a realistic possibility.