Monday Afternoon

**BIO 1: Biocatalysis I**

*This session is sponsored in part by Nisshin OilliO Group, Ltd. and Malaysian Palm Oil Board*

Chairs: C.T. Hou, USDA, NCAUR, ARS, USA; and J. Ogawa, Kyoto University, Japan

**Characterization of Brassica napus Diacylglycerol Acyltransferase 1 and the Enzyme's N-terminal Region.** K.M.P. Caldo, M.S. Greer, G. Chen, M.J. Lemieux, and R.J. Weselake*, University of Alberta, Canada.


**Optimum Conditions for the Production of Soy Polyl Oils and Diacylglycerol from Soybean Oil by Acinetobacter haemolyticus A01-35 NRRL B-59985.** C.T. Hou and K. Ray, NCAUR, USDA, USA.

**Gut Microbial Polyunsaturated Fatty Acid Saturation Metabolism Generating Bio-active Hydroxy, Oxo, and Conjugated Fatty Acid Derivatives.** J. Ogawa¹, S. Kishino¹, T. Sugawara¹, S. Tanabe², and T. Kawada¹, ¹Kyoto University, Japan, ²Hiroshima University, Japan.

**Various Rare Polyunsaturated Fatty Acid Productions by Mortierella alpina Breeding.** A. Ando¹, T. Okuda¹, H. Kikukawa¹, E. Sakuradani², J. Shima³, J. Ogawa¹, and S. Shimizu⁴, ¹Kyoto University, Japan, ²University of Tokushima, Japan, ³Ryukoku University, Japan, ⁴Kyoto Gakuen University, Japan.

**Enzymatic Synthesis of Tyrosol-based Phenolipids: Characterization and Antioxidant Activities.** G. Pande and C.C. Akoh*, University of Georgia, USA.

**Novel Marine Carotenoids and Their Functions.** M. Hosokawa, N. Takatani, T. Sawabe, and K. Miyashita, Hokkaido University, Japan.
Selective Antibacterial Activity of Palmitoleic Acid Useful for Possible Prevention of Atopic Dermatitis. T. Nagao¹, S. Tanaka¹, A. Kurata², H. Nakano¹, and N. Kishimoto². ¹Osaka Municipal Technical Research Institute, Japan, ²Kinki University, Japan.

Production of Diacylglycerols by Glycerolysis of Soybean Oil Catalyzed by an Immobilized Lipase in a Bubble Column Reactor. Y. Wang, X. Yang, N. Zhang, and Y. Teng, Jinan University, China.

Tuesday Morning

BIO 2: Biocatalysis II

This session is sponsored in part by Nisshin OilliO Group, Ltd. and Malaysian Palm Oil Board

Chairs: C.T. Hou, USDA, NCAUR, ARS, USA; and L.K. Ju, University of Akron, USA


Effects of Particle Size of Sucrose Suspensions and Pre-incubation of Enzymes on Lipase-catalyzed Synthesis of Sucrose Oleic Acid Esters. R. Ye¹, D.G. Hayes¹, and R.M. Burton². ¹University of Tennessee, USA, ²MARIC-IV Consulting, Inc., USA.


BIO 2.1/IOP 2/PRO 2: Alternative Fuels and Enzymatic Biodiesel


Evaluation of Glycerol Carbonate Production and Its Cosynthesis in Enzymatic Biodiesel Production. R.M. Burton1 and J. Greenstein2, 1 MARC-IV Consulting, Inc., USA, 2 North Carolina State University, USA.


Continuous Enzymatic Biodiesel Processing. B. Chrabas, Viesel Fuel, LLC, USA.

Cold Flow Properties of Fatty Acid Methyl Esters: Additives versus Diluents. R.O. Dunn, USDA, ARS, NCAUR, USA.

Fuel Quality Sensors for Characterization of Biofuels and Determination of Their Aging Degree. J. Krahl, M. Eskiner, and Z. Fan, Coburg University of Applied Sciences and Arts, Germany.

Three Approaches to Fuels from Fatty Compounds. G. Knothe, K.M. Doll, B.R. Moser, and R.E. Murray, USDA, ARS, NCAUR, USA.

Tuesday Afternoon

BIO 3/H&N 3.1: Biomodifications, Biomechanisms, and Biosafety

Dietary Seed Oil Effects on Kidney Oxylipins Reveal Surprising Effects of Fatty Acids. H. Aukema1,2, 1University of Manitoba, Canada, 2Canadian Centre for Agri-Food Research in Health and Medicine, Canada.


In vivo and in vitro Evidence for Biochemical Coupling of Reactions Catalyzed by Lysophosphatidylcholine Acyltransferase and Diacylglycerol Acyltransferase. X. Pan1, S. Stymne2, J. Zou3, X. Qiu4, G. Chen1, and R.J. Weselake1, 1University of Alberta, Canada, 2Swedish University of Agricultural Sciences, Sweden, 3National Research Council Canada, Canada, 4University of Saskatchewan, Canada.
Preparation of High-purity DHA from Microalgae Oil in a Packed Bed Reactor via Two Step Lipase-catalyzed Esterification. E.J. Lee1, D.S. No1, M.W. Lee1,2, and I.H. Kim1, 1Korea University, Republic of Korea, 2Ilshinwells, Republic of Korea.

Solvent-induced 7R-Dioxygenase Activity of Soybean 15-lipoxygenase-1 in the Formation of Omega-3 DPA-derived Resolvin Analogs. E.P. Dobson, C.J. Barrow, and J.L. Adcock, Deakin University, Australia.

Effect of Dietary Lysophospholipids Containing n-3PUFAs on Serum and Liver Lipids Contents in Rats. R. Hosomi1, K. Miyachi1, K. Fukunaga1, Y. Inoue2, T. Nagao3, M. Yoshida1, and K. Takahashi4, 1Kansai University, Japan, 2Lipid Lab., Japan, 3Osaka Municipal Technical Research Institute, Japan, 4Hokkaido University, Japan.

Effect of Feeding DHA as Phospholipid, Triacylglycerol, or Both on DHA Concentration of Brain Regions, Liver, and Serum Lipids. A.P. Kitson1, A. Berger2, and R.P. Bazinet1, 1University of Toronto, Canada, 2Arctic Nutrition, Norway.

An Efficient Gene Targeting and Molecular Breeding in Oil-producing Fungus Mortierella alpina with Deletion of lig4 Gene for Non-homologous End Joining. H. Kikukawa1, E. Sakuradani1,2, A. Ando1, S. Shimizu1, and J. Ogawa1, 1Kyoto University, Japan, 2University of Tokushima, Japan.

Wednesday Morning

BIO 4/S&D 4: Biobased Surfactants/Detergents

Chairs: D.K.Y. Solaiman, USDA, ARS, ERRC, USA; D.G. Hayes, University of Tennessee, USA; G.A. Smith, Huntsman Performance Products, USA; and R.M. Maier, University of Arizona, USA

Surfactants Based on Algae Oil. G.A. Smith and H. Byrne, Huntsman Performance Products, USA.

Comparison of Performance for Sugar Esters Prepared by a Green Enzymatic Process and a Commercially Available Product. R. Ye1, D.G. Hayes1, R.M. Burton2, A. Liu3, and Y. Wang3, 1University of Tennessee, USA, 2MARC-IV Consulting, Inc., USA, 3Tianjin University of Science and Technology, China.

A New and Cost-effective Biosynthetic Process for Hydroxylated PUFA’s by the Yeast Starmerella bombicola: Opportunities for Bio-medical Research. I.N.A. Van Bogaert1, G. Zhang2, B. Hammock2, and W. Soetaert1, 1Ghent University, Belgium, 2Bruce Hammock Lab, USA.

Production of Biosurfactants Using Bacillus subtilis on Pretreated Biomass Hydrolysates in 5-L Bioreactor. R. Sharma, W.J. Colonna, and B.P. Lamsal, Iowa State University, USA.

Challenges to Realizing the Commercial Potential for Biosurfactants. R.M. Maier, University of Arizona, USA.

Scaling Up Rhamnolipid Production: Comparison of Flask, Bench, Pilot, and Demo Scale Fermentations. D. Derr, N. Lohitharn, R. Mirani, and P. Tedrick, Logos Technologies, USA.

Use of Bioenhancers to Improve Growth and Product Quality of Biosurfactants. R. Sharma and B.P. Lamsal, Iowa State University, USA.


Biosurfactants as a Tool for Metal Removal from Waste Effluents. D.E. Hogan, J.E. Pemberton, and R.M. Maier, University of Arizona, USA.

Wednesday Afternoon

**BIO 5: General Biotechnology**

Chairs: R.D. Ashby, USDA, ARS, ERRC, USA; and B.P. Lamsal, Iowa State University, USA

Milk Fat Triacylglycerol Profile Differentiation Between DGAT1 AA and KK Genotype: Effect of Fat Supplementation. D.A. Tzompa-Sosa, H. Bovenhuis, A.M. van Vuuren, and H.J.F. van Valenberg, Wageningen University, The Netherlands.

Natural Products Produced from Bioethanol Stillage. K. Ratanapariyanuch, Y.Y. Shim, M. Haakensen, and M.J.T. Reaney, University of Saskatchewan, Canada, Prairie Tide Chemicals Inc., Canada, Contango Strategies Ltd., Canada, Jinan University, China.

Enzymatic Synthesis of High Oleic Oil Based Structured Lipid Containing Palmitic and Capric Acid Suitable for a Human Milk Fat Substitute. C. Álvarez and C.C. Akoh, University of Georgia, USA.

*In situ* Self-catalyzed Transesterification for Production of Biodiesel from Rice Bran. N. Choi, D.S. No, and I.H. Kim, Korea University, Republic of Korea.

Application of IPA-water-oil, IPA-methanol-oil and IPA-water-salt Ternary Phase Diagrams in Biodiesel Production from Mustard Seed. S. Sinichi and L. Diosady, University of Toronto, Canada.

Novel Linoleic Acid ∆12 Hydratase from *Lactobacillus acidophilus* Useful for 13-hydroxy Fatty Acid Production. S. Kishino, A. Hirata, and J. Ogawa, Kyoto University, Japan.

The Biochemistry of Two Microalgae with Potential as n-3 PUFA Producers. J.L. Harwood, I.A. Guschina, and K.J. Flynn, Cardiff University, UK, Swansea University, UK.

**BIO 5.1/H&N 5.1/SCC: Lipid Oils and Skin Health**

*This session is sponsored in part by Johnson & Johnson*

Chairs: T.A. McKeon, USDA, ARS, WRRC, USA; K. Mahmood, Johnson & Johnson Consumer, USA; and K. Dobos, Society of Cosmetic Chemists/Sun Chemical Corp., USA

**The Role of Lipids in Skin Physiology.** A. Pappas, Johnson & Johnson, USA.

**New Insights into the Role of Polyunsaturated Fatty Acids in Skin Physiology and Pathology.** H. Gallagher, I.A. Guschina, D. Ramji, and J.L. Harwood*, Cardiff University, UK.

**Biosynthesis and Skin Health Applications of Antimicrobial Glycolipids.** D.K.Y. Solaiman and R.D. Ashby, USDA, ARS, ERRC, USA.

**Meadowfoam (Limnanthes alba) Natural Products Inhibit Matrix Metalloproteinases in Human Keratinocytes: Relevance to Skin Health.** C.L. Miranda, R.L. Reed, A.K. Indra, and J.F. Stevens*, Oregon State University, USA.

**Cosmetic Applications of Castor Oil and Its Derivatives.** T.A. McKeon and X. He, USDA, ARS, WRRC, USA.

**Effect of Harvest Time on Olive and Olive Oil Properties During Ripening for Gemlik and Adana Topagi Olives.** T.M. Keceli, University of Cukurova, Turkey.

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Sunday Through Wednesday Viewing

**BIO-P: Biotechnology Poster Session**

Chairs: B.H. Kim, Chung-Ang University, Republic of Korea; and J. Ogawa, Kyoto University, Japan

**Enzymatic Preparation of L-a-Glycerylphosphorylcholine via Phospholipase A₁-Catalyzed Hydrolysis of Soy Phosphatidylcholine in Organic-aqueous Media.** H.J. Bang¹, I.H. Kim², and B.H. Kim*³, ¹Chung-Ang University, Republic of Korea, ²Korea University, Republic of Korea.

**Microbial Production of Biofuel from Saccharified Plant Biomass by Pentose Assimilating Thraustochytrids.** A. Matsuda¹, H. Nagatomo¹, A. Fujimoto¹, Y. Taoka¹, T. Matsuda², Y. Izumi², and M. Hayashi³, ¹University of Miyazaki, Japan ²Biomaterial in Tokyo, Japan.

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Mail Address: AOCs, P.O. Box 17190, Urbana, IL 61803-1790 USA | Street Address: AOCs, 2710 S. Boulder Drive, Urbana, IL 61802-6998 USA
Phone: +1 217-693-4821 | Fax: +1 217-693-4895 | Email: meetings@aocs.org
Microbial Production of Polyunsaturated Fatty Acids from High Concentration of Glycerol by *Aurantiochytrium* sp. mh2112. A. Fujimoto, A. Matsuda, H. Nagatomo, Y. Taoka, and M. Hayashi, University of Miyazaki, Japan.


Investigating the Anaerobic Peroxidase Activity of Soybean 15-lipoxygenase with LC-PUFAs. E.P. Dobson, C.J. Barrow, and J.L. Adcock, Deakin University, Australia.


Substrate Selectivity of Novozym 435 in the Esterification of Glycerol with an Equimolar Mixture of Linoleic, Conjugated Linoleic, and Pinolenic Acids. H. Woo1, I.H. Kim2, H.D. Choi3, I.W. Choi3, and B.H. Kim1, 1Chung-Ang University, Republic of Korea, 2Korea University, Republic of Korea, 3Korea Food Research Institute, Republic of Korea.

Preparation of Highly Purified Pinolenic Acid from Pine Nut Oil via Three-step Lipase-catalyzed Esterification1. H.J. Kim1, T.T. Zhao1, D.S. No1, C.T. Kim2, and I.H. Kim1, 1Korea University, Republic of Korea, 2Korea Food Research Institute, Republic of Korea.

Dietary Effects of Conjugated Linoleic Triacylglycerols on Body Fat Accumulation and Blood Lipids in High-fat Diet-induced Obese Mice. H. Woo1, M.Y. Chung2, I.H. Kim3, H.D. Choi2, I.W. Choi2, and B.H. Kim1, 1Chung-Ang University, Republic of Korea, 2Korea Food Research Institute, Republic of Korea, 3Korea University, Republic of Korea.


A Process for Recovering Genistein 7-O-phosphate, a Water Soluble Alternative of Genistein, from Fermentation Broth. W.Y. Lo and N.W. Su, National Taiwan University, Taiwan.

Functional Waxes Derived Plant Oils and Wax-nanocellulose Composites. Y.S. Mugo, L. Huybregts, and C. Rusin, MacEwan University, Canada.

Production of Structured Phospholipids Using Phospholipase and Lipase. S.H. Yoon, Woosuk University, Republic of Korea.


Essential Fatty Acids from Microalgae for Food Application. A. Matos1, R. Feller1, E. Moecke1,2, J. Oliveira1, A. Junior1, R. Derner1, and E. Santanna1, 1Federal University of Santa Catarina, Brazil, 2South University of Santa Catarina, Brazil.

Enzymatic Glycerolysis Under Supercritical CO₂ Conditions for Producing a Diacylglycerol (DAG)-enriched Oil. N. Vafaei*, M.G. Scanlon¹, P.J.H. Jones¹, C.B. Rempel¹,³, and N.A.M. Eskin¹, ¹University of Manitoba, Canada, ²Richardson Center for Functional Food and Nutraceuticals, Canada, ³Canola Council of Canada, Canada.


The presenter is the first author or otherwise indicated with an asterisk (*).