

What is unrefined, extra virgin cold-pressed avocado oil?

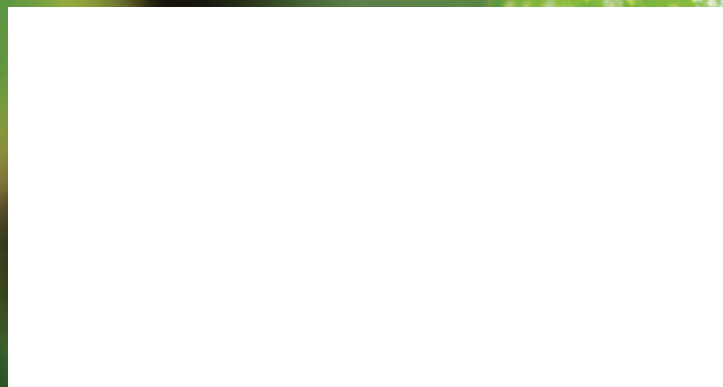
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AOCS Award Winners

A profile of AOCS' incoming President

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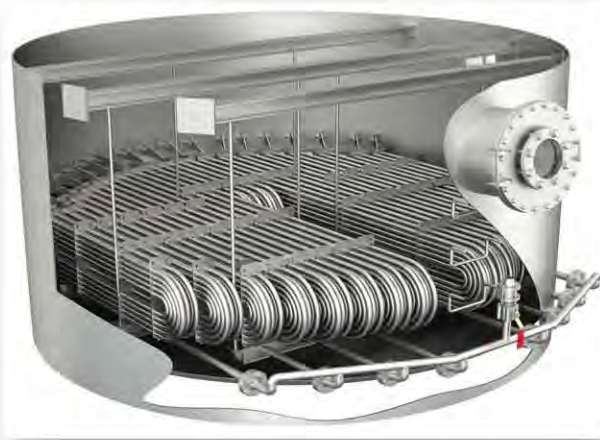


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To be a global forum to promote the exchange of ideas, information, and experience, to enhance personal excellence, and to provide high standards of quality among those with a professional interest in the science and technology of fats, oils, surfactants, and related materials.

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President's Profile: J. Keith Grime

In January 2010, *inform* published a brief biography of J. Keith Grime as part of the materials sent to members regarding candidates for the Governing Board of AOCS. Grime takes office as president in May at the AOCS Annual Meeting & Expo in Phoenix, Arizona, USA. We invited him to expand on his background and relationship with AOCS, and include his response this month.

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Calendar

Bold type: *new listing*For details on these and other upcoming meetings, visit www.aocs.org/meetings.

May

May 3, 2010. CSPA [Consumer Specialty Products Association] Cleaning Products Intermediate Formulations Short Course, Chicago Marriott Downtown, Chicago, Illinois, USA. Information: www.cspa.org/public/events/cleaning_products_course.html.

May 3–4, 2010. LIPIDS MAPS Annual Meeting 2010: Lipidomics Impact on Cell Biology, Atherosclerosis and Inflammatory Disease, Scripps Seaside Forum of the University of California San Diego's Scripps Institution of Oceanography, La Jolla, California, USA. Information: www.lipidmaps.org/meetings/2010annual/index.html.

May 3–6, 2010. BIO [Biotechnology Industry Organization] International Convention, McCormick Place, Chicago, Illinois, USA. Information: <http://convention.bio.org>.

May 3–7, 2010. 18th European Biomass

Conference and Exhibition, Cité Internationale—Centre de Congrès, Lyon, France. Information: www.conference-biomass.com.

May 5–6, 2010. Biomass to Liquids, Crowne Plaza Hotel—St James, London, United Kingdom. Information: www.smi-online.co.uk/events/overview.asp?is=5&ref=3239.

May 5–6, 2010. Biofuels International Expo & Conference, Barceló Hotel, Prague, Czech Republic. Information: www.biofuelsinternationalexpo.com.

May 11–13, 2010. Bioenergy Markets Africa, Maputo, Mozambique. Information: www2.greenpowerconferences.co.uk/v8-12/Prospectus/Index.php?sEventCode=BF1002MZ.

May 13–15, 2010. International Symposium on Microbial Lipids: From Genomics to Lipidomics, Vienna, Austria. Information: www.eurofedlipid.org/meetings/vienna2010.

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AOCS Meeting Watch



May 16–19, 2010. 101st AOCS Annual Meeting and Expo, Phoenix Convention Center, Phoenix, Arizona, USA. Information: phone: +1-217-359-2344; fax: +1-217-351-8091; e-mail: meetings@aocs.org; http://Annual_Mtg.aocs.org.



July 11–16, 2010. 19th International Symposium on Plant Lipids, Cairns Convention Centre, Cairns, Australia. Information: www.ispl2010.org.



October 4–7, 2010. 7th World Conference on Detergents: New Strategies in a Dynamic Global Economy, Montreux Music & Convention Centre, Montreux, Switzerland. Information: www.aocs.org/meetings/montreux.



October 16–19, 2010. 9th International Symposium on the Role of Soy in Health Promotion and Chronic Disease Prevention and Treatment, Capital Hilton, Washington, DC, USA. Information: www.SoySymposium.org.

For in-depth details on these and other upcoming meetings, visit www.aocs.org/meetings.

May 16–19, 2010. 101st AOCS Annual Meeting and Expo, Phoenix Convention Center, Phoenix, Arizona, USA. Information: phone: +1-217-359-2344; fax: +1-217-351-8091; e-mail: meetings@aocs.org; http://Annual_Mtg.aocs.org.



May 16–20, 2010. STLE [Society of Tribologists and Lubrication Engineers] 2010 Annual Meeting, Bally's Hotel & Casino, Las Vegas, Nevada, USA. Information: www.stle.org.

May 17–19, 2010. **Algae World Summit, Hilton Del Mar, San Diego, California, USA.** Information: www.infocastinc.com/index.php/conference/283.

May 20, 2010. **3rd SCS [Society of Cosmetic Scientists] Annual Scientific Symposium: Emerging Technologies and Challenges for the Future, London, UK.** Information: phone: +44 (0)1582 726661; fax: +44 (0)1582 405217; www.scs.org.uk.

May 23–27, 2010. Practical-Short Course: Trends in Margarine and Shortening Manufacture. Non-Trans Products, Food Protein Research & Development Center,

Texas A&M University, College Station, Texas, USA. Information: <http://foodprotein.tamu.edu/fatsoils/scmargarine.php>.

May 25–26, 2010. 2nd Practical Short Course: Functional and Bioactive Ingredients for Food Products and Specialty Beverages, Het Pand, Ghent University, Ghent, Belgium. Information: http://home.scarlet.be/~tpm12374/smartshortcourses/beverages2/program_beverages.html.

May 26–27, 2010. A Celebration of DHA: Discovery, Achievement and Challenges for Global Health 40 Years on, London, UK. Information: www.regonline.co.uk/builder/site/Default.aspx?eventid=806114.

May 26–29, 2010. OLIVEX 2010: The 8th International Exhibition for Olive Oil, Edible Oil & Oil Processing Technology, Damascus Fairground, Syria. Information: www.olivex-sy.com.

May 29–June 2, 2010. 9th ISSFAL Congress, Maastricht, Netherlands. Information: www.unimaas.nl/congresbureau/issfal2010.

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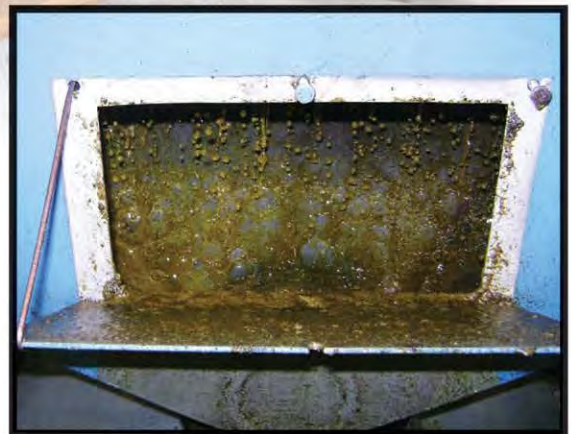
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Message from the President

This past year, 2009—the year of the Great Recession—has been tumultuous in many ways. All of us have been impacted in one way or another, if only to realize that an economic tsunami of this magnitude is still possible despite the availability of more and better data that can be incorporated into sophisticated computer models. Overreliance on the output of these economic models led to overconfidence in pushing economic returns to their limits while viewing time-honored economic principles as passé. Hence, we now find ourselves in the “new reality.” The “new reality” is really the old reality, that you cannot continue to spend more than you earn. This applies equally to AOCS.



AOCS has weathered this storm reasonably well. While we predicted a loss for AOCS in 2009, the (as yet) unaudited accounts show a very small loss of only \$50,000, despite lower than budgeted attendance at both our Centennial Annual Meeting & Expo in Orlando and the 2nd International Congress on Biodiesel in Munich, Germany. Prompt action by the AOCS Governing Board and staff to freeze headcount and salaries helped limit the growth of expenses. Revenues from our publications marketing agreement with Springer continue to exceed expectations. In addition, the action we took to restructure AOCS’ management of cash and investments has also contributed to a better than expected financial outcome for 2009.

We are looking forward to 2010 being a profitable year for AOCS largely because of the contribution from the much-anticipated fabric and home care industries meeting in Montreux, Switzerland, in October. The planning for this event is well under way. Taken together with planning for the Annual Meeting & Expo in Phoenix, the AOCS staff have a full workload.

In my previous “Message from the President” (*inform* 20:493, 2009), I talked about “managing to the future” of AOCS in this age of the “new reality.” In this regard, we are working with a professional marketing consultant both to help AOCS improve the quality and content of the services we provide to members today and to look for new and emerging technologies and interest groups that can potentially be integrated into AOCS in order to enhance the breadth and richness of the services offered to our members.

Meanwhile, we will continue to execute on the current strategic path that we have set for ourselves, which includes:

- Continuing to improve quality and content in our web-based services.
- Continuing to strengthen the relationship between AOCS headquarters and AOCS Sections.
- Continuing to collaborate with other fats and oils groups around the world.
- Strengthening the relationship between AOCS and senior management of the companies that support AOCS activities at a technical level.

As we bring the celebration of this centennial year to its close, I want to sincerely thank AOCS staff and volunteers for their continued commitment to AOCS and the ideals set for us by our “founding fathers” in Memphis, Tennessee, in 1909. We have a strong organization that has survived two World Wars, a Great Depression, and now a Great Recession. We have emerged from 2009 in great shape, with prospects for a great future.

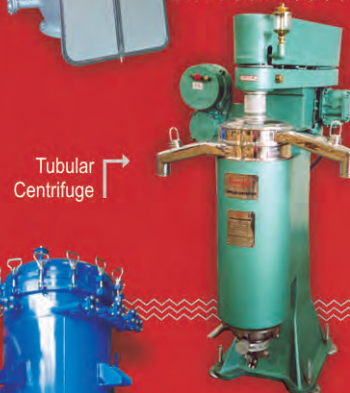
Finally, I want to thank staff and the current Board for their support of my presidency this past year.

Ian C. Purtle
AOCS President, 2009–2010

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What is unrefined, extra virgin cold-pressed avocado oil?

Marie Wong, Cecilia Requejo-Jackman, and Allan Woolf

The high oil content of the avocado fruit (*Persea americana* Mill.) has been known since Aztec times, with the fruit sometimes referred to as “vegetable butter” or “butter pear.” The plant originated in Central America, and its cultivation has spread to warm subtropical and temperate climates worldwide. The flesh of an avocado can contain up to 30% oil (based on fresh weight), but there is very little in the seed ($\approx 2\%$) or the skin ($\approx 7\%$). Avocado oil was originally, and still is, extracted for cosmetic use because of its very high skin penetration and rapid absorption. Following pre-drying of the avocado flesh to remove as much water as possible ($\approx 65\%$ water in avocado flesh), avocado oil for cosmetics is traditionally extracted with solvents at elevated temperatures. After extraction, the oil for application in skin care products is usually refined, bleached, and deodorized, resulting in an odorless yellow oil.

Avocados are primarily grown for the fresh fruit market, either domestic or export. There are 12 major cultivars of avocado, but the main cultivars grown globally are ‘Hass’ and ‘Fuerte.’ The ‘Hass’ cultivar constitutes more than 90% of the avocado crop in New Zealand (NZ) as this cultivar has excellent yield potential and also suffers less postharvest and handling disorders owing to their thicker skins. In 2000, two processing companies in NZ began production of extra virgin avocado oil; they pioneered the process for extracting cold-pressed avocado oil, which is sold as culinary oil for use on salads and for cooking (Eyes *et al.*, 2001). Like extra virgin olive oil, cold-pressed avocado oil is unrefined and so retains the flavor and color characteristics of the fruit flesh.

Production levels in NZ vary year to year depending on the season (some trees bear fruit biennially), weather (wind and storms can damage fruit, which are then not suitable for fresh fruit export), and export markets. Over the 2008/2009 season, NZ processors produced more than 150,000 liters of extra virgin avocado oil, with production expected to increase in the 2009/2010 season. Extra virgin avocado oil is also being produced in Chile, South Africa, and Kenya. Extra virgin avocado oil from NZ is exported to Australia, Japan, Southeast Asia, Europe, and North America by Grove Avocado Oil (Tauranga, NZ) and Olivado (Kerikeri, NZ). Avocados are primarily grown in NZ for fresh fruit export; any fruit not suitable for export is sold on the local market or to processors (for oil and other processed avocado products). Approximately 3% of the NZ avocado crop is processed for the oil. Windfall fruit not suitable for the local market is sometimes bought by oil processors. Fruits that are rotten or exhibit postharvest disorders and are unsuitable for consumption are not used for oil production.

The process developed in NZ for extraction of avocado oil is based on the mechanical extraction method used for olive oil. However, before we discuss the extraction process, we need first to consider the avocado fruit and its development. It is important to understand the



For further reading:

- Eyres, L., L. Sherpa, and G. Hendriks, Avocado oil: A new edible oil from Australasia, *Lipid Technology* 13:84–88 (2001).
- Woolf, A., M. Wong, L. Eyres, T. McGhie, C. Lund, S. Olsson, Y. Wang, C. Bulley, M. Wang, E. Friel, and C. Requejo-Jackman, Avocado oil. From cosmetic to culinary oil, in *Gourmet and Health-Promoting Specialty Oils*, R. Moreau and A. Kamal-Eldin, eds., AOCS Press, Urbana, Illinois, USA, 2009, pp. 73–125.

For more information about the *Gourmet and Health-Promoting Specialty Oils* monograph, visit <http://tinyurl.com/gourmet-oils-aocs>. For a review of the book, see *inform* 21:164, 2010.

pre- and postharvest physiology of avocados, particularly how their maturity and degree of ripeness impact the optimum time for oil extraction.

CULTIVATION OF AVOCADO

Avocados are grown in frost-free subtropical regions. Once the fruit has formed on the tree, it slowly matures (10 months), increasing in size and oil content. Most avocado-exporting countries have guidelines for when to harvest the fruit such that they are considered to be at optimum maturity to ensure they ripen and develop the desirable flavor and texture profile. The maturity of avocados is easily determined by measuring the dry matter content of the fruit (e.g., for NZ, the minimum dry matter for export is 24% by fresh weight; for the United States, it is 20.8%). The dry matter content is highly correlated with the total oil content in the fruit, hence harvesting at less than the minimum recommended dry matter content level will result in fruit with less than optimal oil content. The correlation between dry matter and oil content has been found to be valid across a number of countries (NZ, Australia, and United States), with different regions and orchards.

Avocado fruit do not ripen while they remain on the tree even once they have reached maximum maturity. If the fruits are not harvested, they can remain on the tree even when the next year's fruit is developing, and can remain on the tree for more than 18 months from flowering. Once harvested, the avocado will begin to ripen. This process involves the softening of the flesh due to endogenous pectolytic enzyme activity and, for some varieties, the coloring of the skin from green to purple-black. The degree of ripeness of the avocado is primarily determined by measuring the firmness of the fruit. Hence to ensure the oil content in the avocados is at the maximum for processing, the fruit should ideally be mature at harvest. This is not the case with immature fruit blown off the tree in a storm (windfall fruit); this fruit is still ripened but the oil content in the fruit is less than optimum. Ripening leads to tissue softening, which aids with the extraction of the oil due to the release of the oil from the parenchyma cells. Ripening can be promoted by treating the fruit with ethylene (a



gaseous plant hormone that synchronizes ripening) in controlled-temperature rooms.

To have optimal oil quality, avocado fruit should not be over-ripe and also should have minimal rots or other postharvest disorders (such as flesh greying due to long storage). The amount of oil extracted from mature and ripe avocados earlier in the season has been found to be only approximately 75% of the maximum available oil in the flesh (15% oil by fresh weight) compared to later in the season when it is possible to extract more than 90% of the available oil, this being the maximum oil yield (\approx 25% oil by fresh weight).

EXTRACTION OF AVOCADO OIL

The process for recovering oil from ripe avocados is a mechanical extraction, similar to olive oil extraction, with the additional step of removing the skin and stone (seed). After this, the flesh is ground to a paste and then malaxed for 40–60 minutes at 45–50°C. This is a higher malaxing temperature than used for olive oil extraction, but it is still considered to be cold-pressed extraction for avocado oil. The slightly higher temperature aids the extraction of the oil from the oil-containing cells and does not affect the quality of the oil. The oil and water phases are separated from the pulp using a high-speed decanting centrifuge, and then the oil is separated from the water in final polishing centrifuges. The pulp from the decanting centrifuge and waste skin/seeds are returned to orchards for soil conditioning and mulch, or used as animal feed.

Avocado oil, if extracted from sound fruit (no rots, physiological disorders, or damage), will result in oil with a very low percentage of free fatty acids (%FFA) (<0.5% as oleic acid). Also, the peroxide values (PV) can be very low (<2 meq/kg). Recommended standards for extra virgin avocado oil have proposed a maximum PV of 4 meq/kg (Table 1).

In sound, ripened fruit, the level of lipolysis that occurs is low, resulting in low %FFA. The fruit does not need to be processed immediately after ripening, but long delays should be avoided. Generally a higher %FFA is due to poor-quality fruit, delays in processing ripened fruit, or poor manufacturing practices.

PROPERTIES OF AVOCADO OIL

Extra virgin avocado oil from the ‘Hass’ cultivar has a characteristic flavor, is high in monounsaturated fatty acids, and has a high smoke point (\geq 250°C), making it a good oil for frying. ‘Hass’ cold-pressed avocado oil is a brilliant emerald green when extracted; the color is attributed to high levels of chlorophylls and carotenoids extracted into the oil.

Cold-pressed ‘Hass’ avocado oil has been described as having an avocado flavor, with grassy and butter/mushroom-like flavors. Other varieties may produce oils of slightly different flavor profile as has been seen with ‘Fuerte,’ which has been described as having more mushroom and less avocado flavor.

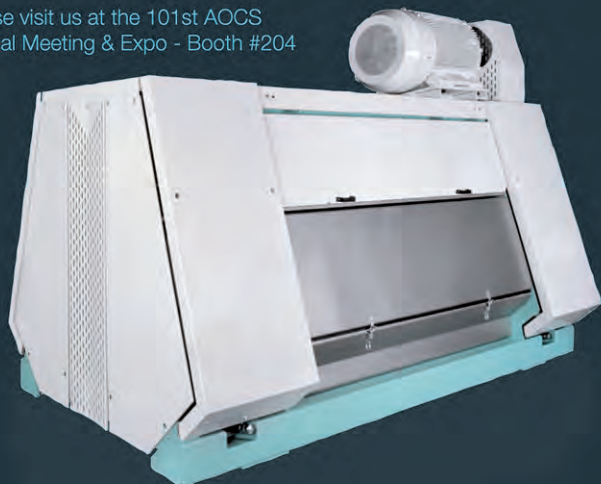
The fatty acid profile is very similar to olive oil, in that it is very high in oleic acid. A typical avocado oil has 76%

CONTINUED ON PAGE 259

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TABLE I. Proposed standards for avocado oil^a

	Extra virgin	Virgin	Pure	Blends
General	Oil extracted from high-quality fruit (minimal levels of rots and physiological disorders). Extraction to be carried out using only mechanical extraction methods including presses, decanters, and screw presses at low temperatures (<50°C). Addition of water and processing aids (e.g., enzymes and talcum powder) is acceptable, but no chemical solvents can be used	Oil extracted from sound fruit with some rots or physiological disorders. Extraction to be carried out using only mechanical extraction methods including presses, decanters, and screw presses at low temperatures (<50°C). Addition of water and processing aids (e.g., enzymes and talcum powder) is acceptable, but no chemical solvents can be used	Fruit quality not important. Decolorized and deodorized oil with low acidity, low color, and bland flavor. Oil produced from good quality virgin avocado oil; may be just avocado oil or infused with natural herb or fruit flavors	Avocado oil is excellent for blending and complements extra virgin olive, flaxseed, macadamia, and pumpkin seed oils. The specification and composition should match what is claimed on the label
Organoleptic characteristics^b				
Odor and taste	Characteristic avocado flavor and sensory assessment shows at least moderate (above 40 on a 100-point scale) levels of grassy and mushroom/butter with some smoky	Characteristic avocado flavor and sensory assessment shows at some (above 20 on a 100-point scale) levels of grassy and mushroom/butter with some smoky	Bland or matches description of infused flavor, e.g., lemon, chili, rosemary, etc.	Dependent on the blend
Defects	Minimal to no defects such as painty and fishy notes below 20 and glue-like below 35 as a sensory panel average on a 100-point scale	Low levels only of defects such as painty and fishy notes below 50 as a sensory panel average on a 100-point scale	Low defects such as painty and fishy notes below 50 as a sensory panel average on a 100-point scale	Low defects such as painty and fishy notes below 50 as a sensory panel average on a 100-point scale
Color	Intense and attractive green	Green with potential yellow hue	Pale yellow	Dependent on the blend
Free fatty acid (% as oleic acid)	≤0.5%	0.8–1.0%	≤0.1%	As specified
Acid value	≤1%	≤2.0%	≤0.2%	
Peroxide value (meq/kg oil)	≤4.0	<8.0	<0.5	
Stability	2 years at ambient temperature when stored under nitrogen and out of the light	18 months at ambient temperature when stored under nitrogen and out of the light	>2 years at ambient temperature when stored under nitrogen and out of light	
Smoke point	≥250°C	≥200°C	≥250°C	
Moisture	≤0.1%	≤0.1%	≤0.1%	
Fatty acid composition % (typical values)				
Palmitic acid (16:0)	10–25			
Palmitoleic acid (16:1)	2–8			
Stearic acid (18:0)	0.1–0.4			
Oleic acid (18:1)	60–80			
Linoleic acid (18:2)	7–20			
Linolenic acid (18:3)	0.2–1			
Antioxidants (mg/kg)				
Vitamin E	70–190			
Trace metals (mg/kg)				
Copper	≤0.05	≤0.05	≤0.05	≤0.05

^aReproduced from Woolf et al., 2009.

^bThese characteristics are measured with a trained sensory panel with a minimum of 15 hours of experience of tasting olive oil.



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President's Profile: J. Keith Grime

In January 2010, inform published a brief biography of J. Keith Grime as part of the materials sent to members regarding candidates for the Governing Board of AOCS. Grime takes office as president in May at the AOCS Annual Meeting & Expo in Phoenix, Arizona, USA. We invited him to expand on his background and relationship with AOCS, and he supplied the following.

I was born in the Pennine Hills region of Lancashire in northwest England, about 20 miles from Manchester. Yes, I was raised on the high-octane soccer of Manchester United, a passion that remains with me today. My stay in that region to complete undergraduate and doctoral degrees in chemistry at the University of Salford would be no indication of the global travels that would be part of the rest of my life. Anne, my wife of 40 years, and I would go on a global adventure that would have us living, working, and raising a family in many places around the world. As it turned out, after leaving the United Kingdom in 1973 for postdoctoral assignments at Florida State and Penn State, we would never live permanently in the UK again. We and our daughters are all now proudly dual citizens of both the UK and USA.

I have had the privilege to follow my dreams in both academic and commercial careers and in many locations. My initial career path was focused on the professorial life, and after postdoctoral appointments in the United States, we moved to New Zealand, where I joined the chemistry department faculty of the country's oldest university, the University of Otago, in Dunedin. With great undergraduate and graduate students and the support of a world-class department, I was able to establish my reputation as a researcher in the area of calorimetric studies of clinical and physiological chemistry. After three years in the beautiful surroundings of the South Island of New Zealand, where our own Kiwi, Rebecca, was born, we returned to the United States in 1978, where I joined the faculty at the University of Denver. In the spectacular environment of the Rocky Mountains, we added to our family with the arrival of Sarah, our younger daughter. On the career front, my research focus continued to be on calorimetric studies of biochemical and clinical systems and surface modification chemistry. One satisfying outcome was the chance to write and publish what is still one of the standard texts in the area of analytical calorimetry. I have many memories of burning the midnight oil working on the book long after the family had gone to bed.

Life and career were to take yet more dramatic turns in 1981 as I accepted an offer to join the research and development (R&D) organization of Procter and Gamble (P&G). The family left the Rockies behind and we headed for the banks of the Ohio River, Cincinnati, and the world of consumer product development. I spent most of my 27-year P&G career working in the fabric and home care business, dealing with every aspect of product development from technology discovery and development to process and formula design, to the



interface between R&D and marketing. Although formally based in Cincinnati for my P&G career, the global nature of P&G's business and R&D organization led me routinely to the four corners of the world, with reporting organizations in Newcastle, Brussels, Frankfurt, Rome, Caracas, Kobe, and Beijing as well as Cincinnati over the years. My wife can make the legitimate argument that my real address was on Delta airlines, as you probably had more chance of finding me there during those years than in Cincinnati!

Everyone who works in the product development area would identify with the biggest job satisfaction element in that area: being in the office, where the idea is nothing more than chemical symbols on a chalkboard, and following it till it appears as a product in the homes of millions of people around the world. What one learns is that this is an incredibly difficult process and there are a million ways to fail along the way. But like any project with a high degree of difficulty, success is then all the more satisfying and, in this case, very tangible. Perhaps the most satisfying element for me is that developing technology on this scale takes collaboration with the chemical and biochemical industry at the highest level of both science and management. This is especially true in the surfactant area of such a large business where you discover the finiteness of the chemical world as every decision you make in molecular structure has ramifications for the world's capacity to supply it. As a technologist and project manager in many such projects, over the years I've had the opportunity to work closely with just about all the major chemical and biochemical companies in the world . . . many of which are mainstays of AOCS. It is hard to imagine a more fulfilling experience than working with many of the world's best technologists and scientists on high-stakes projects. Being involved in such projects gave me a real feel for the scope and capability of the world's commercial technology community, and the experiences and learning were absolutely invaluable in shaping my views on managing in the technical arena. The bottom line is that nothing is achieved without

open collaboration and access to knowledge, and this is one of the pivotal roles of AOCS.

I retired from P&G in late 2007 and set up my own consulting company, JKG Consulting LLC. I consult with corporations that range in size from start-up to mega-sized multinationals and across the spectrum of business focus areas, from the chemical industry to the consumer products industry that it supports, to high-tech "Silicon Valley" clients. My focus is on innovation strategy (both chemical and product), R&D effectiveness, alliance and partnership strategy, and the link between these factors and business and market development. If I could define the perfect job, this would be it. I'm privileged to work on challenging and satisfying problems with great talents and, in between, have significant time to spend on the R&R activities that I never had enough time to do justice to during my career. I've also had a chance to return to my teaching roots and have spent the last two winters as an adjunct professor at Northwestern University teaching a senior/graduate class titled Technical Management Effectiveness and Innovation Strategy. Could it get any more interesting? Well, the answer is "yes" as I also decided that, post-retirement, I would continue my close involvement with the AOCS.

So where is the retirement part of all this you may well ask? When I'm not working on one of the above, you'll find me either messing about in, sailing, or powering a boat, or at our vacation homes on the Gulf Coast or on the shores of Lake Erie.

My longest relationship with AOCS has been with the Montreux Conference (World Conference on Detergents), having been involved in all aspects of planning, chairing, and committee work, since 1992. This will culminate in October 2010 with my role as the general chair of the conference. It is with great pride that I take a small amount of credit for the progression of this conference to the world-class event that it now is. In 2010, for the first time in conference history, we will have all three CEOs from P&G, Unilever, and Henkel speaking on the program, along with about 25 other high-level speakers presenting on all the strategic issues in the business. It has truly become *the* strategic conference of the fabric and home care business and all the businesses that support it. So, for those of you in that business, please follow our request that you'll see in all the publications to Meet Me in Montreux!

I've been involved with the AOCS Governing Board in many capacities since 2002. It has been a wild ride at times as we worked through a major financial crisis a few years ago to the point now where, even in the most difficult economic times, we have attained financial stability. That transition took discipline, strategic choices

"We have one of the most diverse memberships in the chemical and biological technical society arena. This is our strength—not just in technical discipline, not just in regional and global diversity, but also in the fact that we serve academic, governmental, and commercial sectors."

and focus, and a close working relationship between the Board and the professional staff. And it will continue to be that way because as we all know, the economic environment remains volatile. The Board's work is, by definition, strategic and not transparent to the majority of membership, but in order to meet your needs, which is our primary goal, we have to make sure that we remain financially viable and we move with the times. This also means that we must have a vision of the Society for the coming years as everything about us changes. My journey through the academic and commercial world around the globe has, I hope, brought me some of the skills that will help the AOCS continue to thrive as I take over as president at this year's Annual Meeting & Expo—an honor that I take very seriously.

I learned a few things along the way that impact how I approach every professional endeavor. Success is defined by one's ability to develop a vision of the future and to step away from current paradigms that may limit your vision, choosing the right people to work with and then empowering them, making choices, by focusing on what's important and avoiding wasting time on what's not, and finally, but not least, organizing for success. So, where can we apply some of these principles? One answer (among many) is leveraging our strength to the maximum benefit of the membership.

We have one of the most diverse memberships in the chemical and biological technical society arena. This is our strength—not just in technical discipline, not just in regional and global diversity, but also in the fact that we serve academic, governmental, and commercial sectors. But it is only strength to the extent that we leverage it by making the transfer of knowledge and information among these groups the absolute best it can be and not "siloeed" in compartments. Access to this wealth of information should be easy for our members.

This will be one of my major focus areas during 2010–2011. We'll be coming to you for feedback on this area during the year, so don't be bashful in letting us know what you expect. It's going to be a great year, and I look forward to working with you and for you. ■

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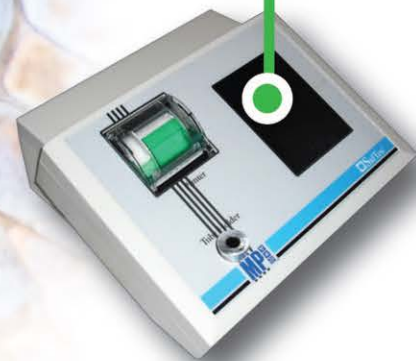
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AOCS Technical Services update

AOCS Director of Technical Services Richard Cantrill spends more time out of the office than in the office, it seems, as he travels the globe representing AOCS and its members.

The month of February 2010 was no exception, as it found Cantrill traveling to Japan for several meetings. They included the second gathering of the AOCS Expert Panel on Process Contaminants, an ILSI Japan Workshop on Sampling and Detection Methods (see the separate meeting report on pages 209–210), and the second plenary meeting of ISO/TC 34/SC 16. To translate the acronyms, that stands for Subcommittee 16—Horizontal Methods for Molecular Biomarker Analysis—of Technical Committee 34 on Food Products of the International Organization for Standardization.

EXPERT PANEL

AOCS' Expert Panel on Process Contaminants was formed in December 2009 and initially is focusing on two issues: the accurate measurement of fatty acid esters of 3-MCPD (3-monochloropropane-1,2-diol) and glycidol, as well as the collection and dissemination of information about these two process contaminants at www.aocs.org/tech/3-mcpd.cfm.

The second meeting of the panel was held on February 8, 2010, in Tokyo. Attendees included representatives of both industry and government. Participants agreed that the development of direct methods of analysis for fatty acid esters of 3-MCPD and glycidol (GE) is appropriate. Further, the attendees agreed to support the collaborative study of a direct method and will help develop a list of potential collaborators in Japan.

Participants also agreed that care should be taken when choosing which method for the direct analysis of GE to study collaboratively because there are a number available with differing degrees of complexity, equipment requirements, and availability of suitable equipment. Although Kao Corp. published the first method (*Journal of Oleo Science* 59:81–88, 2010), the company indicated that this method already has been revised and a new article on the revision is being reviewed for publication.

“The meeting provided a contact point for the fats and oils industry in Japan to come together and consider methods of analysis for process contaminants,” noted Richard Cantrill. “Through the Japan Oilseed Processors Association and Japan Oil Chemists' Society, there was agreement to work with AOCS on solving these analytical issues.”

Those interested in more information about the expert panel should contact Cantrill at rcantrill@aocs.org. The next meeting of the panel will be on Tuesday, May 18, at the AOCS Annual Meeting & Expo in Phoenix, Arizona, USA.

ISO/TC 34/SC 16

Cantrill also participated in the second plenary meeting of the ISO/TC 34/SC 16 on Horizontal Methods for Molecular Biomarker Analysis at the Pacific Hotel in Tokyo on February 9–11, 2010.

A total of 45 delegates and observers attended from Japan, China, France, Germany, India, Thailand, the United Kingdom, and the United States. Other groups represented at the meeting included the European Committee for Standardization (TC 275/Working Group 11 on Genetically Modified Foodstuffs) and the ISO Central Secretariat, and the Joint Research Centre of the European Commission.

The delegates were welcomed by Masaaki Yoshida, president of Japan's Food and Agricultural Materials Inspection Center, which was one of three host organizations.

“The delegates enjoyed the superb arrangements made by our hosts,” Cantrill said, “and we completed a very lengthy agenda resolving many procedural issues and advancing a number of projects.”

The committee decided to revise the layout of the major standards assumed by the committee on its formation. Methods of analysis currently attached as annexes to the standards would become stand-alone documents in the future to allow for their revision and addition through formal ISO processes. The committee also agreed to form temporary working groups to deal with:

- The batch of annexes already submitted but not reviewed,
- The revision of ISO/Technical Specification 21098 detailing the development process for acceptable methods,
- Guidelines on testing for varietal identification, and
- Guidelines on testing for the presence of plant pathogens.

The next meeting of ISO/TC 34/SC16 will be in mid 2011 in the United States. ■



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ILSI Japan Workshop on Sampling and Detection Methods

Ray Shillito

A Workshop on Sampling and Detection Methods was held Friday, February 12, 2010, in Tokyo, Japan, to take advantage of the attendance of experts at the second plenary meeting of the International Organization for Standardization (ISO)/Technical Committee (TC) 34/Subcommittee (SC) 16 Committee on Horizontal Methods for Molecular Biomarkers Analysis.

The Japanese government is advanced in its understanding and deployment of methods. The primary goal of this workshop was to provide a forum to exchange ideas on testing of biotechnology-derived grain, food, and feed products in the context of export from producing countries and their import into Japan.

The one-day workshop was held at the Pacific Hotel in Tokyo. The co-organizers were the Ministry of Agriculture, Forestry and Fisheries of Japan, the Food and Agricultural Materials Inspection Center (FAMIC), and the National Food Research Institute (NFRI), together with the International Life Sciences Institute (ILSI) Japan branch and the ILSI International Food Biotechnology Committee (IFBiC). The meeting was attended by approximately 90 persons, mainly from government, with some attendees from academia and



Attendees to a workshop on Sampling and Detection Methods held Friday, February 12, 2010, in Tokyo, Japan.

industry in Japan. In addition, two industry participants from Korea attended the workshop.

Following introductory remarks by Shuichi Kimura, president of ILSI Japan, Masaaki Morita (FAMIC), Kazumi Kitta (NFRI), and Hiroshi Akiyama (National Institute of Health, Japan) reviewed the current testing situation in Japan, and how grain and food are tested for compliance with labeling regulations. Grain is tested using screening methods, and then is tested for percentage of kernels if screening results are close to the threshold.

Following lunch, Ray Shillito (Bayer CropScience and ILSI IFBiC) discussed the current situation regarding standardization and harmonization of testing methods and approaches via ISO and the Codex Alimentarius Commission. Frank Spiegelhalter (Eurofins GeneScan Inc., Metairie, Louisiana, USA) described the flow of grain through the US commodity system and contrasted the experience

of testing for the presence of biotechnology products in shipments exported from the United States to Japan and European countries.

Dabing Zhang (Shanghai Jiao Tong University, China) described the development and commercialization of biotechnology products in China, including cotton, maize, hybrid rice, tomato, pepper, and papaya. He described how China is developing new detection strategies to cope with the multiple events that are on the market. These include multiplexed approaches and loop-mediated amplification, which have the potential to provide



a faster DNA-based test than the PCR (polymerase chain reaction) method now in use.

Beni Kaufman (BioDiagnostics Inc., River Falls, Wisconsin, USA) described how the seed industry uses testing. In this case, materials have to be tested both for the low-level presence of events and to show purity (high %) of the desired event. He described the many points at which processes are controlled to ensure purity, and at which points tests are applied to confirm that this has been achieved.

Ron Jenkins (United States Department of Agriculture [USDA]–Grain Inspection, Packers and Stockyards Administration [GIPSA]) and Tandace Soldberg (USDA) completed the day by describing the activities of the USDA in its support of consistency of testing. Jenkins described the functions of GIPSA in facilitating grain trade, and the performance evaluation program for certification of rapid test kits (e.g., lateral flow test strips).

Soldberg gave an update on the USDA/GIPSA Biotechnology Corn and Soybean Proficiency Program. This program has been operating since 2002 and has grown from 22 participating organizations in February 2002 to 155 organizations that have participated as of April 2009. Of these, 123 are international. Forty-eight organizations took part in the April 2009 round, she noted.

Ray Shillito is technical coordination manager, Americas, for Bayer CropScience in Research Triangle Park, North Carolina, USA. He is also chair of the US-Technical Advisory Group to ISO/TC 34/SC 16. He can be reached at ray.shillito@bayercropscience.com.

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Update from the Latin American Section of AOCS

Héctor Carlos Autino

On May 16, 2010, the two-year period for which the members of the Governing Board of the Latin American Section of the American Oil Chemists' Society (LA-AOCS) were elected to serve will come to an end.

CHALLENGES ENCOUNTERED

For my colleagues and me on the Governing Board (see sidebar), the challenges that came with our tenures were not minor. Several tasks of considerable importance faced us. Among them:

- To manage the Section under the new AOCS guidelines, both for the sections and divisions.
- To organize, together with ASAGA (Asociación Argentina de Grasas y Aceites; the Argentine Oils and Fats Association), the 13th Latin American Congress on Oils and Fats, held November 1–6, 2009, in Rosario, Argentina.
- To establish the location for the 14th and 15th Latin American Congresses.
- To design and implement a logo and motto for the Section.
- To appoint regional delegates in different countries in Latin America to reinforce and increase our presence in the region.
- To promote the creation of new associations to augment the existing ones (i.e., ASAGA; SBOG, Sociedade Brasileira de Óleos e Gorduras; CORCHIGA, La Corporación Chilena de Aceites y Grasas).
- To increase the number of members, with the long-term goal of becoming the most important section within AOCS.
- To implement a blog for technical consultation that serves as a bridge between our members and the Governing Board and provides a new way for our members to interact.
- To organize, together with AOCS and Fedepalma (Federación Nacional de Cultivadores de Palma de Aceite), the short course on palm oil that took place during the 2009 Congress in Cartagena.
- To apply the available funds of the Section to grant new benefits for our members, including:
 - Complimentary copy of *Temas Selectos sobre Grasas y Aceites*, Volume I.
 - A complimentary polo shirt bearing the Section's logo.
- To implement the delivery of a digital version of ASAGA's quarterly, *A&G* magazine, free of charge to the Section's members.
- To organize, together with ASAGA, the 8th Meeting for Industrial Managers to take place from September 9–11, 2010, in a not-yet-confirmed venue.
- To establish a close contact with all AOCS sections and divisions

LA-AOCS

Sección Latinoamericana de la AOCS

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that promotes a fluid exchange of news, technical issues, and scholarship opportunities for young professionals.

- To increase our contacts with AOCS, with the goal of achieving greater and new benefits for the Section members.
- To generate a monthly edition of the Section's Newsletter with news of scientific and technical interest.

ADVANCES AND GOALS ACHIEVED

The following goals charged to the LA-AOCS Governing Board were accomplished during 2008–2010:

- Together with ASAGA, we organized the 13th Latin American Congress in Rosario, Argentina. The Congress included more than 2,300 participants and 63 exhibiting companies. Additionally, we obtained 25 scholarships for Latin American professionals and students, and we named several members of the Section to the Scientific Committee to evaluate the scientific papers and posters that were presented. For the first time, presentations on tropical and specialty oils were added to the conference program.
- We set the venue for the 14th Latin American Congress, to be organized with AOCS, for Cartagena, Colombia, in 2011; and we tentatively agreed on Chile as the venue for the 15th Congress, to take place in 2013.
- We designed and created the logo and motto of the Section. Our motto: "In Search of the Latin American Integration."
- Practically all of the Latin American regions have already named regional delegates. Additionally, Colombia has created its own association, ASOCOINGRA (La Asociación Colombiana de la Industria de Grasas & Aceites Comestibles), which adds to the existing ones.
- We have increased the number of our members, and we hope to double that number by the upcoming AOCS AM&E in Phoenix, Arizona.
- The technical consultation blog is in operation, and we look forward to extending its services to the complete AOCS community.
- We launched a monthly Newsletter, which is entering its second year, and also the Technical Blog, a site where our members can discuss issues in common.
- We organized, together with AOCS, a Short Course on Refining, Handling, and Applications of Palm Oil held in Cartagena



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Industrial Filtration

during the Fedepalma Congress on September 21, 2009; there were 107 participants.

- We designed a polo shirt with the Section's logo that was distributed to the members present at the 13th Congress; we will also distribute this gift to those who attend the LA-AOCS luncheon at the AM&E in Arizona. We also plan to distribute the book *Temas Selectos sobre Grasas y Aceites*, Volume 1, to new members and participants of the aforementioned event.
- We established a significant exchange with all AOCS sections and divisions, including the Australian, Indian, and Canadian Sections and the Microscopy and Food Structure Division. For example, we contributed a lecturer—Eduardo Dubinsky—for the 64th OTAI Congress in New Delhi on November 9, 2009 (see *inform 21*:117–119 for a report on the meeting).

Current short-term challenges include the distribution of a digital edition of *A&G* as well as the organization, together with ASAGA, of the 8th Meeting of Industrial Managers.

Finally, we wish to express our gratitude to AOCS for its support of the young professionals that collaborated *pro bono* with this Governing Board; to the Governing Board members; to our regional delegates; to SBOG, CORCHIGA, and ASAGA; and to our members. We also wish to encourage those members of AOCS who have yet to join our Section to consider the benefits LA-AOCS membership. We truly hold with the saying that “unity is strength”; we hope that you will be a part of our continued growth.



Héctor Carlos Autino is industrial corporate manager for Bunge Argentina S.A. and the current LA-AOCS president. Contact him at hector.autino@bunge.com.

information

AOCS Latin American Section (LA-AOCS)

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For more information on LA-AOCS, visit www.aocs.org/member/section/latin/.

Briefs

The oils+fats International Trade Fair for the Production and Processing of Oils and Fats made from Renewable Resources will in future be held every two years instead of being an annual event. Thus, the next meeting will be held October 5–7, 2011, in South America. “By making this change, the organizer, Messe München GmbH, is accommodating the wishes of exhibiting companies,” a spokesperson said in February 2010.



The European Union has introduced a logo that, beginning in July 2010, must be shown on packaged organic foods sold in Europe. The winning “Euro-leaf” design shows the EU stars in the shape of a leaf against a green background, and was the result of a pan-European contest open to art and design students.



Despite the recessionary climate, the median salary for food scientists polled by the Institute of Food Technologists (IFT; Chicago, Illinois, USA) increased by 4.4% over the past two years according to the recently released IFT Annual Employment and Salary Survey. For more information, see <http://tinyurl.com/y88majv>.



In February 2010, the largest grain terminal in the south region of Russia, with annual production capacities of 2.5 million metric tons (MMT), was fully commissioned in the Tuapse commercial seaport. According to a report from the APK-Inform Information Agency, Russia harvested 97 MMT of grains in 2009.



The European Commission has introduced an initiative to help chemical companies switch to renewable feedstocks and energy sources, according to the Royal Society of Chemistry (RSC; London, UK). The 4.5 million euro (more than \$6 million) Biochem project aims to help 250 chemical small- and medium-sized enterprises (SMEs) to develop more sustainable production processes, RSC said. ■

News & Noteworthy



United Soybean Board

The ultra-low-linolenic soybean market

Does the failure of Asoyia Inc., the Iowa-based company that marketed 1% ultra-low-linolenic soybeans and soy oil, signal the beginning of the end for the ultra-low-linolenic soy oil market in the United States?

As mentioned in the March issue of *inform* (21:141, 2010), Asoyia was placed in receivership by the Pilot Grove (Iowa) Savings Bank on December 15, 2009. The company was formed in 2004 by 25 Iowa farmers, who licensed soybean varieties developed by breeder Walter Fehr of Iowa State University in Ames. Among Asoyia's products was an ultra-low-linolenic (less than 1.5% α -linolenic acid) soybean and oil marketed as a non-genetically modified (non-GM) *trans*-fat-free replacement for partially hydrogenated soy oil. The company also contracted acreage of low-linolenic TREUS GM beans through Pioneer Hi-Bred International (Johnson City, Iowa, USA).

In April 2008, Asoyia received about \$4 million in venture capital from two firms: Prolog (St. Louis, Missouri, USA) and Life

Science Partners (Boston, Massachusetts, USA). By the 2009 growing season, Asoyia had contracted more than 100,000 acres (almost 40,500 hectares) on 350 farms for soybean and seed production, which was four times the 2008 level. Further, the company was expecting 2010 oil sales of 45 million pounds (more than 20,000 metric tons), or three times the volume Asoyia had sold in recent years.

Included among the company's customers was Pepperidge Farm, which used the oil (in addition to sunflower and canola oils, depending on pricing) in its Goldfish savory crackers.

A Pepperidge Farm spokesperson said in early March 2010 that the company had no comment about its future formulation plans.

Beth Fulmer-Boyer, an AOCS member and Asoyia's vice president of oil business, confirmed that the company was turned over to the bank in December 2009. She cited the recession as lowering the demand for value-added oil, as well as the fact that “too much cost was built into the system.” Once



the full impact of the company's storage agreements was felt and the payments came due in December 2009, Fulmer-Boyer said that the "\$2.75 premium without coverage from the protein was just too much for the oil side of the business to carry."

Asoyia relied on Cargill (Minneapolis, Minnesota, USA) for processing. Contract growers transported beans to three Cargill facilities in Cedar Rapids and Des Moines, Iowa, as well as Bloomington, Illinois. A Cargill spokesperson said his company had established a process with Asoyia and other interested parties "under which we are able to work with them to keep supplying Asoyia oil to customers." The spokesperson confirmed that Cargill is only marketing oil from 2009 soybean production, although the company "is in discussion about 2010."

NICHE MARKET ECONOMICS

Asoyia's ultra-low-linolenic soybeans had to compete not only with low-linolenic beans from other, larger companies (Pioneer's TREUS and Monsanto's Vistive varieties) but also with other solutions to removing *trans*-fats from foods. "In general, the economics of production and transportation of a commodity will always win over the economics of a specialty grain," noted Charles Hurburgh, a professor of agricultural and biosystems engineering at Iowa State University, who worked with Asoyia.

Hurburgh added: "In a raw material situation, it costs more to transport and distribute grain than it does to grow it. Further, if you want to use the traditional handling and processing network for a specialty bean, there is a critical mass that you have to get beyond before the efficiencies are good enough for the specialty market



Tecnológica de Alimentos SA (TASA) of Peru became the first fishmeal and fish oil producer to achieve certification under the new IFFO (International Fishmeal and Fish Oil Organisation) Global Standard for Responsible Supply. The certification was awarded to TASA's Callao Norte plant. Here, Jorge Mora (right), operations director of IFFO, presents the IFFO-Assured certificate to Mario Brescia (left), chief executive officer of TASA.

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to have any staying power at all. That fact weighs in the favor of larger companies.”

To the extent that ultra-low-linolenic oil could be sold competitively with other alternatives to zero-*trans* fat food formulation—alternatives such as *trans*- and inter-esterification and oil blending—it had a market, Hurburgh said.

For its part, Pioneer Hi-Bred, a DuPont business, is “holding steady” on its low-linolenic soybean business, according to a spokesperson. “Low-linolenic oil was a step in the right direction for food processing companies looking for alternative oils in the wake of the FDA *trans* fat label requirement,” noted Amanda Rinehart, marketing communication manager for Pioneer’s Plenish™ business.

In July 2003, the US Food and Drug Administration mandated the addition of *trans*-fat content to the Nutrition Facts panel on food labels; the regulation became final in January 2006. Asoyia’s ultra-low-linolenic soybean oil was one option for food manufacturers rushing to remove *trans* fats from their products.

However, Pioneer is now focusing its efforts on “next-generation output traits

with increased oil stability and nutritionally enhanced fat profile,” Rinehart said, particularly the Plenish high-oleic soybeans that will be grown under contract for continuing field and oil testing in 2010 and 2011, with commercialization anticipated in 2012. “Food companies now are looking for a product with greater stability, extended shelf life, and flexibility in applications,” she said.

Monsanto Co. (St. Louis, Missouri, USA) reports that its Vistive low-linolenic (less than 3%) soybean is performing well, although the company clearly also is focused on next-generation products.

“The food segment Vistive occupies is solid but limited,” said Ben Kampelman, a company spokesperson. “We are excited about the future of more healthful oils, and the Vistive platform is an important component of our portfolio. We expect our next-generation product, Vistive Gold, to build upon the success of Vistive. It will offer the same no-to-low *trans* benefits as today’s Vistive soybeans, and add a high-oleic and low-saturated fat profile.”

In the meantime, the company that grew and crushed the first ultra-low-linolenic

soybean seeds in 2003 says it will remain in the ultra-low-linolenic market “for the foreseeable future.” Robert Meeuwssen of Zeeland Farm Services (Zeeland, Michigan, USA) reports that “the ultra-low-linolenic market has been tough,” although over time the market has remained steady.

“We will continue to produce oil in levels that the market dictates,” Meeuwssen added. What those levels will be is anyone’s guess at this point.

Lipid oxidation and acrylamide

Lipid oxidation positively influences the formation of the process contaminant acrylamide, especially in food models with low sugar and low water content, according to a study by research teams at universities in Italy and Turkey.

Lipid oxidation during food processing or storage results in the creation of a number of compounds including aldehydes, ketones, alcohols, epoxides, and hydrocarbons. Previous studies have suggested that

CONTINUED ON NEXT PAGE



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Commodities

CACAO/CHOCOLATE

Mars, Inc. and Barry Callebaut AG recently signed a cross-licensing and cooperation agreement that is expected to increase the availability and uniformity of cocoa flavanol-rich chocolate products worldwide. Beginning in February 2010, Barry Callebaut began licensing Mars patents and will display the Mars Cocompro® “bean in hand” logo on its Acticoa® products in the US and other markets.

CANOLA/RAPESEED OIL

Agriculture and Agri-Food Canada announced in early March 2010 that it will provide \$14.5 million in funding for agronomic and nutrition research of canola (rapeseed) and flaxseed under a new Canola/Flax Agri-Science Cluster. This funding will be matched by industry



and farmers for a total amount of nearly \$20 million. An additional \$4.6 million of government funding will support the Clubroot Risk Mitigation Project, which seeks to identify best management practices and breed clubroot-resistant canola varieties.

Researchers in Germany report a new high-throughput method that can

both unoxidized and oxidized lipids are able to contribute to the conversion of asparagine into acrylamide,

The research team, led by Edoardo Capuano of the Department of Food Science at the University of Napoli Federico II, set

be applied to predict the oleic acid and α -linolenic acid content of single seeds of rapeseed. Writing in the *Journal of Agricultural and Food Chemistry* (58:94–100, 2010), the team, led by Oliver Niewietzki of the University of Göttingen, gave details about its high-throughput Near-Infrared Reflectance Spectroscopy method using a spectrometer equipped with a photodiode array detector. “Single-seed analyses have been accomplished with a throughput of up to 800 seeds per hour,” they noted.

FISH OIL

The US Federal Trade Commission (FTC) announced on February 16, 2010, that it had sent letters to 11 companies that promote omega-3 fatty acid supplements. The message: that “. . .they should review their product packaging and labeling to make sure they do not violate federal law by making baseless claims about how the supplements benefit children’s brain and vision function and development.” In the warning letters, the FTC gave the companies two weeks to respond and explain the steps they have taken, or intend to take, to ensure they are complying with the law. The agency warned that it may take law enforcement action if the companies make health-related claims for products without scientific proof.

The US military is considering fortifying troops’ rations with omega-3 fatty acids, according to NutraIngredients.com. The report cited a conference, entitled “Nutritional Armor for the Warfighter: Can Omega-3s Enhance Stress Resilience, Wellness and Military Performance?” held at the Samueli Institute in Alexandria, Virginia, in December 2009.

EPAX AS, a supplier of marine-derived omega-3 fatty acids, has moved to a new headquarter facility. Located on Norway’s western shore, the 16,000 square foot (1500 square meter) facility is incorporated into the company’s existing production site, research and development

out to investigate the effect of oil oxidation level on acrylamide formation during the heating of dry, fat-rich model systems. Further, the team examined the roles of reducing sugars, the plant antioxidant catechin, and water concentration.

departments, and quality assurance and control testing labs. EPAX uses excess heat created from the nearby processing plant to warm its offices.

FLAX

The Flax Council of Canada will receive up to C\$5.9 million (\$5.7 million) from the Canadian government to help create new flax varieties and develop an improved method for flax seed testing. The investment will fund two initiatives: The first aims to produce new herbicide-tolerant Canadian flax. The second initiative will work to develop sampling and testing methods to identify the presence of genetically modified flaxseed in Canadian flax exports. “Results will be used to assure global flax markets that Canada knows its crop and is in control of the quality of the flax delivered. In turn, this will serve to increase competitiveness in the flax seed industry,” Agriculture and Agri-Food Canada said in a statement.

New ventures

BioExx Specialty Proteins (formerly Bio-Extraction, Inc.) will open a new plant in Minot, North Dakota, USA, according to the *Minot Daily News* newspaper. The Minot plant is expected to process more than 88,000 metric tons of canola per year. BioExx (Toronto, Canada) has developed technology for extracting oil, meal, and specialty proteins from canola seed.

R&D

Dutch chemicals giant DSM said in February that it will “significantly expand its existing research and development facilities in North America” by building a new Nutrition Innovation Center at the company’s North American headquarters in Parsippany, New Jersey, USA.

The researchers prepared various model food systems containing different combinations of oxidized and nonoxidized oils, sugar, catechin, and water, and all were heated at 180°C for 30 minutes, after which time acrylamide concentrations

were measured by liquid chromatography–atmospheric pressure chemical ionization–mass spectrometry.

The team reported that the presence of oxidized oil increased the formation of acrylamide—an effect that was more apparent in catechin-free model systems. Acrylamide formation was reduced in systems with catechin present and containing untreated oil and partially oxidized oil, whereas no significant lowering effects were observed when highly oxidized oil was used.

Likewise, when reducing sugars were removed from the formulation, the effect of the level of oil oxidation was significantly more evident than that seen in model systems that did contain sugar.

The team also made a comparison between sunflower oil and a more saturated oil (palm oil), concluding that the amount of acrylamide formed was significantly lower in the sugar-free model system formulated with palm oil than that with sunflower oil. They suggested that the thermal stability of the oil can markedly influence the amount of acrylamide in the final products.

The researchers concluded that initial water content also is a critical factor in

determining the final acrylamide concentration because the time-temperature profile during heating can markedly change when a different amount of water is present. In the sugar-containing model systems, the level of lipid oxidation moderately influenced acrylamide formation, whereas the effect was more pronounced in the systems with low water content and with low carbohydrate concentration.

The study appeared online ahead of print in *Food Research International* (doi:10.1016/j.foodres.2010.01.013). The editors of *inform* would like to thank Reading Scientific Services Ltd., whose summary of this research first appeared in Edition 474 of the company's weekly Food e-News.

FDA targets health claims

On March 3, 2010, the US Food and Drug Administration (FDA) cautioned 17 companies that health claims on their food packaging are misleading or false.

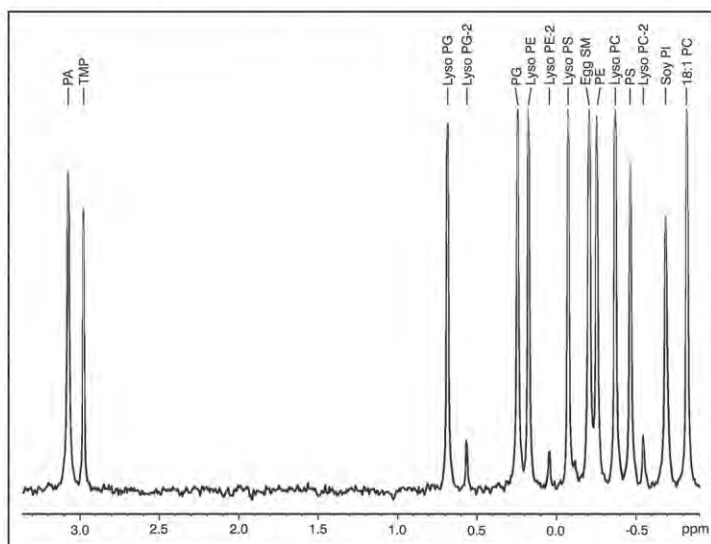
Included were products such as ice cream, fish fillets, and coconut custard pie, all of which make “no *trans* fat” claims on the front of the packaging minus the disclosure statement required by FDA to alert consumers that the products have significant levels of saturated fat and total fat. Also cited was the Beechnut DHA Plus line of products for children, which FDA says makes claims that are not allowed on products intended for children under two years of age “because appropriate dietary levels have not been established for children in this age range.”

One manufacturer of olive oil was warned for making claims that its product will treat, prevent, or cure diseases such as heart disease and cancer. “These types of claims are not allowed on food products,” FDA said on its website (see <http://tinyurl.com/ya8qvju> for a complete list of companies and products cited).

The companies had 15 days to explain how they will change the labels, before the FDA considers further action, including possibly seizing the products.

Reactions to the action included a statement from the Center for Science in the

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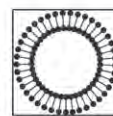


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Public Interest (CSPI), a consumer activist group based in Washington, DC, USA. "While today's action is the largest crackdown on deceptive food labeling in more than a decade, the FDA must now turn its individual enforcement actions into binding regulations," CSPI said.

Scott Faber, vice president of federal affairs for the Grocery Manufacturers Association, said in a statement: "As Commissioner [Margaret] Hamburg noted, the examples cited are not indicative of the food industry as a whole." GMA member companies will cooperate with the FDA, he said.

Earthquake affects hydrocolloids

The horrific earthquake in Chile on February 27, 2010, took a devastating toll on human life. It will also have long-term effects on hydrocolloid production.

"Chile is among the leaders, if not the global leader, in hydrocolloid production from seaweed," said Dennis Seisun of IMR International, a consultancy based in San Diego, California, USA.

Seisun reported in an email to *inform* that he has received feedback that the earthquake did not damage any of the hydrocolloid processing plants in Chile. "There will, however, undoubtedly be an impact caused by infrastructure disruption, which could cause fuel shortages or power outages among other factors," he added.

Seaweed harvesters (*algueros*) on the central southern coast between San Antonio and Lebu have been hardest hit, Seisun wrote. "There will be no further seaweed harvesting in this area (regions VI, VII, and VIII), until September/October at the earliest," he continued. "Luckily, *algueros* in the northern and southern regions were not impacted and harvesting will resume much faster [there]. Infrastructure damage will, however, affect distribution and transportation channels for the raw material."

New chia approval sought

Australia's The Chia Co. is seeking an opinion from the UK's Food Standards Agency on the equivalence of its chia seed,

grown in Australia, to the Columbus Paradigm chia grown in South America, which has already received novel foods approval in Europe.

That approval was given by the European Food Safety Agency in October 2009, more than six years after an application was submitted in June 2003. Chia seed can now be incorporated into bread products at levels up to 5% of a product's total matter; a major European distributor told FoodNavigator.com it expects chia-fortified bread products to be introduced in 2010.

Chia (*Salvia hispanica* L.) is a summer annual herbaceous plant belonging to the mint family. The seeds are rich in protein, fiber, amino acids, and α -linolenic and linoleic fatty acids. (AOCS' *Physical and Chemical Characteristics of Oils, Fats, and Waxes*, edited by David Firestone, gives a fatty acid profile for chia oil of 7–8% 16:0, 3% 18:0, 4–7% 18:1, 24–26% 18:2, and 54–59% unassigned 18:3.)

Chia is grown commercially in several Latin American countries and Australia, but chia seeds are not consumed to a significant degree in Europe and are therefore considered novel. ■

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Toyota Motor Corp., in conjunction with its trading affiliate Toyota Tsusho Corp., is developing jatropha as a feedstock for fueling its vehicles. The company is betting that attainment of higher crop yields than have been measured in the past, in combination with rising oil prices, will make the plant a profitable alternative fuel. The crop is to be planted in the Philippines on a banana plantation. Toyota Tsusho is cooperating with Singapore-based seed researcher JOil Pte. Ltd. to develop a plant that produces reliable yields. Research at JOil specializes in tissue cultures and selective plant breeding.



Biomass Advisors (Miami, Florida, USA), a *Biofuels Digest* company, released “Camelina: A Market Forecast and Strategy Report” in March. The report deals with such topics as growing camelina in wheat rotation; use of meal for animal feed and oil for renewable biofuels; its economics; required inputs; agriculture and camelina; business and investment opportunities; and case studies. The report is available for \$495. For further information, go to www.biofuelsdigest.com/blog2/2010/02/03/camelina-a-market-forecast-and-strategy-report/.



Renewable Energy Group (REG; Ames, Iowa, USA) closed on the acquisitions of two biodiesel companies in March: Central Iowa Energy (Newton) and Blackhawk Biofuels (Danville, Illinois). These acquisitions bring the total capacity of REG to 302 million gallons (1.14 billion liters) per year.



According to the market research report *Global Biodiesel Market (2009–2014)*, published by MarketsandMarkets (www.marketsandmarkets.com), the total global biodiesel market is expected to be worth \$12.6 billion by 2014. European markets will represent 55.6% of the total revenues, and the Americas market will be 28.6%. The compound annual growth rate of the global biodiesel market is predicted to be 7.8% from 2009 to 2014. The report appeared in March 2010 and is available for \$4,650. ■

Biofuels News



BIODIESEL

Biodiesel standard procedure validated

AOCS has validated a two-minute testing procedure using a single drop of biodiesel with Cognis’ QTA® (Quality Trait Analysis) System. Standard Procedure Ck 2-09 was published in January and is available to AOCS members and nonmembers through the AOCS website (<http://www.aocs.org/tech/methods.cfm>). The Standard Procedure documents Cognis’ patented QTA System for biodiesel analysis using infrared spectroscopy. All analyses can be conducted using a single drop of biodiesel, with no sample preparation or use of chemical reagents. The results are available within two minutes.

AOCS, through its Rapid and Non-Destructive Technologies Committee, approved the new procedure using a consensus balloting process. The Standard Procedure for QTA was validated for accuracy when compared to current ASTM

International methods through a 16-laboratory round-robin procedure, using statistical methods prescribed by the AOAC-IUPAC Harmonized Protocol and ASTM D6708.

Gina Clapper, AOCS technical specialist, said, “After undergoing a full round-robin procedure, the QTA System for biodiesel analysis demonstrated that accuracy and precision are maintained and in some cases even enhanced by this rapid analysis method when compared to traditional, longer methods. A rapid method for biodiesel analysis, such as the QTA System, will encourage more frequent testing by both biodiesel producers and users.”

Steve Howell, technical director for the National Biodiesel Board (NBB), commented, “The approval of an official AOCS method for the Cognis QTA system clears the way for adoption of the Cognis QTA system as a future option for official D6751 and BQ-9000 compliance.”

Biodiesel blend withdrawn in UK

On February 9, Morrisons Supermarkets, the largest retail supplier of biofuels in the United Kingdom, announced it would cease

selling B30, a blend of 30% biodiesel and 70% petrodiesel, at its forecourts/service stations as of April 1. This action follows the government's report in November 2009 that it would cease its "20 pence per liter duty differential" subsidy for biofuels. Morrisons suggested drivers who had been using B30 would have to switch to standard diesel, which can contain as much as 7% biodiesel.

On the lead of Morrisons, there is speculation other supermarkets will withdraw biodiesel fuel pumps as well.

According to the *London Times* (www.timesonline.co.uk, February 10, 2010),



the supermarket group is also considering withdrawing E85 (85% ethanol + 15% gasoline).

The *Times* indicated that this is the second time in five years that the government cancelled fuel subsidies after having encouraged drivers to invest in green cars. There is real concern that as motorists revert to using ordinary gasoline and diesel, they will have wasted their investments in green vehicles.

Castor oil as biofuel feedstock

Evogene Ltd. (Rehovot, Israel) and Orfuel, Inc., the US biofuel subsidiary of Ormat Industries Ltd. (Reno, Nevada), announced the termination of their partnership to develop improved feedstock sources for biodiesel production in February.

Ormat plans to continue to use castor bean varieties not developed by Evogene in its biofuel research and development activity.

Evogene also plans to continue to develop its proprietary castor bean lines for use as a feedstock for second-generation biofuel production. To this end, Evogene has established field trials in Texas, USA, and northeastern Brazil. The strains being tested are designed for higher yield and growth on semi-arid land. These trials follow on two years of field trials under semi-arid conditions in Israel.

Texas AgriLife Research, part of Texas A&M University, and South Cone Agriculture plc (Dublin, Ireland) in Brazil will operate the field trials. Evogene estimates that over 10 million hectares are potentially available in Texas and Brazil for commercial growth of castor.

General Motors announces B20 capability

At the National Biodiesel Conference held February 7–10 in Grapevine, Texas, USA, General Motors (GM) announced a new lineup of heavy-duty diesel pickup trucks. GM said its new Duramax 6.6L turbo diesel engine has been substantially revised to include B20 capability, as well as meet strict new emissions standards effective this year. The engine will power the redesigned

2011 Chevrolet Silverado and GMC Sierra heavy-duty pickups, as well as the Chevrolet Express and GMC Savana full-size vans. The Duramax diesel will be covered by GM's five-year/100,000-mile powertrain warranty.

To make the Duramax 6.6L and its fuel system compatible with B20, GM upgraded some seals and gasket materials to withstand the ester content of biodiesel and included an upgraded fuel filter that includes a coalescing element to improve the separation of water that may be present in the fuel. GM also introduced additional heating of the fuel circuit to reduce the chance of fuel gelling or waxing that could plug filters.

The Duramax 6.6L's diesel particulate regeneration system features a downstream injector that supplies fuel for the regeneration process. This reduces potential oil dilution, saves fuel, and works better with B20 than in-cylinder post injection.

New process ups biodiesel yield

Chemists at the University of California–Davis (USA) have developed a process that could increase yields of biodiesel from oilseed crops such as safflower by up to 24%. The method converts both plant oils and carbohydrates into biodiesel in a single process, and should also improve the performance characteristics of biodiesel, especially in cold weather.

Mark Mascal, co-author of the paper with postdoctoral researcher Edward Nikitin, said conventional biodiesel production extracts plant oils and then converts them into fatty acid esters that can be used to power engines. That leaves behind the carbohydrate portion of the plant—the sugars, starches, and cellulose that make up stems, leaves, seed husks, and other structures.

The new process converts those carbohydrates into levulinic acid esters—at the same time and in the same vessel that the oils are converted to fatty acid esters—resulting in a fuel cocktail that performs better at low temperatures than conventional biodiesel.

The fuel cocktail has a similar boiling range to conventional biodiesel, but is thinner; it becomes waxy at a lower temperature. "Our hope is that this blend of levulinic esters and biodiesel would perform better over a wider range of temperatures than biodiesel," Mascal said.

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Costs of the new process may be somewhat higher than for conventional biodiesel production, but should be offset by improved fuel yields and performance, he said.

A paper describing the method appears in *Energy & Fuels* 24:2170-2171 (2010).

JATROPHA

D1 updates progress with jatropha

In February the independent directors of D1 Oils plc (London, UK) summarized progress the company has made to the end of 2009 in developing jatropha as a feedstock for biofuel. The company harvested about 400 metric tons of jatropha seed kernels in 2009, across India, Africa, and Indonesia. A similar amount was expected for the first quarter of 2010, because the harvest season extends into the new year in many areas where D1 is operating.

The company said it is “currently experiencing strong levels of interest in all its locations at selling prices for crude Jatropha oil in the range of \$800–\$1,000 per metric ton” (www.investigate.co.uk/Article.aspx?id=201002040700106588G).

Experiments in feeding jatropha kernel meal to small animals found no deleterious effects with feed ratios of up to 100% jatropha in comparison with the control soybean meal. Experiments with poultry are next, and studies with larger mammals are scheduled for later in 2010. According to *BiofuelsDigest.com* (February 9, 2010), toxin-free jatropha meal could produce income of \$250–\$400 per metric ton.

Selected third-generation high-performing accessions, for use in breeding programs and commercial plantings, have shown an increase in yield potential of 40–60% based on 3½ years of data from a planting trial.

The company’s breeding program to improve yields is progressing. Male sterile *Jatropha curcas* lines have been identified that, combined with several pollinators, resulted in fertile F1 hybrid plants. This is a key step toward development of true, commercial F1 hybrids for release to farmers.

D1 Oil has agreed to terms to supply plant science technology, products and services to an unnamed European oil and gas company that plans to develop jatropha plantations in sub-Saharan Africa.

As a consequence of these developments, D1’s share prices increased 10%, according to *Agrimoney.com* (www.agrimoney.com/news/d1-shares-jump-10percent-as-tie-up-with-oil-giant-looms--1303.html).

New jatropha cultivar increases yield

SG Biofuels, a sustainable plant-oil company headquartered in Encinitas, California, USA, released a proprietary cultivar of jatropha, JMax 100, in late February. This cultivar has been optimized for growing conditions in Guatemala and yields 100% more than existing varieties.

JMax 100 is the first elite cultivar developed through the company’s JMax Jatropha Optimization Platform. The platform



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JMax 100 increases the profitability of jatropha to more than \$400 per acre, or more than 300% above existing commercial varieties. This equates to more than 350 gallons per acre (3,300 liters/hectare) at \$1.39 per gallon, enabling the large-scale growth of the nation's renewable fuel industry and development opportunities for community farmers, plantation developers, and renewable energy investors.

Kirk Haney, president and chief executive officer of SG Biofuels, said, "While Guatemala now has a significant head-start [in the development of jatropha as a renewable energy crop], we anticipate continued advancements through the JMax platform that will further enhance the productivity and profitability of jatropha for growers around the world."

SG Biofuels will work with a select group of partners and collaborators to optimize JMax for region-specific planting through the establishment of in-region technology centers. In addition to its work in Guatemala, the company is collaborating with the Hawaii Agriculture Research Center to develop a customized jatropha cultivar that can be used to meet the high demand for locally grown renewable fuel.

ETHANOL

Brazil becomes ethanol super-power with joining of Shell and Cosan

In early February Shell International Petroleum Company Limited (Shell) and Cosan S.A. (Cosan; São Paulo, Brazil) announced the signing of a non-binding memorandum of understanding (MoU), with the intention

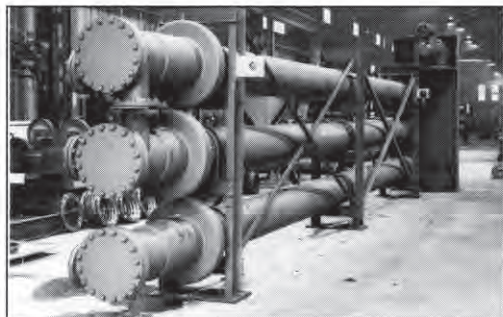
to form a *ca.* \$12 billion joint venture (JV) in Brazil for the production of ethanol, sugar and power, and the supply, distribution, and retail of transportation fuels.

[For comparison, ExxonMobil in July 2009 announced an investment of as much as \$600 million in Synthetic Genomics Inc. to develop algae as a biofuels feedstock.]

Under the terms of the MoU, both companies would contribute certain existing Brazilian assets to the JV. In addition, Shell would contribute a total of \$1.625 billion in cash, payable over two years.

With Cosan's current annual production capacity of about 2 billion liters and significant growth aspirations, the JV would be one of the world's largest ethanol producers. In addition, the inclusion of Shell's equity interests in Iogen (Ottawa, Ontario, Canada) and Codexis (Redwood City, California, USA), which are working to commercialize cellulosic ethanol, would potentially enable the JV to deploy next-generation biofuels technologies in the future.

Mark Williams, Royal Dutch Shell's downstream director, said in a company statement, "We see joining with Cosan as



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a way to grow the role of low-carbon, sustainable biofuels in the global transportation fuel mix. The joint venture would also enable Shell to set up a material and profitable biofuels business, with the potential to deploy next generation technologies.”

Rubens Ometto Silveira Mello, Cosan’s chairman of the board, said: “Cosan’s vision is to become a global leader in clean and renewable energy. Our size, degree of sophistication, and stage of development means we need a partner that not only shares our vision, but also has access to international markets to help us deliver our growth potential.”

The deal with Cosan makes Shell the third oil company to invest in ethanol production in Brazil. BP was first in 2008, followed by Petrobras in late 2009.

Cheaper cellulosic ethanol

Both Danisco and Novozymes are hot on the trail of making cellulosic ethanol a competitive alternative to gasoline.

On February 15, at the Renewable Fuels Association’s 15th Annual National Ethanol Conference in Orlando, Florida, USA, Danisco introduced Accellerase® DUET, which it predicted will become the industry standard “in terms of cost and performance” in the production of ethanol from cellulosic biomass, according to Philippe Lavielle, executive vice president

of business development for Genencor, the parent company of Danisco. With improved overall hemicellulase activity, Accellerase® DUET builds on the advances in β -glucosidase and cellulase activity previously made by Accellerase® 1500. These additional improvements allow Accellerase® DUET to achieve higher sugar and biofuel yields, often at threefold lower dosing, and to be feedstock- and pretreatment-flexible.

At the same meeting, on the day after Danisco spoke, Novozymes released Cellic® CTec2 enzymes, which it claims will enable the biofuel industry to produce cellulosic ethanol for less than \$2.00 per gallon for the initial commercial-scale plants that are scheduled to be in operation in 2011 [for example, POET’s cellulosic ethanol plant scheduled to come online in Emmetsburg, Iowa, USA; see *inform* 21:21, 43 (2010)]. This cost is on par with gasoline and conventional ethanol at the current US market prices.

A Novozymes statement pointed out that the enzyme cost for cellulosic ethanol has fallen by 80% over the past two years; enzyme costs are now down to about \$0.50 per gallon of cellulosic ethanol.

The Financial Times on February 16 quoted analyst Martin Sikorski, with the Cheuvreux brokerage in Stockholm, as suggesting that US demand for ethanol, if mandates for using 16 billion gallons of ethanol annually by 2020 come to pass, implies annual enzyme sales of about \$5 billion.

Both Danisco and Novozymes would be first to benefit.

GM asks for expanded ethanol availability

In a presentation on February 16 to the Renewable Fuels Association’s 15th Annual National Ethanol Conference, Tom Stephens, vice chairman for global product operations of General Motors, called for the establishment of more service station dispensing E85 (85% ethanol + 15% gasoline). Stephens said, “GM is spending about \$100 million a year adding flex-fuel capability to our vehicles. We can’t afford to leave this capital stranded.”

Stephens also pointed out that adding the capability to run on E85 adds as much as \$70 to the production cost of each vehicle. Coleman Jones, biofuel implementation manager for GM, says the company has produced 4 million of the 7.5 million flex-fuel vehicles on US roads. Half of GM’s vehicle models will be able to run on E85 by the 2012 model years, according to Stephens.

There are about 160,000 service stations in the United States. Of those, Stephens said, 12,000 or more need to be able to provide ethanol so that “every one of our customers [will be able to purchase ethanol] within about 2 miles of where they live.” At

CONTINUED ON PAGE 243

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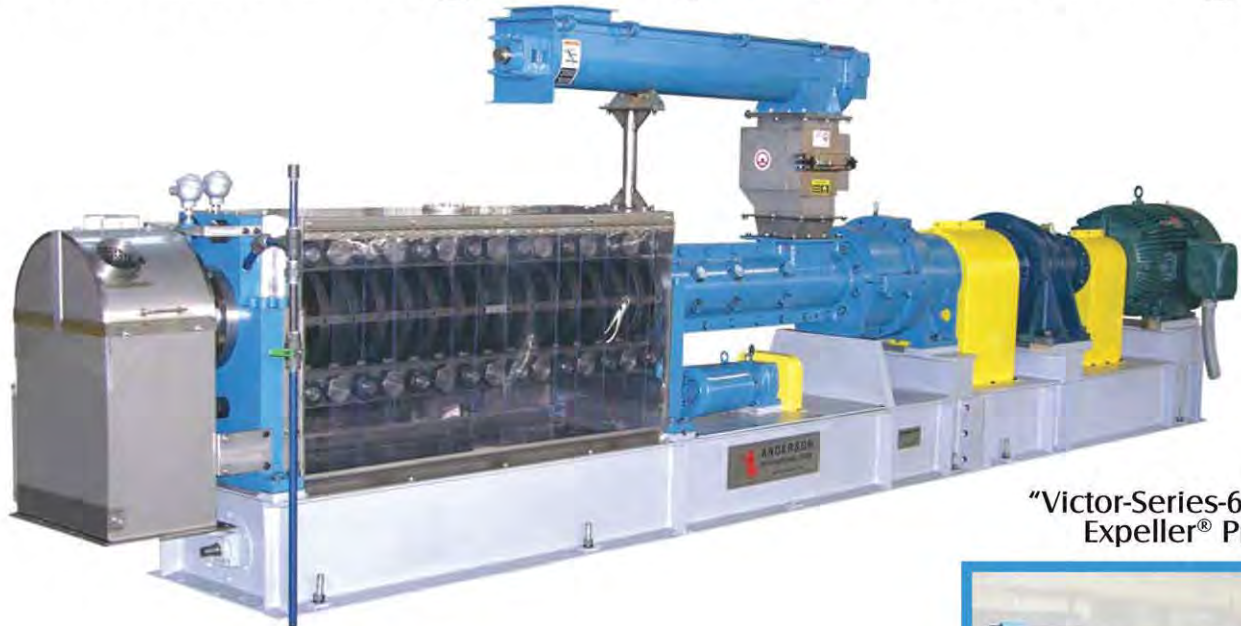
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Briefs

Comprehensive metabolomic analyses led by Shawn Ritchie of Phenomenome Discoveries Inc. in Saskatoon, Saskatchewan, Canada, revealed significantly reduced levels of C_{28} – C_{36} carbon-containing hydroxylated polyunsaturated ultra-long-chain fatty acids in all three independent cohorts of colorectal cancer (CRC) patient samples relative to controls. “These metabolites are easily measurable in serum and a decrease in their concentration appears to be highly sensitive and specific for the presence of CRC, regardless of ethnic or geographic background,” the authors write in *BMC Medicine* (doi: 10.1186/1741-7015-8-13). “The measurement of these metabolites may represent an additional tool for the early detection and screening of CRC,” they conclude. The complete article is available at <http://tinyurl.com/yex6lqp>.



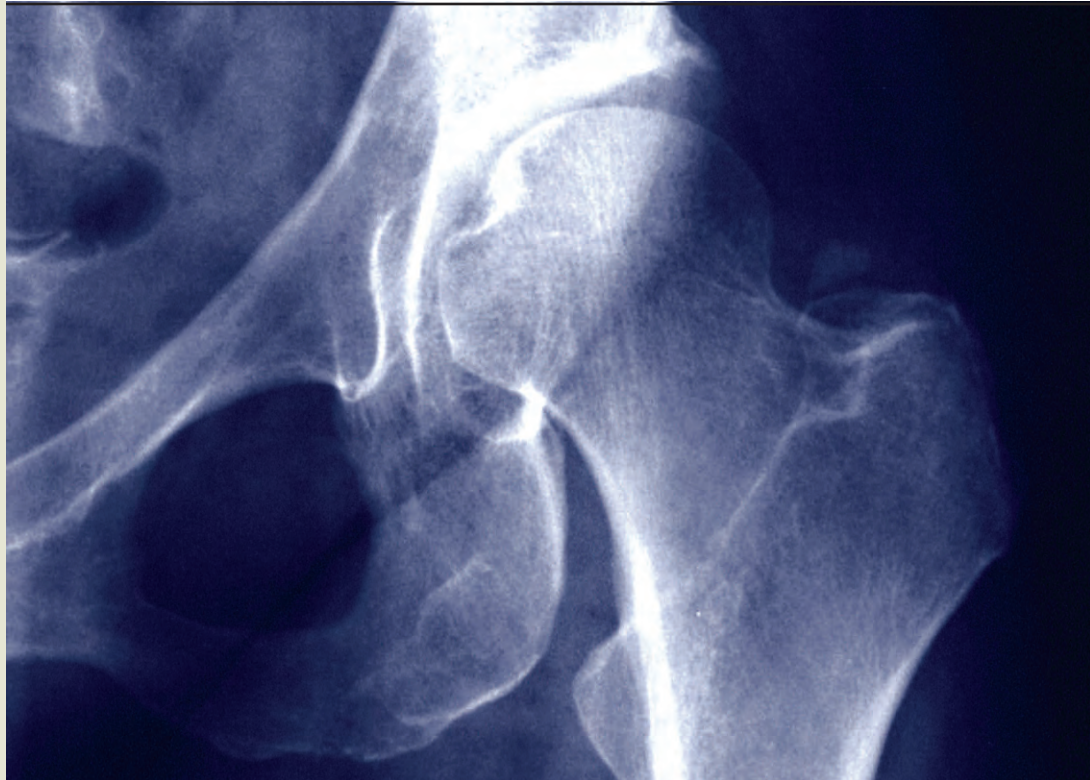
Another recent study suggests a daily dose of 1.8 grams of docosahexaenoic acid (DHA) “has potential to substantially increase survival in metastatic breast cancer patients treated with chemotherapy,” according to researchers led by Philippe Bounoux of the French Institut National de la Santé et de la Recherche Médicale (INSERM) in Tours. The new study, if supported by additional research, suggests that DHA may help improve survival by sensitizing tumors to chemotherapy, said Bounoux and his colleagues. The findings appeared in the *British Journal of Cancer* (101:1978–1985, 2009).



Yet another study on omega-3 fatty acids suggests that taking fish oil supplements may reduce the likelihood of high-risk persons developing psychotic disorders. Twelve weeks of supplementation with fish oil rich in EPA (eicosapentaenoic acid) and DHA reduced the risk of progression to full threshold psychosis by 22.6%, compared to a placebo, according to findings published in the *Archives of General Psychiatry* (67:146–154, 2010). G. Paul

CONTINUED ON NEXT PAGE

Health & Nutrition



Little effect of soy isoflavones on bone loss

A previous six-month study by Iowa State University (ISU; Ames, Iowa, USA) researchers had indicated that consuming modest amounts of soy protein, rich in isoflavones, lessened lumbar spine bone loss in midlife, perimenopausal women (*American Journal of Clinical Nutrition* 72:844–852, 2000). But now an expanded three-year study by some of those same researchers does not show a bone-sparing effect in postmenopausal women who ingested soy isoflavone tablets, except for a modest effect at the femoral (hip) neck among those who took the highest dosage.

The multicenter clinical trial of 224 postmenopausal women—led by D. Lee Alekel, professor of nutrition and interim associate director of the Nutrition and Wellness Research Center (NWRC) at ISU and supported by the National Institute of Arthritis, Musculoskeletal and Skin Diseases, one of the research institutes of the National Institutes of Health (NIH)—was the longest ever conducted on the effects

of soy isoflavones on bone mineral density (BMD). It compared the effects of ingesting daily either 80-mg or 120-mg soy isoflavone tablets, compared to placebo tablets, on BMD and other health outcomes.

ISU NWRC researchers collaborated with research physiologist Marta D. Van Loan and her colleagues at the US Department of Agriculture Agricultural Research Service’s Western Human Nutrition Research Center, located at the University of California, Davis. The primary results of their study were published in *The American Journal of Clinical Nutrition* (91:218–230, 2010).

STUDY EXPANDS ON EARLIER RESEARCH

“Our six-month preliminary study, published in 2000, indicated that soy protein, rich in isoflavones, exerted the greatest impact in slowing the loss of bone mineral density in the lumbar spine,” Alekel said. “But we believed that we needed to replicate these results in a study with a greater sample size and longer duration, which is what we did with this three-year intervention.

“In this longer study, we had sufficient power to detect change,” she continued.

Amminger of the Medical University of Vienna, Austria, led the study.



Health Canada recently issued a monograph on CLA (conjugated linoleic acid) after coming close to banning the ingredient because of concerns about its safety and efficacy. The monograph affirms CLA's safety but is selective in the kinds of weight management claims for CLA that it supports, according to NutraIngredients.com. The monograph is intended to serve as a guide to Canadian industry for the preparation of Product Licence Applications for natural health product market authorization of CLA. For more information about the monograph, call +1-613-957-2991.



The February issue of *Critical Reviews in Food Science and Nutrition* presented a number of articles devoted to the importance of breakfast. "Breakfast skipping may lead to up-regulation of appetite, possibly leading to weight gain over time and deleterious changes in risk factors for diabetes and cardiovascular disease," notes the abstract of a paper entitled "Do We All Eat Breakfast and Is It Important?"

"Breakfast skipping has also been linked to poorer overall diet quality. Regular breakfast consumption, on the other hand, may reduce the risk of chronic diseases due to the potential impact on the composition of the overall diet, and is also associated with improved learning abilities and better school performance in children," the abstract continues. ■

"We monitored adverse events, had excellent compliance throughout, and accounted for potential confounding factors."

NWRC research staff members Laura Hanson, Jeanne Stewart, and Kathy Hanson joined Kenneth Koehler and C. Ted Peterson from the Department of Statistics as part of the eight-member ISU team that conducted the study.

The researchers ran statistical analyses to determine change in BMD at the lumbar spine, total proximal femur (hip), femoral neck, and whole body. They accounted for treatment, age, and whole-body fat mass.

Although the 120-mg dose of soy isoflavones had a small protective effect on femoral neck bone BMD, researchers found no significant effect of treatment on lumbar spine, total hip, or whole-body BMD.

"This trial used isoflavones extracted from soy protein, compressed into tablet form, [and] consumed over the course of three years, which is very different than either providing soy protein or soy foods," Alekel said. "In our recent study, we did not demonstrate an important biological effect on BMD or bone turnover."

RESEARCH QUESTIONS BONE LOSS VALUE OF SOY ISOFLAVONES

The new study calls into question the value for postmenopausal women of consuming soy isoflavone tablets to help lessen bone loss and minimize the effect of osteoporosis.

"The preponderance of studies that have been published—particularly the longer-term, more carefully conducted studies, like our own—[has]shown little to no biological effects of soy isoflavones on BMD," Alekel said. "This field of research has attracted 'believers,' making it difficult to convince them otherwise. They may continue to believe what they want to believe, rather than what the evidence shows."

And when it comes to minimizing the consequences of osteoporosis in postmenopausal women, Alekel urges a more holistic approach.

"People, in general, would like an easy fix. We would all like soy isoflavones to be that magic pill, but this study has found that they are not," she said.

Results from this research have been published in six manuscripts to date, with six additional manuscripts underway. The NWRC research team will continue to study

factors that influence BMD and health outcomes in postmenopausal women.

cis-Palmitoleic acid and cholera

Could a common fatty acid someday be used to treat or prevent cholera?

Dartmouth researchers recently described the structure of a protein called ToxT that controls the virulent nature of *Vibrio cholerae*, the bacterium that causes cholera. Buried within ToxT, the researchers were surprised to find a fatty acid that appears to inhibit ToxT, which prevents the bacteria from causing cholera. The acute diarrhea associated with cholera can be life threatening, and, according to the World Health Organization, cholera remains a serious threat to global health.

Doctors have known that bile, found in the intestine, inhibits the expression of the virulence genes in *V. cholerae*, but until now the mechanism behind this was not completely understood. This study provides a direct link between the environment of the gut and the regulation of virulence genes, and it also identifies the regulatory molecule.

"Finding a fatty acid in the structure was quite a surprise," said F. Jon Kull, associate professor of chemistry at Dartmouth (Hanover, New Hampshire, USA) and senior author on the paper. "The exciting thing about this finding is that we might be able to use a small, natural molecule to treat and/or prevent cholera. We will also use the structure of the fatty acid as a framework to try and design a small molecule inhibitor of ToxT."

The study appeared in the online edition of the *Proceedings of the National Academy of Sciences* (doi: 10.1073/pnas.0915021107).

Obesity and inflammation

Although obesity is a risk factor for diabetes and coronary heart disease worldwide, only some obese individuals go on to develop these metabolic complications, whereas others are relatively protected. Defining these protective factors could help scientists prevent disease in the wider population.

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To this end, a research team led by Suneil Koliwad at the Gladstone Institute of Cardiovascular Disease (University of California, San Francisco, USA) recently added new details that link obesity to diabetes and heart disease.

When individuals become obese from overeating, adipocytes located in the fat tissue fill up with dietary fats and begin to die. Immune cells called macrophages move out of the blood stream and into this tissue, where they accumulate around dying adipocytes. As the macrophages work to clear away the dead cells, they are exposed to large amounts of dietary fat that can result in unwanted consequences. Exposure to saturated fats, in particular, causes the macrophages to enter an inflammatory state. In this state, the macrophages secrete cytokines, such as tumor necrosis factor α , that encourage the development of insulin resistance, diabetes, and heart disease.

The Gladstone team hypothesized that enhancing the capacity of macrophages to store dietary fats might alter this process. To do this, they focused on an enzyme called DGAT1, which makes triglycerides from dietary fats for storage as cellular energy reserves. They examined a transgenic strain

of mice (aP2-*Dgat1*) that makes large amounts of DGAT1 in both adipocytes and macrophages.

“We found in experimental mice that a single enzyme, DGAT1, in macrophages is involved in many of the problems associated with obesity,” said Koliwad. “This is exciting because humans have this enzyme as well, providing the potential for a therapeutic target to examine.”

“Our results are very exciting,” said Robert Farese, senior author on the study. “We have used DGAT1 as a tool to uncover a mechanism by which macrophages might protect individuals from developing serious consequences of obesity.”

The study was published in the *Journal of Clinical Investigation* and is available at <http://tinyurl.com/yhhjscf>.

Mercury levels in canned tuna questioned

Is stricter regulation of the canned tuna industry needed in the United States?

In a new study, researchers—led by

Shawn Gerstenberger, a professor of environmental and occupational health at the University of Nevada, Las Vegas—documented the amount of methylmercury present in canned tuna purchased in Las Vegas, Nevada, USA. In total, 55% of all tuna examined was above the US Environmental Protection Agency’s safety level for human consumption (0.5 parts per million, or ppm), and 5% of the tuna exceeded the action level of 1.0 ppm established by the US Food and Drug Administration (FDA).

“These results indicate that stricter regulation of the canned tuna industry is necessary to ensure the safety of sensitive populations such as pregnant women, infants, and children,” Gerstenberger and colleagues wrote.

The National Fisheries Institute (NFI), however, disagrees with that conclusion. “Trace amounts of mercury found in some tuna don’t outweigh the health benefits of eating it,” Gavin Gibbons told *BusinessWeek* magazine. Gibbons is director of media relations for NFI, a trade association that represents commercial fishermen, producers, restaurants, and processors. Furthermore, Gibbons said, the FDA guidelines have an uncertainty factor built in that limits mercury exposures to levels 10 times lower than the lowest levels associated with adverse effects.

The study appeared in *Environmental Toxicology and Chemistry* (29:237–242, 2010). ■



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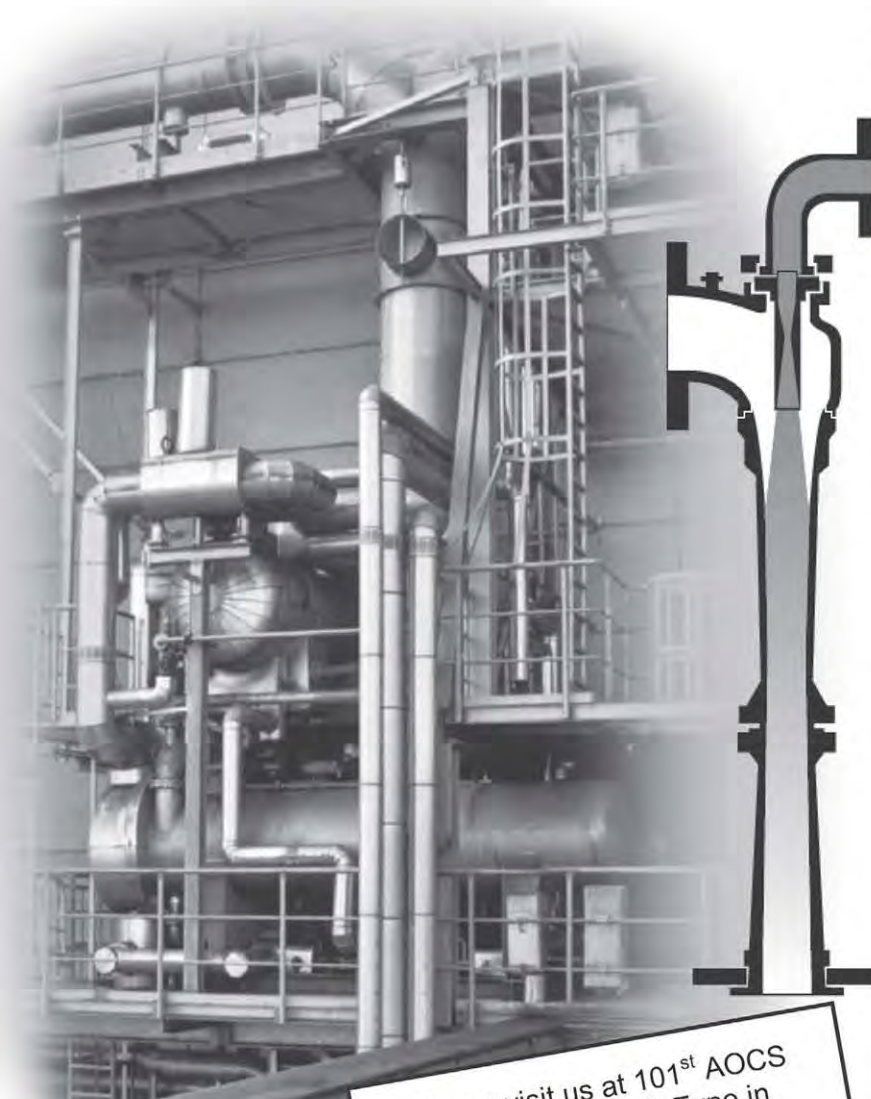



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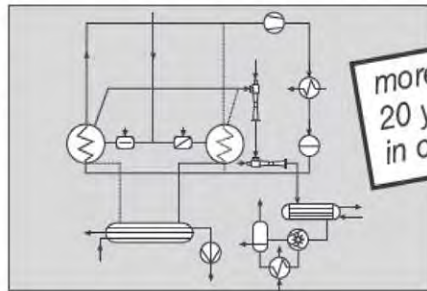

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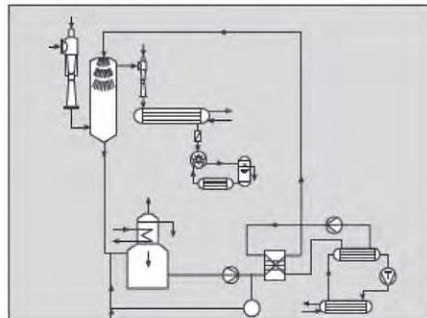
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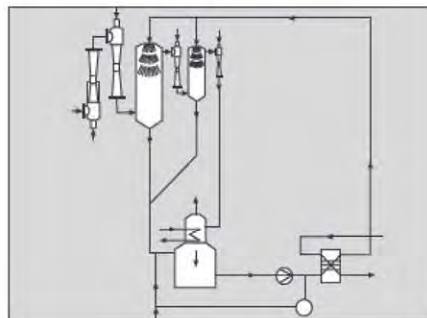
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Briefs

Univar, a global supplier of specialty chemicals based in Redmond, Washington, USA, announced in February that it had signed an agreement to acquire the Quaron Group, a chemical distributor based in the Netherlands. Quaron supplies chemicals to a wide variety of industries, including cosmetics and personal care, in France, Belgium, and the Netherlands.



The BIOSECUR preservative and disinfectant line manufactured by Canadian-based Biosecur Lab is the first such for use as a broad-spectrum preservative and disinfectant to earn organic certification, according to the company. The line has gained Ecocert certification and is derived from organic citrus fruit, Biosecur says.



Arch Chemicals, Inc. (Norwalk, Connecticut, USA) announced in February that it has signed a definitive agreement to sell its industrial coatings business to The Sherwin-Williams Co. (Cleveland, Ohio, USA) for approximately 40 million euros (\$54 million) in cash. The transaction was expected to close on March 31, 2010.



PMC Biogenix (Mount Laurel, New Jersey, USA) has established a technical center at its Memphis, Tennessee, USA, oleochemicals and derivatives manufacturing site devoted to developing new products from renewable sources. The center includes a 7,000 square foot (750 m²) pilot plant. PMC Group acquired the Memphis site from Chemtura in March 2008, according to *Chemical Week* magazine.



Method, a cleaning-products company with a “green” sales pitch, has introduced a laundry detergent in a small pump bottle. The company is spending \$10 million on an advertising campaign that takes aim at the large-handled jugs of competitors, saying method’s smaller pump bottles can help prevent the “jug addict” from “overdosing.”

CONTINUED ON NEXT PAGE

Surfactants, Detergents, & Personal Care News



SDA President and Chief Executive Officer Ernie Rosenberg delivers an executive briefing during the group’s Annual Meeting & Industry Convention in Orlando, Florida. Photo courtesy of Frank Atura.

The US Soap and Detergent Association (SDA; Washington, DC) held its 84th Annual Meeting & Industry Convention on January 26–30, 2010, at the Grande Lakes Orlando in Florida. Doris de Guzman, specialties editor for ICIS Chemical Business, filed a series of reports from the meeting. Following are highlights of her coverage, courtesy of ICIS News, as excerpted and compiled by inform’s Catherine Watkins.

SDA meeting highlights

Sustainability was a major theme of the 2010 SDA convention and was on the minds of everyone from Procter & Gamble (P&G) to Wal-Mart.

“We are focused on our consumers, and they want to know what’s in their products. For us, consumers are the ultimate arbiter,”

said Alberto Luiz Dominguez, vice president, divisional merchandise manager of household paper goods and chemicals for Wal-Mart Stores, Inc. Dominguez, who spoke at the meeting, said the company seeks to work with the cleaning industry to make the ingredients in products more transparent to customers.

Aside from chemical disclosures and transparency, other sustainability projects Wal-Mart is considering include decreasing packaging use in its products; increasing the availability of recycling; using alternative

information

Follow Doris de Guzman’s blog about green chemicals at www.icis.com/blogs/green-chemicals/. For *ICIS Chemical Business*, the weekly magazine covering the chemical industry, go to www.icis.com/magazine.

Method is based in San Francisco, California, USA.



Japan's Kao Corp. will develop marketing strategies and increase sales and promotional spending for the 20 or so top sellers among its 76 domestic and overseas brands of cosmetics. Aggregate sales in Kao's cosmetics business "are likely to hit about 300 billion yen this fiscal year. But the value of domestic cosmetics shipments had declined 12 straight months on a year-on-year basis through December," according to a report by *The Nikkei* newspaper. ■

fuel and renewable energy in its operations and distribution; reducing greenhouse gas emissions from its operations; and improving the sustainability of its buildings, ICIS' de Guzman noted.

Wal-Mart announced its Sustainability Product Index in July 2009 with the goal of setting standards and metrics on the sustainability of each product the retailer sells. Dominguez said the company's goal is to have something in place under this index in the next three to five years.

DOW EYES GREENER CHEMICALS

Dow Chemical expects to introduce a number of new sustainability-driven products for its home and personal care business this year, following its integration with Rohm and Haas.

"We are looking to address sustainability challenges in the cleaning industry," Carlos Silva Lopes, Dow marketing director for the fabric & surface care division, told ICIS news at the sidelines of the meeting.

These include developing "cleaning products in cold water, phosphate-free automatic dishwasher detergents, solvent-free hard surface cleaners, and other cleaning products with a greener profile and improved sensory properties," Lopes said.

In particular, Dow was hoping to introduce innovative zinc-free polymers in floor care application, he said.

The home and personal care business of the company was formed in April 2009 after the Rohm and Haas acquisition. Fabric and surface care and personal care segments comprise 85% of this business division.

Some industrial applications such as water treatment, oilfield, and mining are also serviced from portfolio but these are more asset-driven, de Guzman noted in her ICIS News coverage of the meeting.

P&G CHEMICALS TO SWITCH FEEDSTOCK

Procter & Gamble Chemicals (P&G) is planning to switch feedstock for its tertiary amines production in Kansas City from petroleum-based olefins to natural-based fatty alcohols, a company official told ICIS.

"Our intention is to use our fatty alcohol network as we believe this is the right thing to do for the long-term health of our business," Tom Nelson, global sales director for P&G Chemicals, said.

P&G's tertiary amines are key ingredients in the company's light-duty liquid product lines, such as its dish detergent brands Dawn in the United States and Fairy in Europe. The firm's Kansas plant has a tertiary amines capacity of 60,000 metric tons/year.

Details regarding the sourcing of the fatty alcohol for the Kansas plant were still being finalized, Nelson said.

One of the key priorities this year for P&G Chemicals is to further optimize its fatty alcohols network, Nelson added.

"We will work on our supply chains, look at where the next increment of capacity is going to come in based on demand projections, as well as identify new uses and applications for alcohol co-products to create more value," Nelson said.

Other key priorities for the business this year include streamlining the company's North American fatty acid supply chains and expanding the development of sustainable formulations with the company's sucrose polyester molecule Sefose and fat replacer molecule Olean, Nelson added.

With Sefose, P&G said it is already in advanced developmental collaboration in different applications with several customers.

REGULATORY OUTLOOK

SDA expects more aggressive chemical regulations coming from government agencies in 2010, officials from the trade group said at the meeting.

California's Green Chemistry initiative is one of SDA's biggest concerns, said

AOCS member Richard Sedlak, SDA's senior vice president of technical and international affairs.

"By the end of this year, we expect a final rule concerning the Safer Alternatives Regulation (AB 1879) to come out under the California Green Chemistry initiative. This rule is likely to include specific product categories including cleaning products," Sedlak said.

He added: "Certain cleaning products containing a chemical of concern may need an alternative assessment and product manufacturers will be burdened with the cost to do this."

Another part of the Green Chemistry initiative is prioritizing ingredient disclosure, said Michelle Radecki, SDA's general counsel.

The SDA said it will make sure that the Green Chemistry initiative will not lead to unnecessary product or ingredient bans by continuing to be involved in the ongoing dialogue with California's Department of Toxic Substances Control, which handles the implementation of the initiative.

The SDA also expects more aggressive regulation proposals coming from the federal level.

"The US Environmental Protection Agency (EPA) is more energized and aggressive this year in implementing [its] chemical action plans as well as examining the practice of confidential business information (CBI)," Radecki said.

Under the EPA's Toxic Substances Control Act (TSCA), companies may claim a range of sensitive, proprietary information as confidential business information. Radecki noted the importance of confidential business information in promoting innovation within the cleaning products industry.

"Without CBI, innovation is lost for cleaning products companies," she said.

The SDA also expects issues coming out from the "Household Product Labeling Act" introduced in 2009 by Senator Al Franken and Representative Steve Israel. The proposed rule would require disclosure of all ingredients, including fragrances, dyes, and preservatives, on product labels.

"This proposal could easily become part of the TSCA reform legislation. In response to this proposal we quickly provided information on our own voluntary ingredients communication initiative," Radecki said.

The SDA and the Consumer Specialty

Products Association (CSPA) introduced their voluntary ingredient communication initiative in January 2010. As a result, member companies producing cleaning, air care, automotive, polishes and floor maintenance products are now voluntarily providing their ingredients via their websites, product labels, toll-free numbers, and other nonelectronic media.

Radecki said 99% of SDA members are already in compliance with the initiative.

The origin of dust

Where does dust come from? Scientists in Arizona are reporting a surprising answer to that question, which has perplexed generations of men and women confronted with layers of dust on furniture and floors. The answer is also of interest to formulators of hard-surface and floor cleaners.

In brief: Most indoor dust comes from outdoors.

In their study, David Layton and Paloma Beamer of the University of Arizona (Tucson, USA) point out that household dust consists of a potpourri that includes dead skin shed by people, fibers from carpets and upholstered furniture, and tracked-in soil and airborne particles blown in from outdoors. It can include lead, arsenic, and other potentially harmful substances that migrate indoors from outside air and soil. That can be a special concern for small children, who consume those substances by putting dust-contaminated toys and other objects into their mouths.

The scientists describe the development and use in homes in the US Midwest of a computer model that can track distribution of contaminated soil and airborne particulates into residences from outdoors. They found that over 60% of house dust originates outdoors. They estimated that nearly 60% of the arsenic in floor dust could come from arsenic in the surrounding air, with the remainder derived from tracked-in soil. The researchers suggest that the model could be used to evaluate methods for reducing contaminants in dust and associated human exposures.

The research appeared in *Environmental Science & Technology* (43:8199–8205, 2009).

SD&PC patents

SPECIAL EMULSIFIER MIXTURE

Sartingen, K., Henkel AG & Co., Germany, WO2010/009978, January 28, 2010

The invention relates to a clear composition containing surfactants and composed of, in addition to one or more oil components, a mixture of solubilizers that are selected from the group of the (i) ethoxylated fatty alcohols, (ii) ethoxylated hydrogenated castor oils, and (iii) ethoxylated mono-, di-, or triglycerin esters, at a ratio of the components (i):(ii):(iii) in a range of 1:(2–4):(3–4). The compositions are distinguished by exceptional suspension stability and viscosity stability and are excellently suitable as a cosmetic composition for cleansing the skin and hair.

ENHANCED REMOVAL OF BLOOD SOILS

Smith, K.R., et al., Ecolab Inc., WO2010/010526, January 28, 2010

A composition for blood-containing soils is provided. The composition is useful in warewashing, hard surface cleaning, laundry, and in cleaning medical, dental, and animal care instruments and implements. A composition of the invention comprises an iron chelant, a reducing agent, and a lysing agent. Compositions of the invention may be provided in concentrated form or as ready-to-use solutions and may be provided in liquid, powder, solid, or granulated forms. Optional additional ingredients include but are not limited to surfactants, pH modifiers, viscosity modifiers, water, builders, corrosion inhibitors, threshold agents, antiredeposition agents, aesthetic aids, antimicrobial agents, solidification agents, and processing aids. A desirable feature of the invention lies in its ability to clean blood-containing soils at low active concentrations. The invention further provides a method of removing blood-containing soils from a surface including applying a composition to a soil, the composition including an iron sequestrant, a reducing agent, and a lytic agent. ■

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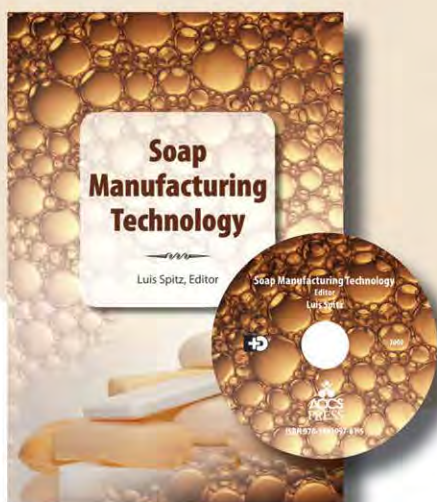
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Book Review

Practical Statistics for the Analytical Scientist: A Bench Guide, 2nd Edition

Stephen L.R. Ellison, Vicki J. Barwick, and
Trevor J. Duguid Farrant
Royal Society of Chemistry, 2010
268 pages, \$49 (soft cover)
ISBN: 978-0-85404-131-2

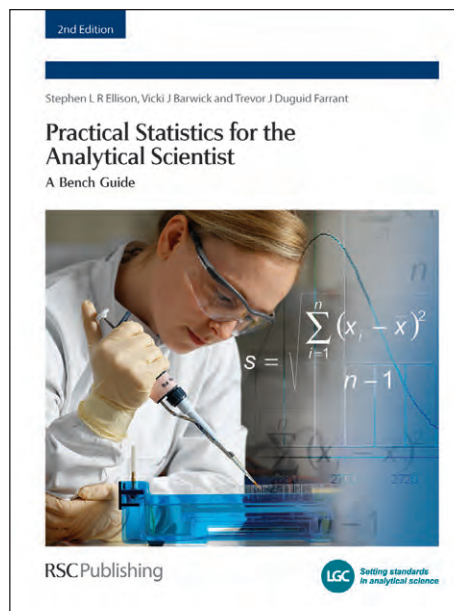
William E. Artz

My formal introduction to college statistics courses was not pleasant. That unpleasant experience was reinforced when I was informed by one statistics professor—while writing—that the advice I had gotten much earlier from another statistics professor on the experimental design for my M.S. research apparently was incorrect.

No matter one's experience, if one wants to publish quantitative data and make any kind of comparison based on that data in a good, peer-reviewed scientific journal (e.g., the fatty acid composition of polar bear fat from Alaska bears is more saturated than that of polar bears sampled in Russia, one method of oil extraction is better than another, one oil oxidizes faster than another), the selection and use of the appropriate statistical design and statistical analysis are critical.

Practical Statistics for the Analytical Scientist: A Bench Guide, 2nd Edition by Ellison and colleagues generally does a very good job of explaining statistics (both the appropriate statistical design and the appropriate statistical analysis of the data) and a good job of describing how to use commercially available software to do those statistical analyses. However, a few items in the book are not completely clear to me (perhaps due to my checkered statistics past).

The book begins with a chapter on how to select the appropriate statistical method(s) for an analysis using a question-and-answer format. Generally, a straightforward answer is given, followed by the exact section of the text that covers that question in detail. The subjects include planning experiments, limits, instrument calibration, analytical method performance, etc. This is followed by a chapter on graphical methods and data types. Next, there are four excellent chapters on basic statistical methods, outliers in analytical data, ANOVA, and regression analysis. For example, the authors provide some concrete and useful advice on experimental design for linear regression analysis (≥ 5 independent observations, space the concentrations approximately evenly, and do at least three replicates). Common mistakes to avoid include using (0,0) as a data point when no such data point was the result of an analysis, or forcing the regression analysis through the origin. In addition, the correlation coefficient cannot be used to judge whether a more complex equation is a better fit than a simple linear model, since the addition of another term to the equation will always improve r , even if the predictive value is poorer.



Chapter 8, Designing Effective Experiments, is excellent. I would think careful reading and application of those ~30 pages, prior to beginning any experiment, would substantially increase the publication rate of work submitted to peer-reviewed scientific journals. The subjects discussed include factorial designs, randomization,

pairing, block designs and, briefly, more advanced designs such as fractional factorial designs and incomplete block designs. The authors also added a brief chapter appendix on the calculations for a simple blocked experiment. Chapters 9 and 10 provide good information on subjects such as precision, bias, limits of detection and quantitation, linearity, measurement uncertainty, and methods of evaluation.

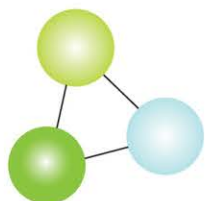
For those in the industrial arena, Chapters 11 and 12, Analytical Quality Control and Proficiency Testing, are very useful and informative. The final chapter is an important subject for everyone in the scientific community: sampling. The authors state that their treatment of sampling is limited, and they cite sources that cover the topic much better and more comprehensively, yet they do provide a lot of good, basic information on sampling.

Practical Statistics for the Analytical Scientist: A Bench Guide, 2nd Edition is a well-written and informative book on statistics for analytical chemists. It would be an excellent resource for those for whom chemical analysis is an important part of their research or work, whether they are university faculty, graduate students, or industry scientists. I highly recommend it as a desk reference.

William E. Artz is a faculty member at the University of Illinois at Urbana-Champaign with ~25 years of experience in lipid chemistry and lipid analysis research. He can be reached at wartz@illinois.edu.

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Methods and compositions for the non-surgical removal of fat

Kolodney, M., and A.M. Rotunda, Los Angeles Biomedical Research Institute at Harbor UCLA-Medical Center and Regents of the University of California, US7622130, November 24, 2009

Compositions and methods useful in the nonsurgical removal of localized fat deposits in patients in need thereof using pharmacologically active detergents are disclosed. The pharmacologically active detergent compositions can additionally include anti-inflammatory agents, analgesics, dispersion agents, and pharmaceutically acceptable excipients but do not contain phosphatidylcholine. The pharmacologically active detergent compositions are useful for treating localized accumulations of fat including lower eyelid fat herniation, lipodystrophy, and fat deposits associated with cellulite and do not require surgical procedures such as liposuction.

System and method for the continuous production of bio-diesel

Marr, W., Redland Industries Inc., US7622600, November 24, 2009

A continuous biofuel production process includes the steps of introducing a feedstock containing fatty acids and triglycerides into a first reaction vessel in which alkyl esters are produced through esterification of free fatty acids. The alkyl esters and triglycerides are introduced into a second reaction vessel in which at least a portion of the triglycerides are converted to alkyl esters and glycerin through transesterification. The alkyl esters, glycerin, and remaining triglycerides are introduced into a third reaction vessel in which at least a portion of the remaining triglycerides is converted to alkyl esters and glycerin through transesterification.

Fatty acid by-products and methods of using same

Tran, B.L., and D.L. Kouznetsov, Nalco Co., US7624878, December 1, 2009

Methods and compositions for separating materials are provided. In an embodiment, the present invention provides a method of separating a first material from a second material. For example, the method can comprise mixing the first material and the second material in a slurry with a beneficiation composition. The beneficiation composition can comprise one or more fatty acid by-products derived from a biodiesel manufacturing process and one or more green collectors. Air bubbles can be provided in the slurry to form bubble-particle aggregates with the first material, and the bubble-particle aggregates can be allowed to be separated from the second material.

Method of producing fatty acid alkyl ester for diesel fuel oil

Tsuto, K., and M. Nakayama, Revo International Inc., US7626047, December 1, 2009

A method for producing a fatty acid alkyl ester for diesel fuel oil starting with a fat/oil material such as an edible oil whereby the qualities required of diesel fuel oil can be satisfied and the wastes from the production process can be minimized. The method is characterized by subjecting a fat/oil material to transesterification with an alcohol, washing the oily phase of the reaction mixture with water, eliminating water after washing via absorption by a high-water-absorptive resin, and then separating the high-water-absorptive resin gel thereby to provide a fatty acid alkyl ester suitable for diesel fuel oil.

Methods and apparatus for removal of degradation byproducts and contaminants from oil for use in preparation of biodiesel

Berg, M., *et al.*, Soane Energy LLC, US7626048, December 1, 2009

Methods, particles, and devices are disclosed for filtration of oil for use of the oil in the preparation of biodiesel. Disclosed particles may comprise a substantially inert porous particle with a coating comprising a polymer having amine, amino, and/or imine group(s).

Oil gels of controlled distribution block copolymers and ester oils

St. Clair, D.J., Kraton Polymers US LLC, US7625967, December 1, 2009

The present invention relates to oil gel compositions that include at least one nonaromatic ester oil and an anionic block copolymer of a mono alkenyl arene and a conjugated diene. The block copolymer is selectively hydrogenated and has mono alkenyl arene end blocks and a controlled distribution block of a mono alkenyl arene and a conjugated diene midblock. The ester oil is a nonaromatic ester compound such as soybean oil, rapeseed oil, and other like compounds.

Propane utilization in direct hydrotreating of oils and/or fats

Ghonasgi, D.B., *et al.*, ConocoPhillips Co., US7626063, December 1, 2009

Methods for producing C₁₀-C₃₀ hydrocarbons from fatty compounds are provided in which at least a portion of the hydrogen required to accomplish the conversion is generated from by-products of the conversion process. Light hydrocarbons, especially propane, produced during the conversion of triglyceride compounds are used to generate hydrogen that is used in the conversion process thereby reducing the need for outside hydrogen sources.

Polyglycerol fatty acid ester and composition containing same

Kondo, N., *et al.*, Taiyo Kagaku Co., US7629479, December 8, 2009

A polyglycerol fatty acid ester formed by esterifying a polyglycerol and a fatty acid, wherein the polyglycerol has a hydroxyl value of 1,200 or less and primary hydroxyl groups in an amount of 50% or more of the total hydroxyl groups and an emulsified or solubilized composition, foodstuff, and cosmetics, each containing the polyglycerol fatty acid ester.

Processor for producing biodiesel from natural fats and oils

Bowen, G.M., and D.P. Bowen, Springboard Biodiesel LLC, US7628828, December 8, 2009

An integrated biodiesel processor is disclosed. The integrated biodiesel processor includes a main reaction tank for storing feedstock to be processed and within which the reactions take place to form a biodiesel product from the feedstock. The integrated biodiesel processor also includes one or more secondary tanks integrated with and disposed within the main reaction tank. The secondary tanks are configured to store reactionary ingredients to be released into the main reaction tank in order to generate reactions.

Process for the preparation of high purity phytosterols

Arumughan, C., *et al.*, Council of Scientific and Industrial Research, India, US7632530, December 15, 2009

The present invention provides an isolation process of the pure sterols from the SODD (soybean oil deodorizer distillate) by simple acid-catalyzed esterification and the separation of the reagents by distillation and water washing followed by the crystallization of phytosterols and purification. SODD and distillate from other vegetable oil refining contain free sterols in addition to steryl esters, tocopherols, squalene, and unknown compounds. The process is also applicable to other vegetable oil distillate containing more than 1% phytosterols in the free form. Phytosterols thus obtained are of high purity (95–99%) and high yield (80–90%) and contain β -sitosterol, stigmasterol, and campesterol. ■

Patent information is compiled by Scott Bloomer, a registered US patent agent with Archer Daniels Midland Co., Decatur, Illinois, USA. Contact him at scott_bloomer@admworld.com.



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Extracts & Distillates

n-3 Omega fatty acids: A review of current knowledge

Gogus, U., and C. Smith, *Int. J. Food Sci. Technol.* 45:417–436, 2010.

The very long chain polyunsaturated fatty acids (PUFA) (C₁₈–C₂₂) and n-3 (ω-3) PUFA are apparently widely accepted as a part of modern nutrition because of their beneficial effects on metabolism. Most significantly, the reported protective effect of the n-3 fatty acids in relation to cardiovascular inflammatory diseases and cancer has led people to consider these fatty acids more beneficial than other dietary supplements. Unfortunately, there is a lack of studies relating to the physical performance-increasing effect in sports diets, cholesterol-reducing effect in meat technology, effects on human serum profile, the application dose, and the side effects with/without n-6 PUFA, which has left us with several crucial unanswered questions. We still do not know the correct dose of n-3 PUFA and the correct ratio of n-3 PUFA to n-6 PUFA or their possible contraindications when combined with drugs, other foods, and herbal supplements. Another reported aspect of n-3 PUFA is that they protect and even enhance the effect in medical treatment of important diseases such as Alzheimer's, multiple sclerosis, and cancer. These reports led to PUFA becoming one of the most accepted and consumed food supplements. Despite this weight of evidence and the considerable current use, there is still a need for studies that will determine whether the n-3 PUFA are in fact important functional supplements with no adverse effects. This review will attempt to outline (i) the current position of n-3 PUFA in the field of clinical nutrition and health-care and (ii) the studies needed to determine whether there are significant advantages in taking them as food supplement without any adverse effects.

A review on biodiesel production using catalyzed transesterification

Leung, D.Y.C., *et al.*, *App. Energy* 87:1083–1095, 2010.

Biodiesel is a low-emissions diesel substitute fuel made from renewable resources and waste lipid. The most common way to produce biodiesel is through transesterification, especially alkali-catalyzed transesterification. When the raw materials (oils or fats) have a high percentage of free fatty acids or water, the alkali catalyst will react with the free fatty acids to form soaps. The water can hydrolyze the triglycerides into diglycerides and form more free fatty acids. Both of these reactions are undesirable and reduce the yield of the biodiesel product. In this situation, the acidic materials should be pretreated to inhibit the saponification reaction. This paper reviews the different approaches adopted in the industry for reducing free fatty acids in the raw oil and for refining crude biodiesel. The main factors affecting the yield of biodiesel (i.e., alcohol quantity, reaction time, reaction temperature, and catalyst concentration) are discussed. This paper also describes other new processes of biodiesel production. For instance, the Biox co-solvent process converts triglycerides to esters through the selection of inert co-solvents that generate a one-phase oil-rich system. The noncatalytic supercritical methanol process is advantageous in terms of shorter reaction time and fewer purification steps but requires high temperature and pressure. For the *in situ* biodiesel process, the oilseeds are treated directly with methanol in which the catalyst has been previously dissolved at ambient temperatures and pressure to perform the transesterification of oils in the oilseeds. This process, however, cannot handle waste cooking oils and animal fats.

Mass spectrometry based cellular phosphoinositides profiling and phospholipid analysis: A brief review

Kim, Y., *et al.*, *Exp. Mol. Med.* 42:1–11, 2010.

Phospholipids are key components of cellular membrane and signaling. Among cellular phospholipids, phosphoinositides, phosphorylated derivatives of

phosphatidylinositol, are important as participants in essential metabolic processes in animals. However, owing to their low abundance in cells and tissues, it is difficult to identify the composition of phosphoinositides. Recent advances in mass spectrometric techniques, combined with established separation methods, have allowed the rapid and sensitive detection and quantification of a variety of lipid species including phosphoinositides. In this mini-review, we briefly introduce progress in profiling of cellular phosphoinositides using mass spectrometry. We also summarize current progress of matrices development for the analysis of cellular phospholipids using matrix-assisted laser desorption/ionization (MALDI) mass spectrometry (MS). The phosphoinositides profiling and phospholipids imaging will help us to understand how they function in a biological system and will provide a powerful tool for elucidating the mechanism of diseases such as diabetes, cancer, and neurodegenerative diseases. The investigation of cellular phospholipids including phosphoinositides using electrospray ionization MS and MALDI MS will suggest new insights on human diseases and on clinical application through drug development of lipid-related diseases.

Oxysterols in biological systems: The gastrointestinal tract, liver, vascular wall, and central nervous system

Garenc, C., *et al.*, *Free Rad. Res.* 44:47–73, 2010.

Oxysterols are oxygenated derivatives of cholesterol generated from exogenous (food) or endogenous (auto-oxidation and enzymatic conversion) sources. Despite their hepatic capacity to transform into bile acids, oxysterols are present in the blood circulation and central nervous system. This review aims to provide a better understanding of the origins and roles of oxysterols under normal and pathophysiological conditions, such as atherosclerosis and Alzheimer's disease. Oxysterols are metabolites of the cholesterol auto-oxidation pathway present in atherosclerotic plaque and are concomitantly endogenous activators of nuclear receptor liver X receptors known to enhance cholesterol efflux. Despite their honorable role in the gastrointestinal tract and central nervous system, oxysterols have, in general, adverse

effects in atherogenesis during which they accumulate and trigger cellular and molecular insults that lead to foam cell formation. This study will discuss the paradox that oxysterols are essential for the normal physiology of the hepatic, central nervous, and vascular systems but that they are also bioactive molecules that lead to adverse effects when they accumulate in the vascular wall.

Production of trans-free margarine stock by enzymatic interesterification of rice bran oil, palm stearin, and coconut oil

Adhikari, P., *et al.*, *J. Sci. Food Agric.* 90:703–711, 2010.

Trans-free interesterified fat was produced for possible use as a spreadable margarine stock. Rice bran oil, palm stearin, and coconut oil were used as substrates for lipase-catalyzed reaction. After interesterification, 137–150 g kg⁻¹ medium-chain fatty acid was incorporated into the triacylglycerol (TAG) of the interesterified fats. Solid fat contents at 25°C were 15.5–34.2%, and slip melting point ranged from 27.5 to 34.3°C. POP and PPP (β -tending TAG; where P = palmitic, O = oleic) in palm stearin decreased after interesterification. X-ray diffraction analysis demonstrated that the interesterified fats were mostly in the β' polymorphic form, which is a desirable property for margarines. The interesterified fats showed desirable physical properties and suitable crystal form (β' polymorph) for possible use as a spreadable margarine stock. Therefore, our result suggested that the interesterified fat without trans fatty acid could be used as an alternative to partially hydrogenated fat.

Phytosterol plasma concentrations and coronary heart disease in the prospective Spanish EPIC cohort

Escurriol, V., *et al.*, *J. Lipid Res.* 51:618–624, 2010.

Phytosterol intake with natural foods, a measure of healthy dietary choices, increases plasma levels; but increased plasma phytosterol levels are believed to be a coronary heart disease (CHD) risk factor. To address

AOCS Journals



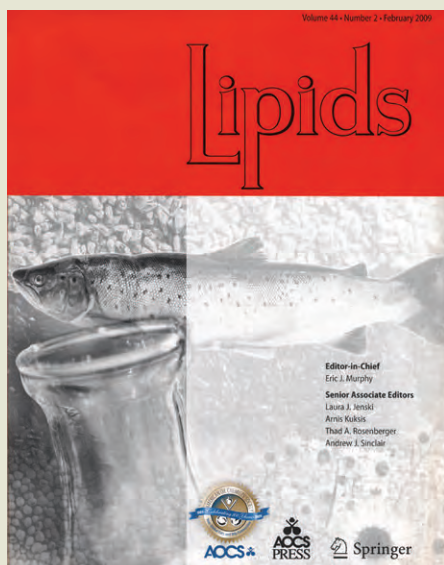
Journal of the American Oil Chemists' Society (March)

- A method to qualify and quantify the crystalline state of cocoa butter in industrial chocolate, Le Révérend, B.J.D., P.J. Fryer, S. Coles, and S. Bakalis
- Characterisation of phenolic compounds in oils produced from frosted olives, Guillaume, C., L. Ravetti, and S. Gwyn
- Effect of saturated/unsaturated fatty acid ratio on physicochemical properties of palm olein–olive oil blend, Naghshineh, M., A.A. Ariffin, H.M. Ghazali, H. Mirhosseini, and A.S. Mohammad
- Use of the SAW sensor electronic nose for detecting the adulteration of virgin coconut oil with RBD palm kernel olein, Marina, A.M., Y.B. Che Man, and I. Amin
- Computational study of macroscopic properties of macromolecules with industrial interest, Burusco, K.K., C. Jaime, F. Franch-Lage, L. Beltran, and F. Granero
- Lipase-catalyzed synthesis of saccharide–fatty acid esters using suspensions of saccharide crystals in solvent-free media, Ye, R., S.-H. Pyo, and D.G. Hayes

- Red palm olein: Characterization and utilization in formulating novel functional biscuits, El-Hadad, N., H.A. Abou-Gharbia, M.H. Abd El-Aal, and M.M. Youssef
- Enzymatic synthesis of novel feruloylated lipids and their evaluation as antioxidants, Zheng, Y., C. Branford-White, X.-M. Wu, C.-Y. Wu, J.-G. Xie, J. Quan, and L.-M. Zhu
- Synthesis and properties of polyurethane elastomers with castor oil as crosslinker, Oprea, S.
- Physicochemical characteristics and composition of Indian soybean oil deodorizer distillate and the recovery of phytosterols, Khatoon, S., R.G. Raja Rajan, and A.G. Gopala Krishna
- Antifungal activity of leaf essential oil and extracts of *Metasequoia glyptostroboides* Miki ex Hu, Bajpai, V.K., and S.C. Kang
- Comparing process efficiency in reducing steryl glucosides in biodiesel, Tang, H., R. De Guzman, S. Salley, and K.Y.S. Ng
- Enzyme-assisted aqueous extraction of oil from isolated oleosomes of soybean flour, Towa, L.T., V.N. Kapchie, C. Hauck, and P.A. Murphy

Lipids (March)

- Elevated production of docosahexaenoic acid in females: Potential molecular mechanisms, Kitson, A.P., C.K. Stroud, and K.D. Stark
- Lysophosphatidylcholine containing docosahexaenoic acid at the *sn*-1 position is anti-inflammatory, Huang, L.S., N.D. Hung, D.-E. Sok, and M.R. Kim
- Protein tyrosine phosphatase-1B (PTP-1B) knockdown improves palmitate-induced insulin resistance in C2C12 skeletal muscle cells, Bakhtiyari, S., R. Meshkani, M. Taghikhani, B. Larijani, and K. Adeli
- *Trans* fatty acids in human milk are an indicator of different maternal dietary sources containing *trans* fatty acids, Mueller, A., C. Thijs, L. Rist, A.P. Simões-Wüst, M. Huber, and H. Steinhart



- Phospholipid distribution and phospholipid fatty acids of the tropical tunicates *Eudistoma* sp. and *Leptoclinides uniorbis*, Dagorn, F., J. Dumay, G. Wielgosz-Collin, V. Rabesaotra, M. Viau, C. Monniot, J.-F. Biard, and G. Barnathan
- Fatty acyl-CoA reductase and wax synthase from *Euglena gracilis* in the biosynthesis of medium-chain wax esters, Teerawanichpan, P., and X. Qiu
- Fetal bovine serum concentration affects Δ^9 desaturase activity of *Trypanosoma cruzi*, Villasuso, A.L., P. Romero, M. Woelke, P. Moyano, E. Machado, and M.G. de Lema
- *Trans* fatty acid-induced NF- κ B activation does not induce insulin resistance in cultured murine skeletal muscle cells, Hommelberg, P.P.H., R.C.J. Langen, A.M.W.J. Schols, A.L.M. van Essen, F.J.M. Sneyvangers, R.P. Mensink, and J. Plat

this paradox, we evaluated baseline risk factors, phytosterol intake, and plasma non-cholesterol sterol levels in participants of a case control study nested within the European Prospective Investigation into Cancer and Nutrition (EPIC) Spanish cohort who developed CHD ($n = 299$) and matched controls ($n = 584$) who remained free of CHD after a 10-year follow-up. Sitosterol-to-cholesterol ratios increased across tertiles of phytosterol intake ($P = 0.026$). High density lipoprotein (HDL) cholesterol level increased; and adiposity measures, cholesterol/HDL ratios, and levels of glucose, triglycerides, and lathosterol, a cholesterol synthesis marker, decreased across plasma sitosterol tertiles ($P < 0.02$; all). Compared with controls, cases had nonsignificantly lower median levels of phytosterol intake and plasma sitosterol. The multivariable-adjusted odds ratio for CHD across the lowest to highest plasma sitosterol tertile was 0.59 (95% confidence interval, 0.36–0.97). Associations were weaker for plasma campesterol. The apolipoprotein E genotype was unrelated to CHD risk or plasma phytosterols. The data suggest that plasma sitosterol levels are associated with a lower CHD risk while being markers of a lower cardiometabolic risk in the EPIC-Spain cohort, a population with a high phytosterol intake.

An extremely simple method for extraction of lysophospholipids and phospholipids from blood samples

Zhao, Z., and Y. Xu, *J. Lipid Res.* 51:652–659, 2010.

Lipids, lysophospholipids, and phospholipids in particular have been shown to be biomarkers and potential therapeutic targets for human diseases. While many extraction and analytical methods have been developed for quantitative analyses of these molecules, most of them are laborious and time-consuming, with associated issues of poor reproducibility. This becomes one of the critical bottlenecks to move lipid markers to clinics. In the current work, we have developed an extremely simple method for extraction of lysophospholipids and phospholipids from human plasma or serum samples, which only utilizes a single methanol solvent and involves a single step of centrifugation. This method has been

subjected to strict validation by comparing it with classical lipid extraction methods. This simple method will be extremely useful for the lipidomic, diseases marker, and lipid biochemistry fields, not only for its potential wide applications associated with its simplicity and reproducibility but also for its impact in moving lipid markers into clinics through high-throughput processing

Preparation of fatty acid methyl esters for gas-liquid chromatography

Ichihara, K., and Y. Fukubayashi, *J. Lipid Res.* 51:635–640, 2010.

A convenient method using commercial aqueous concentrated HCl (conc. HCl; 35%, w/w) as an acid catalyst was developed for preparation of fatty acid methyl esters (FAME) from sterol esters, triacylglycerols, phospholipids, and FFA (free fatty acids) for gas-liquid chromatography (GC). An 8% (w/v) solution of HCl in methanol/water (85:15, v/v) was prepared by diluting 9.7 mL of conc. HCl with 41.5 mL of methanol. Toluene (0.2 mL), methanol (1.5 mL), and the 8% HCl solution (0.3 mL) were added sequentially to the lipid sample. The final HCl concentration was 1.2% (w/v). This solution (2 mL) was incubated at 45°C overnight or heated at 100°C for 1–1.5 h. The amount of FFA formed in the presence of water derived from conc. HCl was estimated to be <1.4%. The yields of FAME were >96% for the above lipid classes and were the same as or better than those obtained by saponification/methylation or by acid-catalyzed methanolysis/methylation using commercial anhydrous HCl/methanol. The method developed here could be successfully applied to fatty acid analysis of various lipid samples, including fish oils, vegetable oils, and blood lipids by GC.

Olive oil phenols modulate the expression of metalloproteinase 9 in THP-1 cells by acting on nuclear factor- κ B signaling

Dell'Agli, M., et al., *J. Agric. Food Chem.* 58:2246–2252, 2010.

In vivo studies suggest that the phenolic component contributes to the anti-inflammatory and antiatherosclerotic actions of olive oil; however, the effects in circulating cells

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are not fully characterized. Monocytes play a key role in inflammation-based diseases by expressing several molecules, including metalloproteinases (MMP). In the present study, we investigated the effects of olive oil phenolic extract and individual compounds on MMP-9 in THP-1 cells, a human monocyte-like cell line. Olive oil extract prevented the stimulation of MMP-9 expression and secretion in tumor necrosis factor α -treated THP-1 cells. Oleuropein aglycone, a typical olive oil phenol, was active at concentrations found in the extract, although other compounds probably contributed to the biological activity. We also found that the effect of the extract and individual compounds on MMP-9 is due to impaired nuclear factor- κ B signaling. Our findings provide further evidence on the mechanisms by which olive oil reduces the inflammatory burden associated with disorders, such as atherosclerosis.

Biotechnological conversions of biodiesel derived waste glycerol into added-value compounds by higher fungi: Production of biomass, single cell oil, and oxalic acid

André, A., *et al.*, *Ind. Crop. Prod.* 31:407–416, 2010.

Waste biodiesel-derived glycerol was used as the sole carbon source by higher fungi; two *Lentinula edodes* strains were flask cultured in carbon-limited conditions and displayed satisfactory growth in media undergoing weak agitation at pH 4.0 and a temperature of 25°C. Maximum biomass of 5.2 g/L was produced. Mycelia were synthesized, containing around 0.1 g of fat per g of biomass, with linoleic acid ($^{18:2}$) being the principal cellular fatty acid produced. Two *Aspergillus niger* strains were grown in nitrogen-limited flask cultures with constant nitrogen and two different initial glycerol concentrations in the medium. In 250-mL flask cultures, large-sized pellets were developed, in contrast with the trials performed in 2-L flasks. Nitrogen limitation led to oxalic acid secretion and intracellular lipid accumulation; in any case, sequential production of lipid and oxalic acid was observed. Initially, nitrogen limitation led to lipid accumulation. Thereafter, accumulated lipid was re-consumed and oxalic acid, in significant quantities, was secreted into the medium.

In large-sized pellets, higher quantities of intracellular total lipid and lower quantities of oxalic acid were produced and vice versa. Maximum quantities of oxalic acid up to 20.5–21.5 g/L and lipid up to 3.1–3.5 g/L (corresponding to 0.41–0.57 g of fat per g of biomass) were produced. Lipid was mainly composed of oleic ($^{18:1}$) and linoleic ($^{18:2}$) acids.

How good is the evidence for the lipid hypothesis?

Stanley, J., *Lipid Technol.* 22:39–41, 2010.

The evidence for the lipid hypothesis is weak. After 20 years of follow-up, the Nurses Health Study, a prospective cohort study, was no longer able to demonstrate an association between intakes of saturated fat and risk of developing coronary heart disease. Randomized controlled trials with statins have shown that lowering LDL (low density lipoprotein)-cholesterol levels by 23% can reduce the risk of developing cardiovascular disease but reducing saturated fat can only reduce cholesterol levels by 10%. This issue can only be resolved by carrying out randomized controlled dietary trials with CVD (cardiovascular disease) end points. Although there are scientific difficulties standing in the way of such trials, it is the opinion of this author that these can be overcome. Whether the political will is there to fund them is another matter, although some of the money currently spent on prospective cohort studies would be far better spent on randomized controlled trials.

Saturated fat, carbohydrate, and cardiovascular disease

Siri-Tarino, P.W., *et al.*, *Am. J. Clin. Nutr.* 91:502–509, 2010.

A focus of dietary recommendations for cardiovascular disease (CVD) prevention and treatment has been a reduction in saturated fat intake, primarily as a means of lowering LDL (low density lipoprotein)-cholesterol concentrations. However, the evidence that supports a reduction in saturated fat intake must be evaluated in the context of replacement by other macronutrients. Clinical trials that replaced saturated fat with polyunsaturated fat have generally shown a reduction in CVD events, although several studies showed no effects. An independent association of saturated fat intake with CVD risk has not been consistently

shown in prospective epidemiologic studies, although some have provided evidence of an increased risk in young individuals and in women. Replacement of saturated fat by polyunsaturated or monounsaturated fat lowers both LDL- and HDL (high density lipoprotein)-cholesterol. However, replacement with a higher carbohydrate intake, particularly refined carbohydrate, can exacerbate the atherogenic dyslipidemia associated with insulin resistance and obesity that includes increased triglycerides, small LDL particles, and reduced HDL-cholesterol. In summary, although substitution of dietary polyunsaturated fat for saturated fat has been shown to lower CVD risk, there are few epidemiologic or clinical trial data to support a benefit of replacing saturated fat with carbohydrate. Furthermore, particularly given the differential effects of dietary saturated fats and carbohydrates on concentrations of larger and smaller LDL particles, respectively, dietary efforts to improve the increasing burden of CVD risk associated with atherogenic dyslipidemia should primarily emphasize the limitation of refined carbohydrate intakes and a reduction in excess adiposity.

Generality of shear thickening in dense suspensions

Brown, E., *Nature Materials* 9:220–224, 2010.

Suspensions are of wide interest and form the basis for many smart fluids. For most suspensions, the viscosity decreases with increasing shear rate, that is, they shear thin. Few are reported to do the opposite, that is, shear thicken, despite the longstanding expectation that shear thickening is a generic type of suspension behavior. Here we resolve this apparent contradiction. We demonstrate that shear thickening can be masked by a yield stress and can be recovered when the yield stress is decreased below a threshold. We show the generality of this argument and quantify the threshold in rheology experiments where we control yield stresses arising from a variety of sources, such as attractions from particle surface interactions, induced dipoles from applied electric and magnetic fields, as well as confinement of hard particles at high packing fractions. These findings open up possibilities for the design of smart suspensions that combine shear thickening with electro- or magnetorheological response. ■

BIOFUELS NEWS (CONTINUED FROM PAGE 223)

present, there are only about 2,200 ethanol fuel stations in the United States. "Two-thirds of the pumps are concentrated in 10 states and those 10 states have only about 19% of the flex-fuel vehicles that we have on the road," Stephens added. Those 10 states are all in the Midwest.

Later in the Conference, John Eichberger, vice president of government relations for the National Association of Convenience Stores, stated that every E85 dispenser in the nation is illegal because none have been certified as compatible with E85. Eichberger claimed that retailers are not likely to increase their sales of ethanol-blended fuels without protection from liability associated with consumer misfueling.

ALGAE

The Pentagon's Defense Advanced Research Projects Agency (DARPA) claims that it is just months away from producing jet fuel—from large-scale refining of algal oil into jet fuel—at a cost of less than \$3 per gallon (\$0.79 per liter), according to Barbara McQuiston, special assistant for energy at DARPA.

DARPA has already extracted oil from algal ponds at a cost of \$2 per gallon, according to *The Guardian* (<http://guardian.co.uk>, February 13).

McQuiston also said a larger-scale refining operation, producing 50 million gallons (200 million liters) annually, could be available as soon as 2011. These projects have been managed by General Atomics (San Diego, California, USA) and SAIC (San Diego). Predicted yields are 1,000 gallons of oil per acre (9,400 liters per hectare) from their algae farms.

The US military has a goal to obtain half of its fuel from renewable energy sources by 2016. Thus, the Pentagon is working to develop technologies to make its planes, ships, tanks, and so on "fuel agnostic," that is, capable of working with any energy source. ■

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People News/ Inside AOCS

Grime, Dumelin elected to lead AOCS

J. Keith Grime, president, JKG Consulting, Cincinnati, Ohio, USA, was elected AOCS president in the 2010–2011 officer election. **Erich E. Dumelin**, retired vice president, supply chain strategy and technology foods, Unilever, Zurich, Switzerland, was elected vice president. Under AOCS by-laws, the vice president is also president-elect and runs unopposed for president the following year.

Sevim Z. Erhan, Center director, Eastern Regional Research Center, US Department of Agriculture (USDA), Agricultural Research Service (ARS), Wyndmoor, Pennsylvania, USA, was elected to a two-year term as secretary.

The new officers will be installed May 18, 2010, during the 101st AOCS Annual Meeting & Expo in Phoenix, Arizona, USA.

Elected as AOCS Governing Board members-at-large were: **Richard H. Barton**, owner and president, N. Hunt Moore and Associates, Inc., Memphis and Collierville, Tennessee, USA; **David R. Duncan**, senior vice president, research & development, home & personal care, Unilever, London, England; **Mila P. Hojilla-Evangelista**, research chemist, plant Polymer Research Unit, National Center for Agricultural Utilization Research, USDA-ARS, Peoria, Illinois, USA; and **Alejandro G. Marangoni**, professor and Canada research chair, food and soft materials science, University of Guelph, Guelph, Ontario, Canada.

Continuing in their current terms are **Timothy Kemper** as treasurer; he is president and CEO, Desmet Ballestra North America, Inc., Marietta, Georgia, USA. **Christopher L.G. Dayton**, research scientist, Oil Center of Excellence, Bunge Limited, Bradley, Illinois, USA; **William J. Hausmann**, vice president of operations, Lou Ana Division, Ventura Foods, LLC, Opelousas, Louisiana, USA; and **Andrew Proctor**, professor, Department of Food Science, University of Arkansas, Fayetteville, Arkansas, USA continue as members-at-large. **Robert Moreau**, research chemist at USDA-ARS, Eastern Regional Research Center, Wyndmoor, Pennsylvania, USA, continues as Publications Steering Committee chairperson; **Len Sidisky**, manager, Gas Separations Business Unit, Supelco (Division of Sigma Aldrich), Bellefonte, Pennsylvania, USA, continues as Technical Steering Committee chairperson; and **Deland Myers**, director, Great Plains Institute of Food Safety at North Dakota State University, Fargo, North Dakota, USA, continues as Education and Meetings Steering Committee chairperson.

Ballots were emailed or mailed to eligible members in December 2009. Ballots received prior to the deadline were counted at AOCS headquarters on February 26, 2010. AOCS member George Willhite was on hand to oversee the counting and verify the results.

15th Annual Silent Auction

The AOCS Student Common Interest Group, in conjunction with the AOCS Foundation, has again organized a silent auction for the AOCS Annual Meeting & Expo to benefit student programs. The 15th Silent Auction will open for bidding in the Expo Hall of the Phoenix Convention Center on Sunday, May 16, 2010, at 3:30 p.m. Bidding on items will close



Grime



Dumelin

In Memoriam

Horace Johnson Keith

AOCS recently learned that Horace J. Keith died on March 26, 2009, in Clyde, Texas, USA, at the age of 86. He had been an AOCS member since 1954.

Born in Rome, Georgia, USA, Keith attended school in Tyler, Texas. He served in the US Navy during World War II and joined Western Cottonoil Company, a division of Anderson, Clayton and Company, in 1946. He was employed as an analytical chemist with Anderson, Clayton for 40 years and was regularly recognized for his abilities through the AOCS Smalley Check Sample program.

Keith is survived by his wife of 62 years, Pearlie Mae; 4 children, 11 grandchildren, and 16 great-grandchildren.



Naresh Bedi

Dr. Naresh Bedi, the managing director of Quality Services & Solutions Pvt. Ltd. (QSS), which is headquartered in Mumbai, India, died on January 7, 2010, at the age of 65.

QSS provides quality-related certification services during procurement, production/processing, handling and export/import of products and commodities both within India and at ports. Bedi took special interest in promoting commercial and economic cooperation between India and Indonesia, as well as other countries in southeast Asia. Among others, QSS offered quality expertise on Indian de-oiled meals, oil meals, castor oil and castor meals, and vegetable oils.

Bedi was a member of the Analytical, Edible Applications, and Processing Divisions of AOCS as well as the Australasian and Indian Sections. ■

Interested in contributing to *inform* magazine?

Do you have a story that would be perfect for the pages of *inform*? A new development in your field that is sure to generate widespread interest? A profile of a colleague or institution? Been to a meeting whose hot topics stirred great debate? *inform* magazine is actively seeking the contributions of you and your colleagues. Contact *inform*'s managing editor at jeremyc@aoacs.org for more information.

Tuesday evening at 5:30 p.m.—just in time for the winning bidders to take their items home with them.

Each year, a wide variety of items are donated, including handmade crafts, fine art, gift baskets, regional cultural items, hotel stays, scientific equipment, electronics, and collectibles. The items that received the highest bids last year were:

- A fused silica capillary column donated by Supelco, Inc.,
- A Garmin Nuvi 205 portable navigation system donated by Frito-Lay, Inc., and
- An iPod Nano from Graham Corp.

Proceeds from the auction are used for student programs such as fellowships and the Honored Student Award. Visit www.aocs.org/found/auction.cfm to see photos of items that will be up for bid.



Johnson receives award

The 2010 Andersons Cereals and Oilseeds Award of Excellence was presented to AOCs member **Lawrence Johnson**, professor of food science and human nutrition at Iowa State University, Ames, USA. The presentation took place in Kansas City at the February 3 annual meeting of the NC-213 Multi-state Research Program in Marketing and Delivery of Quality Grains and Bioprocess Co-products. (NC-213 is a project team of engineers, scientists, and economists from leading US land grant universities and government research centers that conduct research to create and disseminate the technical knowledge needed to manage quality food safety and bio-security efficiently in world grain markets.)



Johnson

Johnson was selected for his significant contributions in research, outreach, and technology transfer, as well as leadership and professional service related to cereals and oilseeds. He is internationally recognized for research and technology development of new value-added products from corn and soybeans.

The Andersons Cereals and Oilseeds Award of Excellence is funded by The Andersons, Inc. (Maumee, Ohio, USA), a diversified company with interests in the grain, ethanol, and plant nutrient sectors of US agriculture, as well as in railcar leasing and repair, turf products production, and general merchandise retailing.

ADM appoints president

Matthew J. Jansen became president of the oilseeds business unit of Archer Daniels Midland Company (ADM; Decatur, Illinois, USA) on February 8, and **Matthew D. Bruns** became vice president of corn processing.

Jansen will be responsible for all commercial activity, operations, and production for the company's oilseeds business. He has been with ADM since 1989, and most recently served as vice president, risk management and ethanol trading and sales.

Bruns will oversee ethanol trading and sales as well as the corn business unit's commodity risk. Bruns joined ADM in 1995.

Calling all AOCs golfers!

Did you play a round of golf at the 100th AOCs Annual Meeting & Expo in Orlando, Florida?

AOCs Member John Heilman did.

And he recently discovered that his putter was inadvertently switched with someone else's during the tournament. If you did attend the golf outing in Orlando, please take a moment to check your clubs. John Heilman can be contacted at jeheilman@q.com.



Vilsack announces new Soybean Board members

Agriculture Secretary **Tom Vilsack** announced the appointment of 17 members and one alternate member to the United Soybean Board on February 12. Their three-year appointments began that day. All appointees will serve three-year terms.

Appointed Soybean Board members are: **F.H. Lyons Jr.**, Arkansas; **Mark Detweiler**, Georgia; **David P. Hartke**, Illinois; **Karen Fear**, Indiana; **Laura L. Foell**, Iowa; **Dennis R. Clark**, Kentucky; **Raymond S. Schexnayder Jr.**, Louisiana; **James A. Call**, Minnesota; **Todd Gibson**, Missouri; **Mark A. Caspers**, Nebraska; **Earl B. Hendrix**, North Carolina; **Vanessa A. Kummer**, North Dakota; **John B. Motter**, Ohio; **Jim Musser**, Pennsylvania; **Stanley R. Hanson**, South Dakota; **Wade A. Cowan**, Texas; and **R. Bruce Johnson**, Virginia. Georgia resident **Walter L. Godwin** was appointed as an alternate member.

The 68-member board is authorized by the Soybean Promotion, Research and Consumer Information Act. The secretary selected the appointees from soybean producers nominated by Qualified State Soybean Boards. The mandatory program is funded at the rate of 0.5% of the net market price of the soybeans purchased. The board's goal is to strengthen the position of soybeans in the marketplace and to maintain and expand domestic and foreign markets and uses for soybeans and soybean products.

Mizicko appointed president of Eurofins STA Labs

John Mizicko replaced **Darrell Maddox** as president of Eurofins STA (ESTA) Laboratories, Inc., a wholly owned subsidiary of Eurofins Scientific (Des Moines, Iowa, USA), as of March 1. Maddox resigned from ESTA in order to pursue new commercial and additional personal interests.

Maddox agreed to remain with ESTA during the transition to the new president and to continue to work on strategic and business development projects for ESTA and Eurofins in the future. He had been president of Eurofins STA Labs since 1995. Maddox was instrumental in chartering the National Seed Health System and developing the International Seed Health Initiative.

Before becoming president, Mizicko was division manager of seed quality services for Eurofins STA. In that position, he handled the seed health and seed analysis testing services. Prior to that, he worked for the Harris Moran Seed Company, SunSeeds, and Niagara Seed Company. ■

Certified Reference Materials Available

AOCS currently offers Certified Reference Materials (CRM's) for canola, sugar beet, potato, corn, rice, soy, and cottonseed.

CRM's are a useful tool for identifying new traits that arise from plant biotechnology. They are created from leaf, seed, or grain, expressing the new trait, as well as from the conventionally bred matrix.

The European Commission (EC) has mandated that as of 18 April 2004, a method for detecting a new biotech event and CRM's must be available before the EC will consider authorizing acceptance of a new genetically modified crop. AOCS has been contracted to manufacture CRM's according to ISO Guides 30-35 and in accordance with EC No 1829/2003.

Please visit www.aocs.org/tech/crm for a complete listing of available materials.

Phone: +1-217-693-4810 • Fax: +1-217-693-4855
E-mail: technical@aocs.org • www.aocs.org/tech

TECHNICAL
SERVICES

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AOCS 
Since 1909
Your Global Fats and Oils Connection

Job Fair

May 16–22, 2010



Where the right employee finds the right career.

The third AOCS Job Fair will take place during the week of the 101st AOCS Annual Meeting & Expo. Employers and job seekers can take advantage of this expanded career network to search for the perfect employee or career opportunity.

Attending the Annual Meeting?

- Post job openings or résumés May 16–22 at **NO CHARGE**.
- Visit the Job Fair booth located in the AOCS Pavilion. Designated computers will be available for the career services.
- Space is available for potential interviews. Stop by the Information Desk for more details.

Not attending the Annual Meeting?

You can still take advantage of the AOCS Job Fair!

- From May 16–22, post job openings for only \$25.00.
- Job seekers can post résumés and search top quality career opportunities at no charge.*

*This applies throughout the year.

Visit our website www.aocs.org/member/jobcent

for more information on the Job Fair and the year round access to the best employment opportunities in the fats and oils industry.



Theiler to present keynote address



Catherine Watkins

Richard F. Theiler, senior vice president of research and development of The Dial Corp., will provide the keynote address for the AOCS Business Meeting and Awards Recognition Breakfast on Tuesday, May 18, from 8:00 a.m. to 8:45 a.m., during the 101st AOCS Annual Meeting & Expo (AM&E).

His presentation—titled Sustainability Innovation in the Chemicals and Consumer Product Goods (CPG) Industries—will provide a comprehensive examination of business impacts and new opportunities.



Theiler

“The sustainability movement continues to gain momentum and will change the future business environment worldwide,” Theiler notes. “The driving forces that contribute to this movement include economic and environmental influences, regulatory and legislative initiatives, consumer behavior, customer demands, and media attention.”

Insights regarding those driving forces will be presented, as well as their implications and impacts on the global fats, oils, and CPG industries. Subjects he will touch on include sustainable busi-

ness applications, product technologies, and the tools for assessing life-cycle impacts.

Theiler was named senior vice president, research and development, of The Dial Corporation, a subsidiary of Henkel KGaA based in Scottsdale, Arizona, USA, in 2003. Prior to joining Dial, he held senior management positions with Colgate-Palmolive Co. and Unilever, both in the United States and United Kingdom. He is active with a number of Washington, D.C.-based trade associations, including the Personal Care Products Council and The Soap and Detergent Association. Theiler earned a Ph.D. in biochemistry from the University of Illinois in Urbana-Champaign, USA, and is the author of numerous patents and publications.

OTHER MUST-ATTEND MEETING EVENTS

AOCS Bookstore. Visit the AOCS Bookstore in the Expo Hall to review new titles and participate in a fun game of chance. You might win a prize or a discount on your book purchase.

Titles debuting at the meeting include two new editions and a DVD. The *2nd International Congress on Biodiesel* DVD includes synchronized PowerPoint slides and audio files of presentations from

the meeting in Munich in November 2009, which was co-sponsored by AOCS and Euro Fed Lipid. The new editions that will be available are *Single Cell Oils: Microbial and Algal Oils*, 2nd edition, and *The Biodiesel Handbook*, 2nd edition.

Expo events. Watch for details about the kickoff of the AOCS Foundation’s Influencing Innovation campaign. And be sure not to miss the 15th Annual Silent Auction in the Expo Hall. Proceeds from the auction of donated goods and services from member companies help to fund student initiatives.

Also on the Expo floor—in addition to at least seven new exhibitors—will be Monsanto Co.’s CAML (Crop Analytics Mobile Laboratory). AOCS and Monsanto will host tours of the CAML—a versatile mobile laboratory—during exhibition hours as well as special demonstrations of AOCS Methods during lunch breaks.

Technical Services expert panel meetings. AOCS Technical Services will convene three expert panels during the AM&E. They include the expert panels on biodiesel (Sunday, May 16, 4 p.m.), olive oil (Monday, May 17, 2 p.m.), and process contaminants (Tuesday, May 18, 2 p.m.). See the AM&E program for further details. In addition, the Methods Roundtable Meeting, which will cover activities of the chromatography, rapid and nondestructive, seed and meal, mycotoxins, and flavor and quality subcommittees, will be held on Sunday, May 16, at 2 p.m. Participants will discuss the recent progress of various projects.

inform Associate Editor Catherine Watkins can be reached at cwatkins@aocs.org.



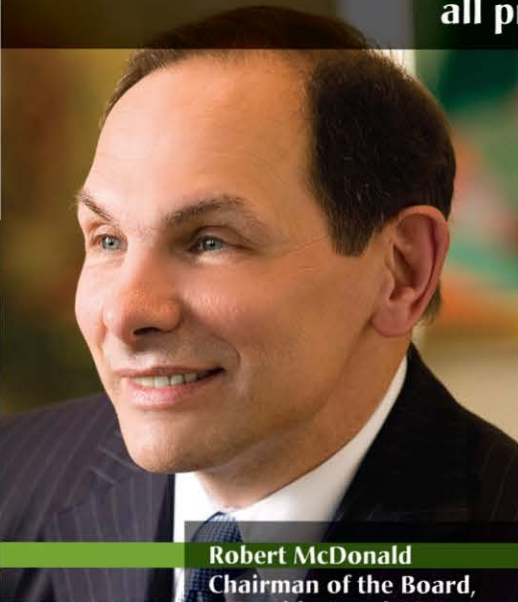
Co-sponsored by AOCS, AISE, CESIO, JOCS, JSDA, and SDA

Montreux 2010

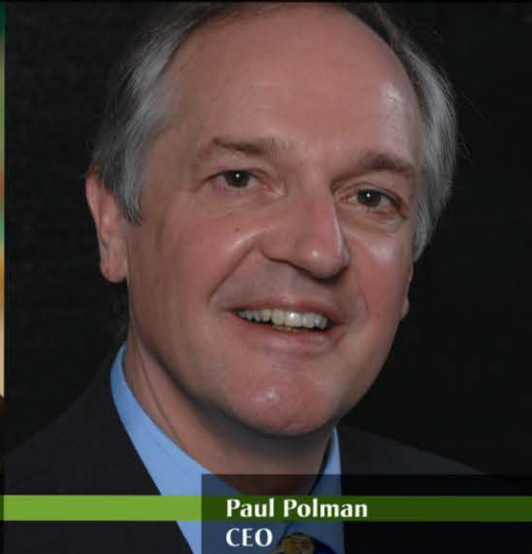
Where global leaders shape the future of the fabric and home care industries to enhance our quality of life.

History will be made at Montreux 2010

For the first time ever, the CEOs of the top three detergent manufacturers will all present at this important conference.



Robert McDonald
Chairman of the Board,
President and CEO
The Procter & Gamble
Company
Presenting Tuesday
morning, 5 October



Paul Polman
CEO
Unilever
Presenting Tuesday
afternoon, 5 October



Kaspar Rorsted
CEO
Henkel AG Co. KGaA
Presenting Wednesday
morning, 6 October



*Meet Me
in Montreux!*

7th World Conference on Detergents | 4-7 October 2010 | Montreux, Switzerland
www.aocs.org/meetings/Montreux

Meet us in Montreux!

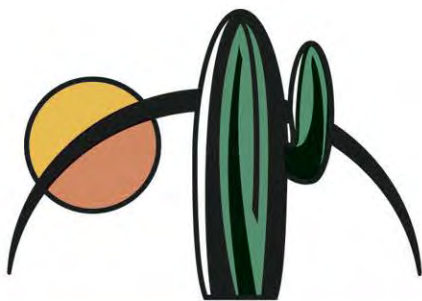
Work continues on AOCS' 7th World Conference on Detergents: New Strategies in a Dynamic Global Economy, scheduled for October 4–7, 2010, at the Montreux Music & Convention Centre in Montreux, Switzerland.

A number of high-powered executives already have been booked as speakers, including the CEOs of the top three detergent manufacturers: Kaspar Rorsted of Henkel, Robert McDonald of P&G, and Paul Polman of Unilever. Be sure to read the complete meeting preview in next month's *inform*.

(right) With just a moment to spare between attending executive briefings and committee meetings at the SDA meeting, AOCS Executive Vice President Jean Wills Hinton donned the official Montreux meeting T-shirt and drew the name of the recipient of a complimentary registration to Montreux 2010, AOCS' 7th World Conference on Detergents in Montreux, Switzerland. The lucky winner is Tomoaki Goeku, manager, Detergent Intermediates Department, Specialty Chemicals Division, Mitsui & Co., Ltd., Tokyo, Japan.



(left) The Executive Program Committee of the Montreux 2010 conference got together to discuss program details during The Soap and Detergent Association's 84th Annual Meeting & Industry Convention on January 26–30, 2010, in Orlando, Florida, USA. The committee consists of (left to right) Manfred Trautmann, co-chair, vice president, Detergents & Intermediates, Clariant International, Muttenz, Switzerland; J. Keith Grime, general chair, president, JKG Consulting LLC, Cincinnati, USA; Thomas H. Mueller-Kirschbaum, co-chair, corporate senior vice president, Henkel AG & Co. KGaA, Düsseldorf, Germany; and David Duncan, past chair, president, DRD Consulting, Virginia Water, Surrey, UK. Grime also is incoming AOCS president (see his profile on page 203).



Be sure to join us for the Author/Editor
Book Signing Monday 5:00-6:00pm!

Bookstore



101st AOCs Annual Meeting & Expo
May 16-19, 2010
PHOENIX CONVENTION CENTER
Phoenix, Arizona, USA

Find us in the Expo Hall.

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- Free T-shirt when you spend \$300*
- Inventory sale on older titles*
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Win prizes or receive an
additional discount when you
play this suspenseful game of
chance.


New Products on Display at the AOCS Press Bookstore

2nd International Congress on Biodiesel DVD

Co-sponsored by: AOCs and Euro Fed Lipid
2010. DVD. Product code DVD-255


The Biodiesel Handbook, 2nd Edition

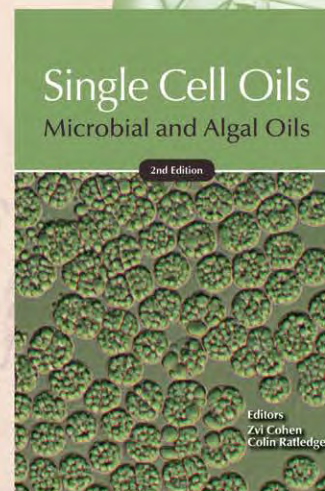
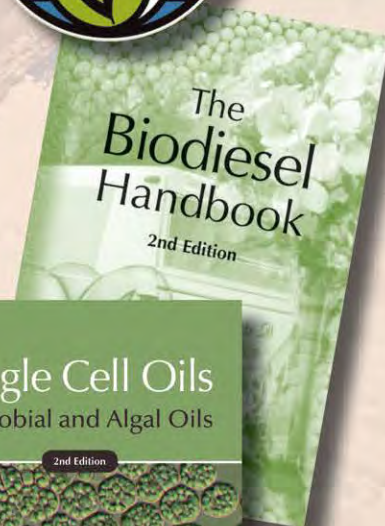
Gerhard Knothe, Jürgen Krahl, and
Jon Van Gerpen, Editors
ISBN 978-1-893997-62-2.

Product code 234 

Single Cell Oils Microbial and Algal Oils, 2nd Edition

Zvi Cohen and Colin Ratledge,
Editors
ISBN: 978-1-893997-73-8.

Product code 249 



AOCS 2010 award recipients announced



Outstanding accomplishments and service by individuals from around the world will be recognized during the 101st AOCS Annual Meeting & Expo to be held May 16–19, 2010, in Phoenix, Arizona, USA. The following list includes awards for whom recipients had been named by the deadline for this issue of *inform*.

SOCIETY AWARDS

Award of Merit



KESHUN LIU, US Department of Agriculture–NRCS, USA

The AOCS Award of Merit is presented for productive leadership service to AOCS that has advanced the prestige, standing, or interests of AOCS, and for services not otherwise specifically recognized.

AOCS Fellows



ALBERT J. DIJKSTRA, Consultant, France



APOSTOLOS (PAUL) KIRITSAKIS, Institute of Thessaloniki, Greece



LEVENTE L. DIOSADY, University of Toronto, Canada



DHARMA R. KODALI, Global Agritech Inc., USA



WALTER E. FARR, Farr Group of Companies, USA



EDMUND W. LUSAS, Consultant, USA

Fellows are selected for exceptional recognition for achievements in science as well as for unusually important service to AOCS or to their profession.

SCIENTIFIC AWARDS

Supelco/Nicholas Pelick–AOCS Research Award



WILLIAM W. CHRISTIE, formerly at The Scottish Crop Research Institute and consultant to Mylnefield Lipid Analysis, Scotland

\$10,000 honorarium, \$1,500 travel stipend, and a plaque.

The Supelco/Nicholas Pelick–AOCS Research Award is for accomplishment of outstanding original research in fats, oils, lipid chemistry, or biochemistry, the results of which have been presented through publication of technical papers. The award is funded by Supelco Inc., a subsidiary of Sigma-Aldrich, and Nicholas Pelick, an AOCS past president.

Stephen S. Chang Award



D. JULIAN McCLEMENTS, University of Massachusetts, USA

\$5,000 honorarium and a jade horse.

The Stephen S. Chang Award recognizes a scientist, technologist, or engineer who has made decisive accomplishments in basic research for the improvement or development of products related to lipids. The award was established by former AOCS President Stephen S. Chang and his wife, Lucy, for individuals who have made significant contributions through a single breakthrough or through an accumulation of publications.

George Schroepfer Medal



CEDRIC H.L. SHACKLETON, Children's Hospital Oakland Research Institute, USA

\$5,000 honorarium and a bronze medal.

The Schroepfer Medal recognizes scientists who have made significant and distinguished advances in the realm of steroids. Preference is given to accomplishments in biochemistry and physiology with biomedical applications and to interdisciplinary research. It honors the memory of George J. Schroepfer Jr., who was a leader in this field for more than four decades.

AOCS Young Scientist Research Award



EDGAR J. ACOSTA, University of Toronto, Canada

\$1,000 honorarium, \$1,500 travel stipend, and a plaque.

The AOCS Young Scientist Research Award recognizes a young scientist who has made a significant and substantial research contribution in one of the disciplines represented by AOCS Divisions. Vijay K.S. Shukla and the International Food Science Centre A/S of Denmark sponsor the award.

DIVISION/SECTION AWARDS

Analytical Division:

Herbert J. Dutton Award



ANDREW PROCTOR, University of Arkansas, USA

\$1,000 honorarium and a plaque.

The award is presented for significant contribution to the analysis of fats and oils or to improvement in the understanding of the processes used in the fats and oils industries. The award is named for Dr. Dutton, a long-time research leader at the US Department of Agriculture facility in Peoria, Illinois, USA.

Student Awards



GERARD DUMANCAS, Oklahoma State University, USA

\$250 honorarium and a certificate



JENNA C. SULLIVAN, Dalhousie University, Canada

Biotechnology Division: Student Awards



1st place—**JINWEI ZHANG**, Newcastle University, United Kingdom

\$300 honorarium and a certificate



2nd place—**QIN LIU**, University of Alberta, Canada

\$200 honorarium and a certificate



3rd place—**ZHULIANG TAN**, Memorial University of Newfoundland, Canada

\$100 honorarium and a certificate

19th International Symposium on **Plant Lipids**

11–16 July



**ISPL
2010**

**CAIRNS
AUSTRALIA**

The Premier Meeting for Plant Lipid Sciences

Bringing together the world's leading plant lipid scientists for a one-of-a-kind program that will set the stage for innovations in the plant-oil-based industries. Visit the website for more information.

ISPL 2010 is organized by the Australasian Section of the AOCS.

Plan to Attend!

www.ispl2010.org

**Edible Applications and Technology Division:
Timothy L. Mounts Award**



ALBERT J. DIJKSTRA, Consultant, France

\$500 honorarium and a plaque.

The award is for either basic or applied research accomplishments relating to the science, technology, or application of edible oils in food products. It memorializes the former AOCS president, who was a distinguished research scientist with the US Department of Agriculture. The award is sponsored by Bunge North America.

Student Award



WAI FUN LEONG, Universiti Putra Malaysia, Malaysia

\$500 travel stipend and a certificate.

**Health and Nutrition Division:
Ralph Holman Lifetime Achievement**

WILLIAM E.M. LANDS, USA

\$500 honorarium, \$1,000 travel stipend, and a signed orchard photo print.



The award recognizes outstanding performance and meritorious contributions to the health and nutrition interest area. The award is named after Ralph Holman in recognition of his lifetime service to the study of essential fatty acids.

Student Award



JENNIFER E. LAMBERT, University of Alberta, Canada

\$500 honorarium and a certificate.

**Industrial Oil Products Division:
SDA/NBB Glycerine Innovation Award**



RAMON GONZALEZ, Rice University, USA

\$5,000 honorarium and a plaque.

The SDA/NBB Glycerine Innovation Award, sponsored by The Soap and Detergent Association and the National Biodiesel Board, recognizes achievements in research relating to new applications for glycerine, particularly those with commercial viability.

**Become one of the leading laboratories
in the fats and oils industry.**

**Participate in the AOCS
Laboratory Proficiency Program.**

**Enroll by May 20 for
sample delivery in June 2010.**

The AOCS Laboratory Proficiency Program is the world's most extensive and respected collaborative proficiency program for oil- and fat-related commodities, oilseeds, oilseed meals, edible fats, and contaminants.

The program objective is to achieve and maintain peak performance of laboratory staff and equipment. It is designed to fit with your accreditation needs under ISO 17025 and is run in a manner consistent with the requirements of ISO guide 43.

Enroll online at www.aocs.org/tech/lpp.cfm,
or contact AOCS Technical Services for an
enrollment form.

Phone: +1-217-693-4810
Fax: +1-217-693-4855
Email: technical@aocs.org

TECHNICAL SERVICES **AOCS**



USB Industrial Uses of Soybean Oil Award



HERMAN P. BENECKE, Battelle, USA

\$3,000 honorarium and a plaque.

This award is for outstanding research into new industrial applications or uses for soybean oil. The United Soybean Board's New Uses Committee sponsors the award to encourage and recognize such research.

Student Award



ZUL ILHAM Z.L., Kyoto University, Japan

\$500 travel stipend and a certificate.

Lipid Oxidation and Quality Division: Edwin Frankel Best Paper Award

Plaque and certificates for all authors.

The award recognize the best paper relating to lipid oxidation or lipid quality published during the previous year by AOCS Press. Kalsec sponsors the award.

Kinetic Study of the Prooxidant Effect of α -Tocopherol. Hydrogen Abstraction from Lipids by α -Tocopheroxyl Radical (*Lipids* 44:935–943)

AYA OUCHI¹, MASAHARU ISHIKURA², KENSUKE KONISHI¹, SHIN-ICHI NAGAOKA¹, and KAZUO MAKAI¹

¹Ehime University, Japan; and ²Yamaha Motor Co., Ltd., Japan

Phospholipid Division: Best Paper Award

Plaque and certificates for all authors.

The award recognizes an outstanding paper related to phospholipids published during the previous year. International Lecithin & Phospholipid Society sponsors the award.

Isolation and Purification of Egg Yolk Phospholipids Using Liquid Extraction and Pilot-scale Supercritical Fluid Techniques (*Eur. Food Res. Technol.* 228:857–863)

HEIKKI ARO¹, EILA P. JÄRVENPÄÄ², KAROLIINA KÖNKÖ¹, MIKKO SIHVONEN¹, VELI HIETANIEMI¹, and RAINER HUOPALAHTI²

¹MTT Agrifood Research Finland; and ²University of Turku, Finland

Processing Division: Distinguished Service Award



GARY R. LIST, Collaborator, US Department of Agriculture–NCAUR, USA

\$1,000 travel stipend and a certificate.

The award recognizes outstanding, meritorious service to the oilseed processing industry or to the Processing Division over a substantial amount of time.



Thanks

The AOCS Foundation extends its heartfelt thanks to the more than 500 Century Club members who have joined since the program began. View a list of Century Club members at www.aocs.org/found/cent_club.cfm.

The Corporate Century Club is new for 2010!
The Foundation would like to thank our first Corporate Century Club member:
Church & Dwight Co Inc.

It's not too late for you and/or your company to join the Century Club or Corporate Century Club, visit <http://www.aocs.org/found> for more information and to make your gift.

Lead the way and be a part of it!

If you have questions or would like more information, please contact Amy Lydic, Development Manager by e-mail at amy@aoocs.org, by phone at +1 217-693-4807, or by mail to AOCS Foundation, 2710 S. Boulder Drive, Urbana, IL 61802, USA.

Student Award

AN PHILIPPAERTS, KU Leuven, Belgium

\$500 honorarium, \$200 travel stipend, and a certificate.

**Protein and Co-Products Division:
ADM Best Paper Award**

Plaque and certificates for all authors.

The awards are presented annually for the outstanding paper related to protein and co-products appearing in an AOCS publication during the previous year. Archer Daniels Midland Co. sponsors the awards.

Chemistry/Nutrition

Fourier Transform Near Infrared Spectroscopy as a Quality Control Tool for the Analysis of Lecithin and By-Products During Soybean Oil Processing (*Journal of the American Oil Chemists' Society* 86:835–841)

**HUI LI¹, MARK GULDEN², ROBERT COCCIARDI¹, and
JAN HUGHES²**

¹Bruker Optics Inc., USA; and ²CHS Inc., USA

Engineering/Technology

Two-Stage Countercurrent Enzyme-Assisted Aqueous Extraction Processing of Oil and Protein from Soybean (*Journal of the American Oil Chemists' Society* 86:283–289)

JULIANA MARIA LEITE NOBREGA de MOURA, and
LAWRENCE A. JOHNSON
Iowa State University, USA

**Surfactants and Detergents Division:
Samuel Rosen Memorial Award**


AMMANUEL MEHRETEAB, Colgate-Palmolive, USA

\$2,000 honorarium and a plaque.

The award recognizes a significant advance in, or application of, the principles of surfactant chemistry by a chemist working in the industry. The award is sponsored by Milton Rosen in honor of his father, Samuel, who worked as an industrial chemist on the formulation of printing inks for more than four decades.

The Soap and Detergent Association (SDA) Award

Crystal plaques for all authors.

The award is presented annually to the authors of the best technical paper published during the preceding year in *Journal of Surfactants*

9th INTERNATIONAL SYMPOSIUM ON THE Role of Soy in Health Promotion and Chronic Disease Prevention and Treatment

**Important Dates
to Remember:**

July 1, 2010 Call for
Papers Deadline

July 30, 2010 Online
Registration Discount
Deadline

September 17, 2010 Early
Bird Registration Deadline

September 30, 2010
Last Day for Advance
Registration

October 16-19, 2010 • Washington, DC USA
www.SoySymposium.org

**Soy Research Today—
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In addition to the perspectives of renowned experts in the industry, special review presentations, commentaries and panel discussions will address some of the hottest and most controversial issues talked about today:

- Health effects of genetically modified soybeans: How much is known?
- Can oncologists now assure their breast cancer patients that soyfoods are safe?
- Soy and bone health: Is there any reason for optimism after the results of the SIRBL study?

**Visit the 9th Soy website for
the latest program details.**

Organized by **AOCS**

and Detergents. The award is sponsored by The Soap and Detergent Association.

Adsorption of Aroma Chemicals on Cotton Fabric in Different Aqueous Environments (*Journal of Surfactants and Detergents* 12:43–58)

S. KAY OBENDORF¹, HAIQING LIU¹, KUITAN TAN¹, MICHAEL J. LEONARD², TIMOTHY J. YOUNG², and MICHAEL J. INCORVIA³

¹Cornell University, USA; ²International Flavors & Fragrances Inc., USA; and ³Sheridan Ross PC, USA.

Student Award



SUMIT K. KIRAN, University of Toronto, Canada

\$500 travel stipend and a certificate.

USA Section: Alton E. Bailey Award



LAWRENCE A. JOHNSON, Iowa State University, USA

\$750 honorarium and a plaque.

The North Central Chapter of the USA Section established this award to recognize outstanding research and exceptional service in the field of lipids and associated products. The medal commemorates

Alton E. Bailey's great contributions to the field of fats and oils as a researcher, as an author of several standard books in the field, and as a leader in the work of the Society.

Hans Kaunitz Award



GERARD G. DUMANCAS, Oklahoma State University, USA

\$500 honorarium and a certificate.

The award recognizes the outstanding performance and merit of a graduate student within the geographical boundaries of the USA Section.

STUDENT RECOGNITION AWARDS

AOCS Foundation Honored Student Awards

The award recognize graduate students at any institution of higher learning who are conducting research in any area of science dealing with fats and lipids and who are interested in the areas of science and technology. Supported by contributions from members as well as companies in the industry.

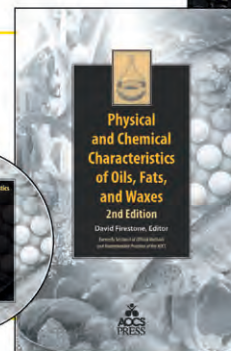
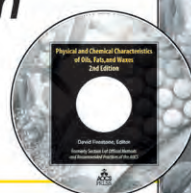
Travel stipend and a certificate.

Manuchehr (Manny) Eijadi Award

The Eijadi Award recognizes outstanding merit and performance by an AOCS Honored Student. The award, established by Mr. Eijadi, is

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Peter and Clare Kalustian Award

The Kalustian Award recognizes outstanding merit and performance by an AOCS Honored Student. The award is supported by the Kalustian estate.

\$1,000 scholarship and a certificate.



CARLOS E. ASTETE,
Louisiana State University, USA—Honored Student



AMIR MALAKI NIK, University of Guelph, Canada—Honored Student



GERARD G. DUMANCAS,
Oklahoma State University, USA—Honored Student



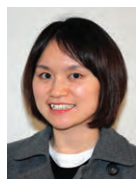
VERA VAN HOED, Ghent University, Belgium—Honored Student



JENNIFER E. LAMBERT,
University of Alberta, Canada—Honored Student and Peter and Clare Kalustian



YU ZHANG, The University of Pennsylvania, USA—Honored Student and Manuchehr Eijadi



QIN LIU,
University of Alberta, Canada—Honored Student



YING ZHONG,
Memorial University of Newfoundland, Canada—Honored Student



DEBJANI MITRA, Iowa State University, USA—Honored Student

Ralph H. Potts Memorial Fellowship Award



LINH D. DO, The University of Oklahoma, USA

\$2,000 scholarship, travel stipend, and a plaque.

The Ralph H. Potts Award is presented annually to a graduate student working in the chemistry of fats and oils and their derivatives. The award is sponsored by AkzoNobel to memorialize Ralph Potts, a pioneer in

research on industrial uses of fatty acids. ■

AVOCADO OIL (CONTINUED FROM PAGE 201)

monounsaturates (oleic and palmitoleic acids), 12% polyunsaturates (linoleic and linolenic acids), and 12% saturates (palmitic and stearic acids); these values are given as percentage of fatty acid/total fatty acids. The main antioxidant in the oil is α -tocopherol, which is present at levels of 70–190 mg/kg oil. β -, γ -, and δ -tocopherols are only present in minor amounts (<10 mg/kg oil). Other nonlipid components present in the oil include chlorophylls (11–19 mg/kg oil) and carotenoids (1.0–3.5 mg/kg oil).

The chlorophylls from the flesh and the skin contribute to the characteristic emerald green color of the oil. Depending on the location in the mesocarp, the chlorophyll content varies, but the majority of chlorophyll and carotenoids are present in the greener layers of flesh next to the skin. If avocado skin is included in the pulp during malaxing, then the likelihood of extracting more pigments is greater. Chlorophyll does not contribute to oil stability but can be a problem, as chlorophyll can act as a sensitizer for photo-oxidation to occur. Therefore, it is important to store the oil away from light.

Carotenoids in avocado fruit have long attracted attention for their potential anti-carcinogenic effect; these same carotenoids are subsequently extracted into the oil. The most significant carotenoid present in the oil is lutein (0.5–3.3 mg/kg oil). Lutein is beneficial for eye health by reducing the progression of age-related macular degeneration. The cold-pressed avocado oil also contains high levels of phytosterols (β -sitosterol being the main sterol present), at 2.23–4.48 mg/g oil. Based on its fatty acid makeup and the presence of these phytochemicals, extra virgin cold-pressed avocado oil is considered to be a healthful oil.

STANDARDS FOR AVOCADO OIL

The impacts of postharvest procedures, preprocessing treatments, extraction, and storage on the composition, quality, and sensory characteristics of avocado oil have been investigated over the last 10 years in NZ in collaboration with Australian and Californian research groups. Standards have been proposed for avocado oil, including extra virgin, virgin, and pure grades of oil (Table 1). These standards have been recommended to ensure that avocado oil sold is of good quality in terms of standard quality indices, composition, and sensory properties. The standards are unique to avocado oil, where cold-pressed avocado oil is recovered by mechanical extraction at temperatures less than 50°C, without solvents; water and enzymes can be used. These standards are important, as the production and culinary consumption of cold-pressed avocado oil, with its light, distinctive flavor, is increasing worldwide.

Marie Wong is senior lecturer at the Institute of Food, Nutrition & Human Health, Massey University (Auckland, New Zealand). She can



be contacted via email at M.Wong@massey.ac.nz. Allan Woolf and Cecilia Requejo-Jackman are with the New Zealand Institute for Plant & Food Research Limited (Auckland, New Zealand).

CALENDAR (CONTINUED FROM PAGE 193)

June

June 1–4, 2010. AchemAsia, 8th International Exhibition, Congress on Chemical Engineering and Biotechnology, Beijing, P.R. China. Information: www.achemasia.de.

June 2–5, 2010. European Fat Processors and Renderers Association, Kempinski Hotel Corvinus Budapest, Hungary. Information: www.efpra2010.org.

June 3–4, 2010. Third European Workshop on Lipid Mediators, Pasteur Institute, Paris, France. Information: <http://workshop-lipid.eu>.

June 6–11, 2010. Bioactive Lipids: Biochemistry and Diseases, Westin Miyako Kyoto, Kyoto, Japan. Information: www.keystone-symposia.org/Meetings/ViewMeetings.cfm?MeetingID=1024.

June 10–11, 2010. International Lecithin & Phospholipid Society, Lecithin Short Course, Ghent University, Ghent, Belgium. Information: email: ilps@lecipro.nl; www.ilps.org.

June 12–15, 2010. National Lubricating Grease Institute Annual Meeting, Bonita Springs, Florida, USA. Information: www.nlgi.org/annual_meeting.

June 12–15, 2010. International Oil Mill Superintendents Association Convention, Marriott Hotel, Williamsburg, Virginia, USA. Information: phone: +1-817-297-4668 or email: paukert.linda@sbcglobal.net

June 14–17, 2010. International Fuel Ethanol Workshop & Expo, America's Center, St. Louis, Missouri, USA. Information: www.fuelethanolworkshop.com.

June 15–17, 2009. International Probiotic Conference 2010, Kosice, Slovakia. Information: www.probiotic-conference.net.

June 17–18, 2010. CosmeticBusiness 2010, M.O.C. (Münchener Order Center), Munich, Germany. Information: www.cosmetic-business.com/en/tradefair.

June 19–24, 2010. HPLC 2010: 35th International Symposium on High Performance Liquid Phase Separations and Related Techniques, The Hynes Convention Center, Boston, Massachusetts, USA. Information: www.casss.org/displayconvention.cfm?conventionnbr=6136.

June 19–24, 2010. FEBS Workshop: Eucaryotic Lipids; treasure of regulatory information, Spetses, Greece. Information: <http://web.science.uu.nl/spetses2010/index.html>.

June 20–23, 2010. 84th Colloid & Surface Science Symposium, The University of Akron, Akron, Ohio, USA. Information: www.uakron.edu/colloids2010/index.dot.

June 20–25, 2010. Lipoprotein Metabolism, Gordon Research Conference, Waterville Valley Resort, Waterville Valley, New Hampshire, USA. Information: www.gordonresearchconferences.org/programs.aspx?year=2010&program=lipopro.

June 21–23, 2010. 14th Annual Green Chemistry & Engineering Conference, Washington, DC, USA. Information: www.gcande.org.

June 21–26, 2010. Eukaryotic Lipids; Treasure of Regulatory Information, Spetses, Greece. Information: g.vanmeer@uu.nl.

June 23–24, 2010. Symposium on Breeding for Disease Resistance, Krasnodar, Russian Federation. Information: www.isa.cetiom.fr/event.htm.

June 27–30, 2010. World Congress on Industrial Biotechnology and Bioprocessing, Washington, DC, USA. Information: www.bio.org/events.

June 27–July 2, 2010. Tribology, Gordon Research Conference, Colby College, Waterville, Maine, USA. Information: www.gordonresearchconferences.org/programs.aspx?year=2010&program=tribology.

July

July 6–8, 2010. China Soybean Expo 2010, Harbin International Conference Exhibition and Sports Center, Heilongjiang Province, China. Information: www.chinasoybeanexpo.com/en.

July 8–9, 2010. AgriGenomics World Conference, Conrad Brussels Hotel, Brussels, Belgium. Information: www.selectbiosciences.com/conferences/AGWC2010/.

July 11–16, 2010. 19th International Symposium on Plant Lipids, Cairns Convention Centre, Cairns, Australia. Information: www.ispl2010.org.



July 17–21, 2010. Institute of Food Technologists' Annual Meeting and Expo, McCormick Place, Chicago, Illinois, USA. Information: www.ift.org.

July 18–20, 2010. Food Processing Suppliers Association Process Expo, McCormick Place, Chicago, Illinois, USA. Information: www.iafis.org.

August

August 1–6, 2010. 19th World Congress of Soil Science, Brisbane, Australia. Information: www.19WCSS.org.au.

August 22–26, 2010. 240th American Chemical Society Autumn Meeting, Boston, Massachusetts, USA. Information: www.acs.org. ■

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