



## GAZETTE

**Monday, June 1, 2015**

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### **Medium Chain Triglycerides (MCT's) What are they and why are they important?**

presented by Dr. Alvin Berger  
Global Director of Business Development for Nutritional Sciences at ABITEC Corp.

**Dr. Berger will define Medium Chain Triglycerides (MCT's), explore confusion over their naming, identify sources, discuss historical and evolutionary aspects. He will review/ summarize current nutritional, clinical, medical and food uses and physiological benefits.**

about Dr. Alvin Berger

Alvin's responsibility at ABITEC is to lead initiatives strategically and operationally, and to drive the future growth of the Nutrition Science Business Unit.

Previously, Dr. Berger was President at Dr. SOS Nutritional Consulting and Nutritionals and Lipid consulting; CSO for Arctic Nutrition in Norway; Nutritional Leader North America/Global Lipid Expert for Cargill; Director/Head of Metabolomics, Lipidomics, and Biochemistry/Nutrition Departments at 3 biotechnology/drug companies (Metabolon, Paradigm Genetics/ Icoria, Cytochroma). Prior to that, he headed many of Nestle's key lipid commercial and scientific activities at the Nestle Research Center in Lausanne, Switzerland, using in vitro-, animal-, and clinical approaches.

Educationally, he completed a post-doctoral fellowship in Molecular Lipid cell Signaling and Cancer Biology at Georgetown University/Lombardi Cancer Center; Ph.D in Nutritional Biochemistry/Lipid Nutrition at UC Davis; PhD Nutrition pre-work at the University of Washington; MS in Aquaculture and Nutrition at the Univ. of Washington and a BS in Biology at the Univ of Michigan.

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## **From the Chair**

**It was a fun year at Long Island IFT. I particularly enjoyed the variety of topics and the speakers that presented them.**

**Let us know how you felt about our programs this year. Did you like the programs presented? What topics would you like us to present, next year.**

**How am I doing with the LIIFT Gazette? Should I make any changes? Do you like the articles that are presented? What type of articles should I focus on, in the future.**

**Give us your feed back on all aspects of the section. We like constructive criticism.**

**Looking forward to seeing you at our final meeting of the season on Monday, June 1st, at the Inn at New Hyde Park.**

**Frank Vollaro, for the Executive Board**

## **Upcoming meetings:**

**July 11-14 , 2015**

**IFT National Meeting  
McCormick Pl. South  
Chicago, Ill.  
[www.ift.org](http://www.ift.org)**

**2015-2016 season, opening meeting:  
October 5, 2015**

## **MEETING PLACE & DIRECTIONS**

**Date: Monday, June 1, 2015**

**Place: The Inn at New Hyde Park  
214 Jericho Tpke.  
New Hyde Park, N.Y. 11040**

**Directions: [www.innatnhp.com](http://www.innatnhp.com)**

**Times: 6:00PM-7:00PM, cash bar, networking  
7:00PM- 8:00PM, dinner  
8:00PM- speaker**

**Price: \$40.00 per person with reservation  
\$50.00 per person at the door**

**Reservations: Carol Zamojcin @ 516-352-5772,  
anytime before May 29, 2015**

## Healthy Fats for Baked Goods

As far as fat is concerned, nutritionists and health officials agree dietary fats are necessary for good health. They provide energy, support cell growth, protect our organs, help the body absorb some nutrients and contribute to satiety. But that doesn't mean it's a fat free-for-all. The Dietary Guidelines for Americans 2010 recommends limiting total fat intake to between 20 percent and 35 percent of total daily calories.

But not all fats are created equal. Unsaturated fats, such as monounsaturated and polyunsaturated fats, are considered relatively harmless when consumed in moderation in a balanced diet. Saturated fats, on the other hand are generally discouraged as they can increase low-density lipoprotein (LDL, or "bad") cholesterol levels, negatively impacting heart health. Even worse from a health standpoint are *trans* fats, which increase LDL and decrease high-density lipoprotein (HDL, or "good") cholesterol.

"Replacing fats that are solid at room temperature, including saturated and man-made *trans* fats, with those that are liquid is one of the most important steps to improving cholesterol levels," said Marie Spano, M.S., R.D." *Trans* fats, which can still be found in a number of foods, particularly baked goods and candies, wreak havoc on the body, increasing total and LDL cholesterol, decreasing high-density lipoprotein cholesterol and increasing inflammation."

But what's the best for the body isn't always best for the baked good.

"The key role that fats and oils play in baked goods is to control texture," said Don Banks, Soy Connection expert, United Soybean Board (USB), Chesterfield, Missouri. "A high quality baked good has to have desirable texture at first bite. If it doesn't, nothing else matters."

## Best Bets

Butter, lard, and vegetable oil shortenings are the gold-standard options for baked goods. But they are loaded with saturated fats, and in the case of partially hydrogenated shortening, *trans* fats that can waylay good health.

"In baked goods, the most-common fat system used is shortenings," said Dave Dzisiak, commercial leader, grains and oils, Dow AgroSciences, Indianapolis. "Shortenings give pie crust their texture and give pastries their rise, and they play a physical role in giving baked goods their signature tastes and textures. A solid fat at room temperature, shortening also helps give pastries and other products like that their flakiness and their softness. And, it gives cookies their shape and helps keep them intact. Then, when you eat it, the fat begins to melt in your mouth at body temperature, and that's what gives a lot of the texture and the taste in those indulgent products that we like." [Ed. Note: *sometimes we like them too much!*]

Shortening literally "shortens" dough's gluten particles and strands, preventing them from sticking together and allowing the dough to stretch, expand and incorporate air bubbles during mixing that expand and provide a desirable texture. In addition, shortening can be formulated to deliver specific textural attributes desired in baked goods, including grain, structure, flakiness and layering. This can be achieved via addition of small amounts of mono- and diglycerides that support emulsification with water and aid moisture retention.

"For formulating each baked good, there is quite limited commonality in shortening usage across the baking industry, even for the production of different brands of the same competitive products." Banks said. "But performance is key, and every shortening has to be formulated, as needed, to meet each customer's requirements. As a result, there are literally hundreds and hundreds of different types of shortening that have been developed to meet the needs of individual bakeries."

The other tried-and-true fats, butter and lard, add rich flavor and fulfill a variety of

functional roles, including providing flakiness in croissants, Danish, and pie crusts.

“Butter and lard really are the best functional options and the best flavor options.” said Lynee Morehart, oils and shortenings technical services manager, Cargill, Minneapolis. “But they have some drawbacks to them certainly. There’s cholesterol in animal fat, so there’s cholesterol in lard. It tends to be higher in saturated fat, at about 50 percent.” Butter has cholesterol, too, and there’s more of a cost to it so, often, manufacturers might mix it with some shortening just to be able to cut down on the costs but still try to give a good product to their consumer.”

### Baking Progress

So it seems the days of selecting a shortening based only upon performance and price are over.

“Shortenings are now often selected to meet specific nutritional targets, including *trans* fatty acid free, lower saturates or specific levels of specific unsaturated fatty acids,” said Bob Johnson, director of research and development, Bunge Oils, Bradley, Illinois.

Life at the bench would be a breeze if all it took to formulate a healthy, tempting baked good was to replace solid fat with a healthy oil. But it doesn’t work that way.

“Baked goods are some of the toughest applications to try to make changes to.” Morehart said. “You’re asking the fat to add true structure to the product, which controls the eating characteristics and texture of that product. With puff pastry, Danish, doughnuts, pie crusts and some cookies, it’s really much tougher to figure out what to do. Not to say that manufacturers aren’t trying to figure it out, and not to say that oil manufacturers aren’t trying to figure it out. We all are. But it’s a much longer process than you would hope for.”

An early attempt to lower saturated fat content in bakery items was to partially hydrogenate healthy oils, which turned them into solid fats with a lower saturate content. “When you do that, that’s when the *trans* fats are brought into the product..” Dzisiak, said. “We all know the story about how unhealthful *trans* fats are for us. Another solution to get the *trans* fats out but still achieve a solid fat is to use tropical oils, because they’re solid at room temperature.” But in doing that, we kind of replace *trans* fats with saturated fats.

Palm oil, for example, a commonly used shortening alternative, has as much as 50% saturated fat, mainly as palmitic acid. That means, while it’s a good option functionally, the structure it provides baked goods comes with a health cost. When combined with a healthier oil, however, palm oil remains a viable option for use in healthier baked goods.

Other healthier oils can also serve as the base for shortenings.

Soybean oil-based shortening can be formulated to match the performance of traditional shortening via blending, traditional interesterification, enzymatic interesterification, use of emulsifiers, fully hydrogenated (*trans*-free) fractions and antioxidants, according to Banks. But such a shortening has its limitations.

“Matching the performance for multiple applications can be challenging,” he said. “Traditional all-purpose shortenings formulated with partially hydrogenated oils are unique in that they have wide (or extended) working ranges that support flexibility in manufacturing and use for multiple products. Matching the performance of a traditional all-purpose shortening using *trans*-free methodology can seldom be achieved. As a result, some bakeries now find it best to use additional shortenings (one or two previously, now perhaps three or possibly more) to achieve optimum performance across their line of products.

When soybean oil is fully hydrogenated, its unsaturated 18-carbon fatty acids become stearic acid, a saturated fatty acid that may have a neutral effect in our bodies, according to Dzisiak.

Blending it with a low-saturate oil results in a *trans*-free fat with a long shelf life.” And you can tune in and design the functional properties you need—like the solid fat content.

The measurement of solid fat content (SFC) is essential in bakery. Fats and shortenings contain a combination of liquid oil and solid-fat crystals, but since the crystals act like a sponge and soak up the liquid oil, no free oil is visible. But that doesn’t mean it’s not there. The hardness (or softness) of a shortening depends on the ratio of solid fat and liquid oil.

“The SFC of fats is widely used to predict functionality and performance in many different kinds of applications.” said Gerald P. MacNiell, PhD., vice president R&D, Loders Croklaan, NA, Channahon, Illinois. “The technique to measure SFC uses a combination of a powerful magnet and a pulse of radio waves that gives an SFC reading in a matter of seconds. The test fat is held at different temperatures to produce a ‘melting curve’—a graph that shows the SFC temperatures ranging from 10 degrees C to 40 degrees C. The SFC curve is a screening process that greatly speeds up the development process.”

*Food Product Design Editor’s Note:* This article was excerpted from the “Healthy Fats for Baked Goods” article written by Teresa Esquivel, published in the exclusive online-only Digital Issue, “Survival Guide: Fats & Oils.” To download the complete issue and read the entire article, go to: [foodproductdesign.com/digital-issues/2014/02/fats-and-oils.aspx](http://foodproductdesign.com/digital-issues/2014/02/fats-and-oils.aspx).