

2017 PROTEIN TRENDS & TECHNOLOGIES SEMINAR

SUMMARY: BUSINESS STRATEGIES



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 A GLOBAL FOOD FORUMS®, INC. EVENT

2017 Protein Trends & Technologies Seminar

Business Highlights Summary

Global Food Forums, Inc.'s 5th annual Protein Trends & Technologies Seminar was held in Itasca, Ill., USA. Its *Pre-conference: Business Strategies* program took place on May 23rd, 2017, and the *Technical Program: Formulating with Proteins* on May 24th.

The *Pre-conference's* goal was to provide information for upper-level managers to help them identify opportunities and threats in the protein ingredient marketplace. Speaker highlights into con-

sumer and product trends, market volatility, global regulations and emerging market opportunities, among other topics, are offered here.

Digital versions of both this *Business Strategies* and *Formulating with Proteins* post-conference summaries and PDFs of PowerPoint presentations can be downloaded from www.GlobalFoodForums.com/2017-protein-seminar/store.

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A New Look at the Changing Protein Category

Nutritional Researcher, Scott Dicker, SPINS, brought his perspective, which is backed by an expertise in sports nutrition and fitness, to the 2017 Protein Trends & Technology Seminar. “Sportification” of non-athletes is driving protein from the locker rooms to mainstream products, he believes, as more people turn to this macronutrient to help them with fitness and wellness goals. While protein traditionally has been marketed to young men as a means to get bigger and stronger, he pointed out that companies are repositioning their products and using the same protein ingredients to market to women to help them get lean and toned.

Dicker referenced the “2017 IFIC Food & Health Survey,” which said 66% of Americans tried to consume more protein in 2016, up from 50% in 2014. “The overall desire to eat more protein is heavily influenced by consumer belief that calories from protein are less likely to cause weight gain than calories from carbs or fat,” he said. Also, 20% of Americans view plant protein as more healthful than they did in the previous year.

This trend is reflected in dollar changes and protein sources in sports products. Animal proteins, primarily from dairy sources, dominate performance bars. *[Editor’s note: Performance bars include only those where protein is the primary component.]* Whey protein is up 66.4% from the last year. Although the sales for pea-fortified bars aren’t high, he stressed the growth percentage can’t be ignored, and he noted that performance bars fortified with pea protein are up 4,696% from last year.

In ready-to-drink (RTD) protein supplements and meal replacements, use of animal proteins (whey, milk and casein) showed the highest gains. *[Editor’s note: primarily whey/casein and whey/milk blends, while casein alone use was down.]* In contrast, combinations of plant proteins declined 12.1%, Dicker said. However, among plant proteins, pea protein is again the one to watch, up 74.9% compared to 0.1% change for “soy foods.”

In the protein powder category, although whey protein dropped 5.6%, it still has a hold on market sales. “Products with a grass-fed labeling claim are still relatively new, but we believe the strong growth percentage [14.9%] will start to correlate to large dollar increases,” Dicker said. “Protein powders are also where we’re seeing the rise in plant-based proteins, with the multiple plant-based sources second only to whey, when looking at protein sources.”

While not a top-10 functional ingredient, he called out collagen as having 461% sales growth in this segment. Sports and wellness consumers are now using collagen for recovery and joint support. *[Editor’s note: The “functional ingredient” term is here used as a nutritional, rather than a physiochemical, property.]*



■ Protein powders show the greatest increase in plant-based protein use, with the multiple plant-based sources second only to whey, when looking at protein sources.

Three-year, cross-channel product sales growth shows that, even though these subcategories already have high dollar sales, they are still growing. Modest percentage growth still equates to large dollar increases. Year-over-year sales growth for performance bars are about 7 and 6% for the past two years, respectively. Sales growth of protein powders is also steady. When looking only at the RTD protein supplements, the growth rate is accelerating slightly—almost reaching double-digit growth over the last 12 months. “When dealing with such high dollars, double-digit growth can be extremely significant,” Dicker commented.

Examination of sales in the conventional, multi-outlet (MULO) and convenience stores show that all three are selling more protein powder and meal replacements in terms of dollars and units.

Conventional retailers are picking up more SKUs of protein powder. Consumers of protein powder are looking for sales and may be less brand-loyal.

RTD sales are also growing, although stagnant in the natural channel. As retailers pick up more protein powders, they are starting to pick up less of the RTD.

Performance bars hold the lion’s share of the market in conventional, MULO and convenience. Sales in the natural channel are

Growth of Key Segments

Key Subcategories Across Channels: Dollar Sales & Year-Over-Year Growth

Liquid Protein & Meal Replacements	\$2.8B	+9.5%
Powder Protein & Meal Replacements	\$864M	+8.2%
Performance Bars	\$617M	+5.9%

NOTE: SALES REFLECT ONLY BARS WITH PROTEIN CONTENT AS A FUNCTIONAL (I.E., NUTRITIONAL) INGREDIENT
SOURCE: SPINSCAN NATURAL, SPECIALTY GOURMET, MULTI-OUTLET + CONVENTIONAL, TOTAL PRODUCT LIBRARY, 52 WEEKS ENDING MARCH 19, 2017; 2017 PROTEIN TRENDS & TECHNOLOGIES SEMINAR

up 18.5%. Growth in the natural channel is often where trends begin, suggesting a sign that natural claims will continue to develop and take hold in the conventional channel. However, when looking at the conventional channel, products that are naturally positioned in the bar category are slightly down, over 4%. Products positioned in the specialty and wellness group are up 14%.

This supports the observation that the sport and wellness consumer niches are continuing to merge regarding protein use. Sports companies are adapting by highlighting the overall health and wellness benefits of protein to their products.

“A New Look at the Changing Protein Category,” Scott Dicker, SPINS Product Library, sdicker@spins.com

2017 Food & Health Survey

The good news is that most consumers associate “protein” with positive health benefits. So, protein sales are likely to continue their upward trajectory. The bad news is...most consumers don’t appear to be very clear as to what they mean by “healthy.” However, that’s a longer-term concern: For now, things look good.

These were the principle takeaways from the International Food Information Council Foundation’s (IFIC) annual “2017 Food & Health Survey.” The survey was drawn from on-line interviews of approximately 1,000 consumers weighted to represent the demographic profile of the U.S. IFIC is an industry-supported foundation dedicated to “effectively communicating science-based information on health, food safety and nutrition for the public good,” explained Liz Sanders, MPH, RDN, Director, Research and Partnerships, at IFIC.

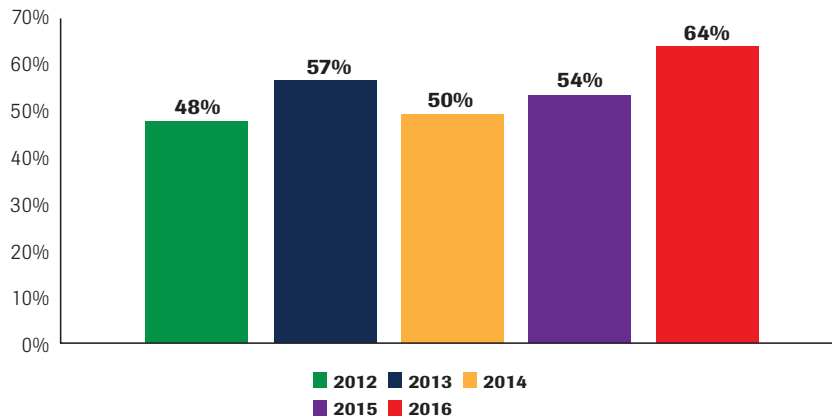
Confusion about protein’s association with positive health benefits is particularly important, as the FDA’s current focus on “healthy food” definitions could have major implications for how protein is labeled on food and beverage packages, explained Sanders.

Close to 60% of respondents associated “healthy” foods as those high in nutritious ingredients, while about 58% associated them with the absence of undesirable ingredients (artificial ingredients, preservatives, etc.). Forty-eight percent of respondents associated “healthy” with specific food groups. However, at least half of consumer appear to be generally unable to link specific foods to specific health benefits, such as cardiovascular or digestive health.

And, while “weight-loss management” was the most commonly expressed “health benefit” that respondents were interested in

Protein Consumption Trend

33% increase in Americans trying to consume protein since 2012



SOURCE: INTERNATIONAL FOOD INFORMATION COUNCIL (IFIC); 2017 PROTEIN TRENDS & TECHNOLOGIES SEMINAR

IFIC’s annual survey of consumer food choices indicates that both animal- and plant-based protein consumption should continue to exhibit steady growth.

getting from foods (30% of those surveyed), “We’ve never seen many respondents really pointing to protein as a source of weight gain,” said Sanders. So, in general, protein’s “health halo” remains rather undefined.

What do consumers perceive as healthy ingredients? The usual suspects (vitamin D, fiber, whole grains) still top the list, but a solid 70% of respondents identified plant proteins as “healthy,” and about 38% of respondents vouched the same for animal proteins.

Interestingly, the Millennial generation (age 18-34) expressed a far more positive health image for animal proteins than did aging Baby Boomers (age 65+): 47% of Millennials surveyed proclaimed animal protein to be healthy, against 27% of Boomer respondents.

The survey did expose a slight bias against meat proteins: 15% of respondents professed to perceive meat protein to be less healthful vs. 12% professing the opposite. For plant proteins, the bias was more in favor of their perceived healthfulness, with 21% perceiving them as being “more healthful,” against 8% perceiving them as less so. Under-scoring the importance of marketing and public relations, these respondents cited media, friends and family as the primary sources for these perceptions. Ironically, Sanders also presented data indicating “media reports” to be among the least-trusted sources for nutritional and dietary information.

The survey highlighted the higher percentage of people trying to increase their protein consumption—from 48 to 64%, between the years 2012-2016. When asked about which specific types of protein they sought to consume more, most respondents (70-76%) identified poultry and eggs.

The greatest number of respondents professing an increased avoidance of any protein was in relation to beef, with 45% actively trying to avoid beef vs. 53% trying to increase their beef consumption. This is still a net positive for the beef industry.

For soy, 14% sought to increase their consumption in 2016, while 27% sought to avoid consumption. Significantly, 68% of respondent sought to consume high-protein beans, nuts and seeds.

Is there a ceiling to increased protein consumption? Likely not. Still, barriers to protein consumption remain among some groups. About half (44%) of respondents claimed they were already consuming sufficient protein in their diet, while 21% respondents cited the higher cost of protein as a barrier to higher consumption. Lower income respondents were more likely to cite cost as a barrier to protein consumption.

“2017 Food & Health Survey,” Liz Sanders, MPH, RDN Director, Research and Partnerships, International Food Information Council Foundation, sanders@ific.org

Supply Chain Challenges: Organic and Non-GMO Ingredients

Nathan Clark, MSc, former Director of Business Development at Mercaris (Silver Spring, Maryland), flagged the growing supply-chain challenges facing the organic food, beverage and ingredient categories, with particular reference to animal proteins. Mercaris, a company committed to supporting sustainable agriculture practices, supplies market data along with an electronic trading platform for North American organic, non-GMO and other certified-sustainable food ingredients.

“In 2016, the U.S. organic foods market was valued between \$45-47 billion, according to best estimates,” said Clark (up-from \$30 billion in 2012). Fresh organic fruits and vegetables remain the strongest pillars of this category (about 35% of sales), followed by dairy and packaged/prepared foods (each at 15% of sales). The fastest growth organic food categories between 2005-2013 were snack foods and packaged/prepared foods (+14%). Organic breads and grain sales grew 11%, while organic meat, fish and poultry sales grew 12% during the same period. Although a well-established category, the dairy products sector showed a bit lower growth at 10%—still a healthy, double-digit level.

Such continued growth momentum has put special strains on the supply of organic-certified ingredients, creating supply-chain bottlenecks. This is especially challenging as organic



Corporate ingredient buyers have had to try new ways to secure reliable access to organic raw materials, from vertically integrating themselves to extended contracting with growers through complete crop-rotation cycles.

certification expands into more animal protein categories, such as meat, poultry, fish and dairy...and by association, dairy protein ingredients, explained Clark.

“Nearly half (48%) of all organic grains and feed production is channeled into the dairy category,” Clark stated.

Farmers desiring to engage in organic production to meet this growing demand face significant hurdles. Foremost, organic certification requires a three-year transition period in production. This means farmers must invest in new agricultural production practices and contend with lower yields for three seasons, before they can recoup their costs via organic price premiums. Given that farming represents a high-risk endeavor, this is especially onerous for farmers operating on already-thin margins.

In addition, longer geographical distances between organic producers and users can further put the price of organic crops at a disadvantage, not just in transportation costs, but also by the added

Increased Demand & Price Volatility		
Product	2016 Median Price/lb	2016 Price Range/lb
Organic fluid milk	\$0.38	\$0.37-\$0.45
Organic cream	\$2.93	\$1.35-\$4.50
Organic butter	\$3.75	\$3.00-\$4.50
Organic NFDM	\$3.70	\$2.90-\$4.50
Grass-fed organic fluid milk	n/a	10-15% above organic prices

SOURCE: MERCARIS SURVEY OF ORGANIC DAIRY PROCESSORS; 2017 PROTEIN TRENDS & TECHNOLOGIES SEMINAR.

Steady growth in demand, combined with raw material-production bottlenecks, translate into increased price volatility for raw organic ingredients and finished goods. This increases market risks for organic food and beverage producers, manufacturers and retailers.

complexity of organic-certified storage, transportation, warehousing and distribution. Combined, these hurdles work against/negatively impact market supply and demand flexibility.

“Much organic production occurs in non-traditional growing areas,” said Clark. He displayed a map identifying New York state as the second-largest organic corn-producer. This is a good location for up-state New York yogurt manufacturers—but not for organic milk and beef producers situated 2,000 miles (3,220 km) away in the West.

Organic milk production has more than doubled in the last 10 years, said Clark, expanding from 2 billion lbs (0.9 billion kg) to more than 4 billion. (1.8 billion kg) per annum. “About half of U.S. organic milk production is channeled into value-added dairy products. With conventional milk sales declining, the market share for organic fluid milk reached 5% of total fluid milk sales in 2016.”

Within the organic dairy category, the fastest growth categories (\$-sales) are cheese (+24%), followed by butter (+16%) and yogurt (+9%). For now, organic cheeses enjoy only a 6% slice of market share in organic dairy products. Should consumer demand for these products and protein powders surge, expect a surge of pressure on organic fluid milk and, therefore, animal feed supplies.

Growing numbers of large and small, food and beverage manufacturing and retail companies (General Mills, Nestlé, Clif Bar, Danone, Stoneyfield Farms, Walmart, Costco) have publicly committed to expanding their own organic and other sustainable product portfolios. For large-volume manufacturing companies, the supply-chain demands serve to further accentuate price volatility at the raw materials and retail levels. Thus, corporate ingredient buyers have been forced to try new ways to secure reliable access to organic raw materials, from vertically integrating themselves farm-to-factory, to extended contracting with growers through complete crop-rotation cycles.

To summarize: “For the foreseeable future, organic ingredient demand will continue to outpace supply,” warned Clark. This challenges organic food, beverage and—more specifically—protein ingredient manufacturers to aggressively anticipate and address tightening supply-chain bottlenecks.

“Supply Chain Challenges: Organic and Non-GMO Ingredients,” Nathan Clark, former Director of Business Development, Mercaris, [Note: Please contact Kellee James, Founder & CEO, Mercaris, kellee.james@mercaris.com, mercaris@mercaris.com]

How to Identify Trends to Stay Relevant with the Evolving Consumer Market

People in the food and beverage industries need to get out of their laboratories and into the hidden corners of consumer food markets, if they want to catch the leading edges of food and beverage innova-



■ **A Sunday on La Grande Jatte, by G. Seurat (1884). The painting, a pixelated composition of colored dots, provides a good metaphor for how many innovations, fads and trends combine to define patterns of innovation in the food and beverage industries.**

tion. That was the message conveyed by Blake Mitchell, Partner and President of Interact on Shelf, in his presentation titled “How to Identify Trends to Stay Relevant with the Evolving Consumer Market.”

“We help food and beverage brands realize their full potential through packaging and marketing. But this talk really is about how to identify trends,” said Mitchell.

He cited his location in Boulder, Colo., as being especially well-situated for catching incipient food trends. “Boulder has a wonderful food and beverage community that supports a lot of innovation,” he said, listing leading *avant-garde* food brands incubated in the Boulder environment, such as Doctor D’s, Quinn Snacks and Purely Elizabeth. *The Huffington Post* once listed Boulder as “the number one place to start a food company,” continued Mitchell.

Mitchell likened the process of analyzing food trends to the pixelated impressionism of 19th Century painter, Georges Seurat. “Each point of color stands alone, but combined with others, creates an overall trend pattern.” However, he cautioned, one has to learn to distinguish between fads and ideas. Even famous painters erase designs and repaint their canvasses before their masterpieces emerge.

The venues whereby Mitchell and his colleagues search out incipient food trends range from food magazines and trade journals; global food and beverage trade shows (they attend some 14 per year); to major retailers—and to the dark, hidden alleys of major world cities, such as Hong Kong.

Some food and beverage trend events are readily accessible online through web services, like Project Nosh; others are small, specialized and highly regional trade shows, such as the all plant-based, annual Seed Food and Wine Festival, located in Miami, Fla. Rabobank, a leading international food and agricultural-focused bank, developed FoodBytes, a series of events and competitions designed to connect food companies and investors with start-up innovators.

Small foodservice outlets also incubate food and beverage ideas, transforming fads into tangible food and beverage trends. Mitchell pointed to MatchaBar's (Brooklyn, N.Y.) building a beverage franchise around *matcha*-green tea beverages, while the Juice Press Bar in New York City features an expanding line of cold-pressed fruit and vegetable juice-based beverages: Both companies sell their products on-line. Speaking of protein, Los Angeles-based Mainland Poke ("po-kay") has been introducing the "wildly popular" Hawaiian raw, cubed fish cuisine to the continental U.S. Presumably, *poke* will not be sold on-line.

"Food trucks are another great source of inspiration," said Mitchell. "Take the time to speak with the chefs: They love to discuss their ideas and businesses." Globally, farmers and fresh food markets around the world are continuous sources of ideas for new flavors and food combinations.

Finally, a wide constellation of food and beverage incubators beckons from around the world. Take the time to visit them or, if nothing else, explore their websites for ideas, says Mitchell. For example, NYC-based AccelFoods, a food entrepreneur accelerator and incubator backed by \$35 million in investment capital, plans to use Amazon.com to launch new product ideas.

It bears reflection at this point to ponder how on-line sales venues have completely transformed the financial models for food and beverage start-ups. In Los Angeles, L.A. Prep and L.A. Kitchens are combining efforts to build a large incubator facility dedicated to helping entrepreneurs tackle issues such as regional unemployment and food waste. In Chicago, there is the Food Hatchery Chicago. In London, there is the Food Foundry. "These are great places to meet entrepreneurs and to learn how they think," said Mitchell.

The bottom line is that the world is full of great ideas that are easily accessible, once one takes the initiative to start digging in both the obvious and the hidden corners of the world. "Be curious, be uncomfortable, be OK walking down a dark alley late at night toward a beckoning neon sign in some international city. Talk to entrepreneurs; talk to category managers." And always: Ask questions.

"How to Identify Trends to Stay Relevant with the Evolving Consumer Market," Blake Mitchell, Partner and President of Interact on Shelf, blake@interactonshelf.com

The Food Industry's Current and Future Regulatory Environment

"What I really wanted to talk about is what to expect over the next few years, given the new administration," said Jessica O'Connell, Special

Food Safety Modernization Act

General Compliance Dates

Sanitary Transportation	March 31, 2017
Food Defense	July 31, 2017
Foreign Supplier Verification Program	May 28, 2019
Produce Safety Standards	January 27, 2019
Produce Safety Standards (Sprouts)	January 28, 2019
Third-party Accreditation /Certification	--- pending

SOURCE: IMPLEMENTATION OF THE FDA FOOD SAFETY MODERNIZATION ACT (FSMA, P.L. 111-353)
R. JOHNSON, CONGRESSIONAL BUDGET OFFICE, DECEMBER 16, 2016

In the U.S., the Trump administration's "two-for-one" regulatory implementation rule has delayed or put into question pending regulatory implementation dates for the Food Safety Modernization Act and other pending FDA and USDA regulations, until their regulatory cost burdens can be assessed and addressed.

Counsel for Washington, D.C.-based Covington & Burling O'Connell. Administrative change in Washington, D.C., normally generates uncertainty regarding new food regulations, but these are abnormal times: What happens when a new administration makes reducing government regulatory burdens one of its primary goals?

U.S. government statutes currently awaiting clarification and implementation include: FDA guidance on definitions for "healthy," "fresh" and "natural;" FDA guidance on implementation of the Food Safety Modernization Act (FSMA); final rulings and guidance on a revised Nutritional Facts panel; FDA guidelines on ingredient definitions; and the USDA's guidelines regarding GMO foods' labeling.

"One of the Trump administration's first acts after inauguration was to issue a regulatory freeze, until pending regulations could be reviewed by new administration appointees," said O'Connell. This is a common practice.

"Shortly after the inauguration, a 'two-for-one' order was issued, indicating that for every new regulation approved, two would have to be rescinded," recounted O'Connell. This was later clarified to apply only to new rules that imposed significant cost burdens on society. Months later, a further clarification instructed agencies to focus their attention on regulations that "eliminate jobs or inhibit job creation;" are "outdated, unnecessary or ineffective;" or "impose costs that exceed benefits."

"We will have to wait and see what regulations will be eliminated under this directive, although it will probably first entail old rules and standards that are outdated," O'Connell noted. She also pointed out that there are significantly different social and business cost burdens incurred from FDA regulations defining package-label designations, such as "natural" or "fresh" on the one hand, and the much heavier burdens

Nutrition Facts	
8 servings per container	
Serving size 2/3 cup (55g)	
Amount per 2/3 cup	
Calories	230
% DV*	
12%	Total Fat 8g
5%	Saturated Fat 1g
	Trans Fat 0g
0%	Cholesterol 0mg
7%	Sodium 160mg
12%	Total Carbs 37g
14%	Dietary Fiber 4g
	Sugars 1g
	Added Sugars 0g
	Protein 3g
10%	Vitamin D 2mcg
20%	Calcium 260mg
45%	Iron 8mg
5%	Potassium 235mg

* Footnote on Daily Values (DV) and calories reference to be inserted here.

■ The Trump administration's current freeze on food ingredient definitions and food package-labeling regulations may slow the pace of new product introductions. Why introduce new products if package claims must be redesigned before roll-out?

associated with implementing FSMA regulations on the other. Some costs defy easy measurement.

The FSMA is especially burdensome to food and beverage manufacturers, and companies remain in limbo until the new regulatory regime sorts itself out. All seven of FSMA's foundational rules have

been published, and compliance dates have been staggered for each rule, leading into 2019...or beyond.

"There was very limited FDA guidance on FSMA compliance before the election and nothing thereafter," observed O'Connell. If the administration applies the "two-for-one" rule to this legislation, it is fair to ask whether such guidance will ever be forthcoming, or whether the regulations will even be implemented, she continued.

Food labeling was "a huge focus" for the preceding Obama administration, but this won't necessarily be the case for the Trump administration. Though not directly pertinent to proteins and protein ingredients, the current freeze on food ingredient definitions and food package-labeling regulations threatens to derail the pace of all new product introductions: Why introduce new products if package claims must be redesigned before roll-out? Markets abhor uncertainty.

There is also one action before the USDA that should concern protein ingredient and food manufacturers, cautioned O'Connell. A USDA standard defining "bioengineered foods" disclosures is due to be implemented July 29, 2018. Implemented to pre-empt individual state initiatives, the law vaguely requires the USDA to foster collaboration with the National Organic Program (NOP), but much remains to be done.

"There have been legitimate questions regarding whether and when it will be implemented," said O'Connell. She said that an Advanced Notice of Proposed Rulemaking (ANPRM) was submitted by the USDA in January but withdrawn less than a week later—due to the regulatory freeze.

O'Connell also alerted attendees to a soon-to be completed USDA-sponsored study evaluating the use of QR codes to communicate in-

formation on food packages, which would have major implications for food labeling, marketing and advertising. She expected results "pretty soon," so stay posted!

"I think that a final question we need to consider is [that of] resources," said O'Connell. "It has always been a struggle to determine how many resources these two agencies could apply toward statute implementation." This, too, remains to be determined. Without credible regulatory guidelines or enforcement, continued uncertainty can only freeze the gears of innovation. [Editor's Note: On September 29, the FDA released a proposed rule to extend the compliance dates for the Nutrition Facts and Supplement Facts label final rule and the Serving Size final rule from July 26, 2018, to Jan. 1, 2020. <https://goo.gl/Mx9iVk>].

"The Food Industry's Current and Future Regulatory Environment," Jessica P. O'Connell, Special Counsel, Covington & Burling's Food and Drug practice group, jpoconnell@cov.com

SPECIAL SESSION: Microalgae as an Alternative Protein Source

Algal proteins have become a strategic factor for global food and beverage industries, aqua-farming and animal nutrition. Gary Brenner, Owner, Brenner pharma/food Business Development, reminded the audience that algae is a broad category, in his Special Session presentation entitled "Microalgae as an Alternative Protein Source: A Developing Story." The distinction between micro and macro is important. There are differences between environmental diversities, and the technology and purification of ingredients.

Traditionally, research has focused on *Spirulina*, *Chlorella*, *Porphyry*, *Nannochloropsis*, astaxanthin, *Dunaliella* and fucoxanthin. Yet the opportunities extend to over 72,000 microalgal sources of species and strains that have not been fully researched or developed.

A critical part of the success in developing protein sources from microalgae lies in the byproducts that are created after cracking the biomass of the algae and extracting out fractions.

It's not unlike the history of soy products and the price comparison between soybeans, soybean meal, soybean oil; and soy flour, concentrates and isolates. For the same percentage of protein, different food categories, such as infant formula, can demand a much higher price, although the requirements are much stricter. Added value has been found in phytochemicals, isoflavones, saponins and phospholipids.

"The world of microalgae is taking the same approach," Brenner said. Microalgal proteins are not a niche product. The business model is centered on high-protein concentrations, functionalities and flavor profile, and ultimately—dollars per kilo.

"I'm all too aware, and the people with whom I interface are aware, that \$6-8 a kilo for 70% algal protein concentrate is steep; but we

can expect that most high-concentration alternative proteins will in this range, a little less or a little more,” he said. Brenner and his colleagues expect two things to happen to bring the price down. Different nutritional benefits will be associated with protein levels; efficiencies will also drive down cost.

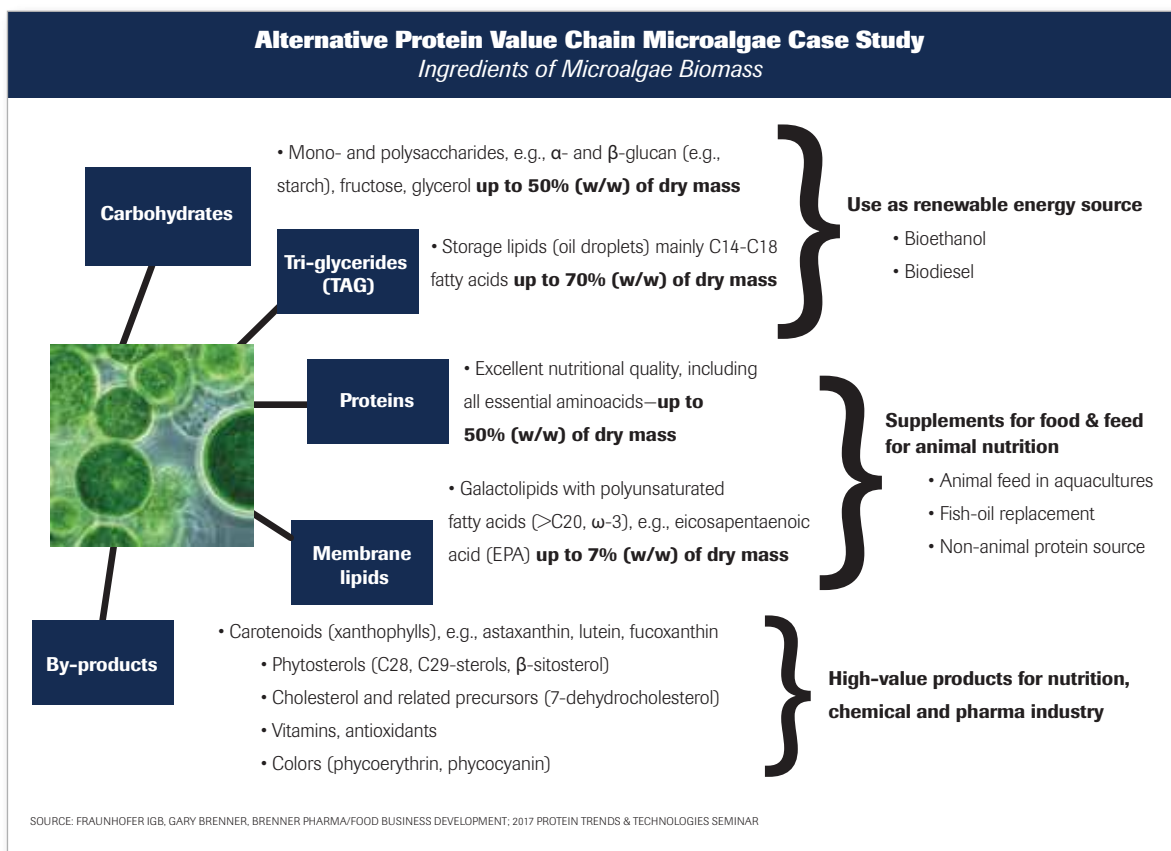
Work in Europe is focused on revolutionizing food production. European Institute of Innovation and Technology (EIT) Food is a consortium of 50 food partners across business

categories whose objectives are, in part, to catalyze food innovation. By supporting research and entrepreneurship, they are working to improve nutrition and make the food system more resource-efficient, secure, transparent and trusted. Of all the land crops, algae is the most sustainable, with the lowest carbon, water and arable land footprint.

Brenner said many of the industry partners are committed to the use of microalgae for alternative protein sources. One of the proposed projects given to EIT Food’s €2 billion multi-year initiative (over seven years) is the development of algal plant-based protein sources. The project aims to develop cost-effective, highly functional and good-tasting specialty proteins with important essential amino acid profiles.

While fractions such as PUFA concentrations may be an added value of a microalgal source, protein is driving project development, both in terms of functionalities and price point. “The alternative protein sources are putting us into a different mindset, when it comes to the possibilities of synergies between these different proteins, with new functionalities solving issues of everything from price to taste and everything in between,” he said.

Flavor is a key consideration, as are amino acid profile and digestibility. The goal is also to achieve functional characteristics that give food developers new tools with which to work. Solubility, emulsification, heat stability, color, viscosity and gelling are properties the industry is working to achieve, Brenner stated.



📌 **The microalgae biomass contains numerous ingredients that offer supply-chain opportunities.**

Brenner also brought home the need for distinction when referring to alga by showing Mintel data. When studying ingredient labels, he found many of the products are from seaweed and not microalgae. Only 24 out of 120 actually are found in food and beverage products; the remainder are dietary supplements. A separate search for microalgae protein shows two food products, both dry blend mixes with Spirulina.

His conclusion? The market for food and beverage applications for microalgae proteins is still a virtually untapped category.

“Microalgae as an Alternative Protein Source: A Developing Story,” Gary Brenner, Brenner pharma/food Business Development, garybrenner@pharmafood-bd.com

The Global Food Forums staff wishes to thank the attendees, speakers, sponsors and exhibitors at this event for making it such a success.

We are pleased to announce the 6th annual Protein Trends & Technologies Seminar to be held May 22-23, 2018, at the Westin Hotel, Itasca, Illinois, USA.

Additional Resources

With Our Compliments:

Global Food Forums, Inc. wishes to thank the speakers, attendees, sponsors and tabletop exhibitors for making the 2017 Protein Trends & Technologies Seminar a very successful event. To download complimentary copies of presentations from the Seminar, including both *Formulating with Proteins* and *Business Strategies*, go to <https://www.globalfoodforums.com/2017-proteinseminar/store/>.



For links to all our past event stores, with complimentary access to presentations and post-conference summaries, go to <https://globalfoodforums.com/store> or scan QR code, left.



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Protein Trends & Technologies News Bites

Please visit <https://goo.gl/9NE9g8> to link to more of these news items.

Tick Bites & Red Meat Allergies: A potentially severe allergy to red meat linked to tick bites seems to be spreading to areas of the country. A Lone Star tick carrying the alpha-gal sugar (galactose-alpha-1,3-galactose) is associated with causing the allergy. However, researchers are beginning to think that other tick species also spread the allergen.

Insect Protein Producer Wins IKEA's Financial Support: Start-up companies submitted more than 1,200 applications from 86 different countries, thereby jumping at the opportunity to become part of the first "IKEA Bootcamp" start-up accelerator. One of those company's chosen was the new Israeli food-tech company, Flying SpArk, which focuses on all-natural protein extracted from the Mediterranean fruit fly.

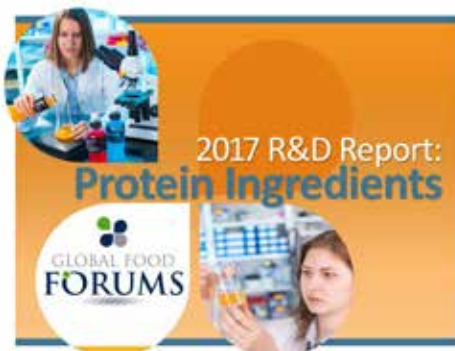
2017 R&D Report: Protein Ingredients

Conducted by NSM Research, Inc.

Product Formulators' Opinions on Current and Future Protein Ingredient Use and Needs

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For more information, contact Peter Havens:
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2018 Protein Trends & Technologies Seminar
 May 22-23, 2018
 Westin Hotel,
 Itasca, IL., USA

MAIL OR FAX REGISTRATION TO:
 Global Food Forums, Inc., P.O. Box 1421,
 Saint Charles, IL., 60174
 FAX: 1-208-246-2242

Note: Online registration can be made at www.GlobalFoodForums.com/2018-Protein-Seminar

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May 22, 2018-Pre-Conference Program: "Business Strategies"

Food & Beverage Manufacturer-\$695.00 Ingredient/Services Supplier-\$795.00

May 23, 2018-Technical Program: "Formulating with Proteins"

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May 22-23, 2018- "Business Strategies" AND "Formulating with Proteins"

Food & Beverage Manufacturer-\$995.00 Ingredient/Services Supplier-\$1095.00

Attendees will receive a registration receipt and confirmation email. Visit www.GlobalFoodForums.com/2018-Protein-Seminar to update your registration information and/or to register. Registrations include Tuesday, May 22nd (5:30-7:00 p.m.) evening networking reception, general sessions, meals, Protein Sampling Station, networking events and attendee bag and binder.

I plan on attending Tuesday Night Reception

Official Hotel-Westin Hotel, 400 Park Blvd., Itasca, IL, 60143. A limited number of discounted rooms have been reserved at \$149.00, plus tax, per night for May 21-24, 2018. Call 1-630-773-4000 and mention the 2018 Protein Trends & Technologies Seminar or go to <https://www.starwoodmeeting.com/Book/2018ProteinTrendsandTechSummit>. The cut-off date for reservations is April 30, 2018. **Cancellation & Substitution Policy.** Cancellations must be received in writing. Visit www.GlobalFoodForums.com/2017-Protein-Seminar for refund details. Alternative parties may be substituted at any time without penalty.

2017 R&D Report: Protein Ingredients

New market research conducted by NSM Research, Inc. surveys R&D and food application formulators on their attitudes, formulation issues and future trends, as related to their use of protein ingredients. This 87-page *Global Food Forums® R&D Report:*

Protein Ingredients is now available. For more information go to:

<http://goo.gl/WEJ4KQ> or contact Peter Havens at Peter@GlobalFoodForums.com or +1.630.621.0230.

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