Market Overview of the Global Protein Ingredients Market

Accelerate Growth Through Best Practices in Growth, Innovation and Leadership in the Global Protein Ingredients Market

April 2013
To Do List

• Market Overview
• Mega Trends and its Impact on the Global Protein Ingredients Market
• So What?—Assess Opportunities and Threats into Actionable Portfolio Prioritization
• About Frost & Sullivan
Market Segmentation of the Global Protein Ingredients Market

The protein ingredients product space is highly fragmented, where there is a lot of competition for a limited number of end applications. This makes the importance of quickly identifying and addressing opportunities and threats critical.

**Protein Ingredients**

- **Animal Protein Ingredients**
  - Dairy Protein Ingredients
    - Milk Protein Concentrate (MPC)
    - Whey Protein Isolate (WPI)
    - Whey Protein Concentrates (WPC35 and WPC80)
    - Whey Protein Hydrolysate (WPH)
  - Egg Proteins
  - Gelatine

- **Plant Protein Ingredients**
  - Soy Protein
    - Soy Protein Isolate (SPI)
    - Soy Protein Concentrate (SPC)
    - Textured Soy Protein (TSP)
  - Wheat Protein
  - Pea Protein
  - Other Protein
    - Rice Protein
    - Potato Protein
    - Canola Protein

**Plant Protein Ingredients**

**Animal Protein Ingredients**
Protein fortification in food and beverage is a key imperative to meet global challenges in nutritional deficiencies.

**Top Three Growth Factors**

1. **Competition to plant proteins**—shift to plant derived proteins which are able to offer similar or superior functional properties, restrains growth.

2. **In emerging markets**, functional role is minimal and nutritional role gains precedence.

3. **Price fluctuations** impacts market growth and stability.

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**Ingredient Share, Global, 2012**

- WPC 80: 11%
- WPC35: 7%
- Egg protein: 40%
- Gelatin: 11%
- Casein and caseinates: 13%
- MPC: 10%
- WPH: 3%
- WPI: 5%

**Region Share, Global, 2012**

- **North America**: 30%
- **Europe**: 38%
- **APAC**: 23%
- **Rest of World**: 9%
- **North America**: 30%

**Global Market Volume**

- 2.3 M Metric Tons (2012)

**Revenue CAGR**

- 5.5 to 6.0% (2012-2018)

Note: All figures are rounded. The base year is 2011. Source: Frost & Sullivan analysis.
Sensory properties are key to successful penetration of plant protein ingredients into the applications dominated by animal proteins, as well as to develop new applications.

**Top Three Growth Factors**

1. **Marketing spend**—the soy industry has enjoyed success by proactively positioning itself as a sustainable food/protein source.

2. **Low consumer awareness of non-soy proteins** restrains growth of other key plant proteins.

3. **Cost competitiveness**—this is a low impact driver despite the cost difference between plant and other proteins being significant (between 30% and 50%).

**Note:** All figures are rounded. The base year is 2011. Source: Frost & Sullivan analysis.
The Protein Ingredients Market is Highly Dependent on the Dynamics of the Global Food and Beverage Value Chain

The cumulative value of all revenue derived from the global food and beverage value chain was over $20 trillion dollars in 2011, representing nearly 30 percent of the entire world’s economy.

Food and Beverage Market: Generalized Value Chain and Revenue, $US Billion (Global), 2011

<table>
<thead>
<tr>
<th>Market</th>
<th>Revenue, $US Billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeds and Traits</td>
<td>$43</td>
</tr>
<tr>
<td>Agricultural Production</td>
<td>$3,917</td>
</tr>
<tr>
<td>Agricultural Logistics</td>
<td>$646</td>
</tr>
<tr>
<td>Food Additives</td>
<td>+$300</td>
</tr>
<tr>
<td>Food Processing</td>
<td></td>
</tr>
<tr>
<td>Food Packaging</td>
<td>$261</td>
</tr>
<tr>
<td>Food Processing</td>
<td>$4,841</td>
</tr>
<tr>
<td>Food Processing Equipment</td>
<td>$223</td>
</tr>
<tr>
<td>Retail Grocery</td>
<td>$7,664</td>
</tr>
<tr>
<td>Retail Food Service</td>
<td>$3,544</td>
</tr>
<tr>
<td>Food Packaging</td>
<td></td>
</tr>
<tr>
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Note: All figures are rounded. The base year is 2011. Source: Frost & Sullivan analysis.
Growing Commodity Prices has Increased Competitive Rivalry in the Protein Ingredients Space

There has been a significant structural shift in price growth in the last 10 years that is expected to continue. Rising raw material costs, and the associated difficulties with transferring the increase to customers, will likely affect profit margins during the next decade.

Commodity F&B Price Index* (Global), Jan 1980 to March 2012

Key: * The Commodity Food and Beverage Price Index is made up of 30 different commodities from petroleum and fertilizer prices to grains, fruits, meats, oilseeds, and sugars. This index reflects prices relative to Jan 2002.

Index: January 2002 = 100

Source: International Monetary Fund and Frost & Sullivan analysis.
As long as a company communicates its green, safe, and healthy initiatives as being more beneficial or less costly than its competitor’s product offering, customers will be willing to pay a premium for it.
Health & Wellness Trends are the Primary Engines of Growth in the Protein Ingredients Market

Among all functional ingredients, proteins score very high in terms of future potential due to their unequivocal health benefits and greater consumer recall of this benefit.

Weight management is a fast growing segment.

Positioning as a satiety ingredient is a key advantage for protein ingredients.

Proteins are perceived as a natural ingredient.

“gluten free” or “soy free” are possible to create with animal protein ingredients

Environmental impact of animal derived, mainly dairy proteins has been the subject of debate

Price fluctuations due to supply instability has been a regular feature

Regulations around sourcing, processing, packaging and labeling are being tightened

This is advantageous for animal proteins which have had ample time to stabilize their position vis a vis regulations

Source: Frost & Sullivan analysis.
So What?—SWOT Analysis of the Animal Protein Market

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dairy proteins still enjoy the best nutritional and flavor profile.</td>
<td>• Dairy protein ingredient penetration in Asia is difficult as the consumption of whole dairy is significant and diversion of raw material for manufacture of protein is not possible.</td>
</tr>
<tr>
<td>• Dairy proteins remain entrenched and dominant in specific end-use applications (e.g. sports nutrition).</td>
<td>• Price fluctuations and raw material shortage.</td>
</tr>
<tr>
<td>• Egg and gelatin are difficult to replace in applications like bakery and confectionary.</td>
<td></td>
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</table>

<table>
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<tr>
<th>Opportunities</th>
<th>Threats</th>
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<td>• Increased potential for dairy and plant proteins in blended formulations.</td>
<td>• Continued substitution by replacement products on account of price difference and reduced barriers to switching.</td>
</tr>
<tr>
<td>• Growing market for condition-specific nutrition, as well as satiety and weight management nutrition.</td>
<td>• Reduced first-mover advantage for dairy, owing to gains made by plant proteins.</td>
</tr>
<tr>
<td>• New opportunities for improving protein delivery through further R&amp;D.</td>
<td>• Large and growing Asian markets may witness more instances of new formulations (by product manufacturers) – rather than reformulations – thus making it easier for plant proteins to be incorporated.</td>
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## So What?—SWOT Analysis of the Plant Protein Industry

<table>
<thead>
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<th>Strengths</th>
<th>Weaknesses</th>
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</table>
| • Excellent nutritional profile.  
• Lower carbon footprint and higher sustainability.  
• Low price. | • Lower score on sensory properties.  
• GM is an issue for greater acceptance in Europe |

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| • Increased potential for dairy and plant proteins in blended formulations.  
• Growing market for condition-specific nutrition, as well as satiety and weight management nutrition.  
• New opportunities for improving protein delivery through further R&D. | • Dairy protein ingredient have the first mover advantage and greater consumer acceptance. |

Source: Frost & Sullivan analysis.
So What?—Filter Opportunities and Threats into Actionable Portfolio Prioritization

**RELEVANT MEGA TRENDS**

- **Changing Economics**
- **Health & Wellness**
- **Being Green**
- **Food Safety**

**Identified core total addressable market and specific opportunities**

**Final output:** Prioritized sustainable addressable markets and potential opportunities

- **Mega Trends Identification and Prioritization**
- **Determination Which Addressable Markets are Sustainable and Driven by Mega Trends**
- **Detailed analysis of specific need opportunities in each sustainable addressable market to provide actionable data and outcomes**

**Need Opportunities**

The core objective of The Growth Model is to identify your Company's GROWTH ZONE—those set of opportunities which have been optimized and validated based on your Company’s own strategic objectives and capabilities weighed against the opportunities in the marketplace.
Why Frost & Sullivan—Our industry coverage

One of Frost & Sullivan’s core competencies is our breadth of industry across four primary industry sectors, representing hundreds of individual subsectors and markets.

Aerospace & Defense

Measurement & Instrumentation

Consumer Technologies

Information & Communication Technologies

Automotive Transportation & Logistics

Energy & Power Systems

Environment & Building Technologies

Healthcare

Minerals & Mining

Chemicals, Materials & Food

Electronics & Security

Industrial Automation & Process Control

“No company covers as many industries in as many countries as Frost & Sullivan”

Fraunhofer-Gesellschaft, Germany
Why Frost & Sullivan—Grounded Expertise in the 10 Critical Growth Processes

Grounded in generating opportunities through market and competitive intelligence, Frost & Sullivan excels at supporting growth strategy development and implementation.

10 Critical Growth Processes

- Mergers & Acquisitions
- New Product Development
- Geographic Expansion
- New Product Launch
- Strategic Partnering
- Distribution Optimization
- Technology Strategies
- Competitive Strategies
- Customer Strategies
- Growth Sourcing
Why Frost & Sullivan—Grounded Expertise in the 10 Critical Growth Processes

- **Business Process Improvement**
- **Competitive Intelligence**
- **Distribution Strategies**
- **Cost Optimization Programs**
- **Branding/ Positioning**
- **New Product Launch, Launch of New Services**
- **Portfolio Diversification M&A**
- **e-Business Strategies**
- **Segmentation Strategies**
- **Commercial Due Diligence**
- **Launch of New Technologies**
- **Partner Search**
- **Market Entry Strategies**
- **Customer Centricity Programs**

Ad-hoc, limited: Role in strategic/organizational change: Partner / coach for implementation.
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