

Soy Protein in Children's Foods and Beverages

Helping kids grow, thrive and succeed

Yaounde

19 April 2012

*Solae*TM

Agenda

- **The Market Opportunity:**
Market indicators signaling opportunity for soy protein/protein in children's foods
- **The Science:**
Protein needs in childhood & the role for soy protein
- **Translating the Opportunity & Science into Foods and Beverages Children will Love:**
Applications for soy protein in children's foods and beverages.

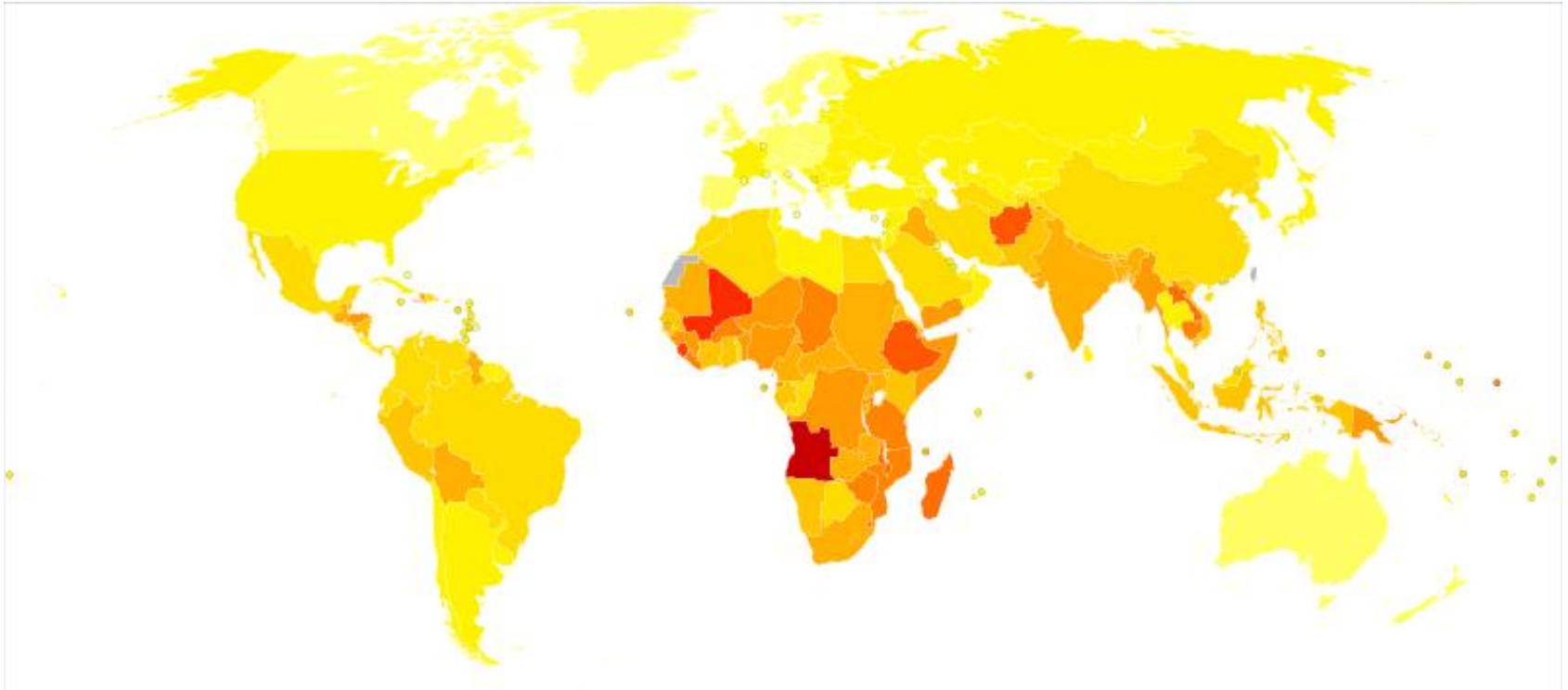
The Value of Soy Protein in Food Systems

- Nutrition and Health Benefits
- Sustainability Advantages
- Economical Alternative to Dairy Proteins
- Performance Across a Wide Spectrum of Food Applications



Globally, Protein-Calorie Malnutrition Remains a Nutritional Challenge in Several Countries

Protein-Calorie Malnutrition Hotspots – Affecting 1/3 of the World's Children



Note: Darker Colors Indicates Areas With Highest Incidence of Protein-Calorie Malnutrition

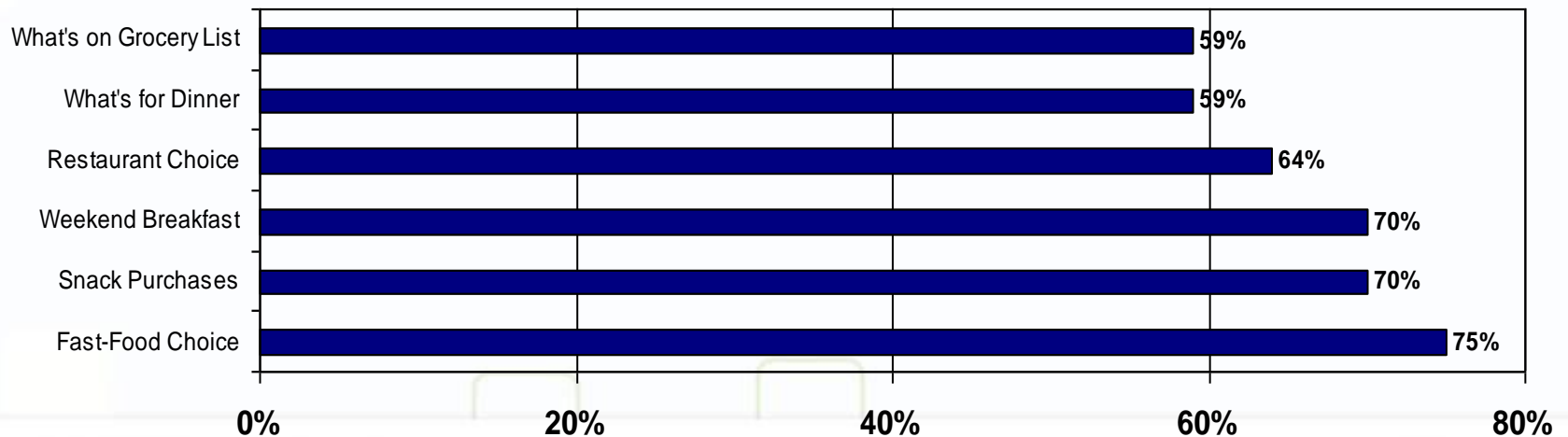
Almost half of primary school-age children in Nigeria are stunted from poor nutrition, and nearly one-fourth of the nation goes without a formal education.

Kids Are A Big Influence in Getting Parents to Adopt Healthy Lifestyles, More Than Media, Advertisements or News

What Influences Family to . . .

	Advertisements	News	TV	Input from Child	None
Buy healthy foods	37%	42%	29%	52%	20%
Exercise more	21%	30%	23%	63%	23%
Spending time together as a family	16%	15%	20%	77%	14%
Make household more environmentally friendly	28%	43%	32%	50%	23%

And Children Are Often Consulted on Food Decisions . . . % of Time Child is Consulted on . . .



Growth & Development – A Top Concern of Moms Globally

	% Extremely/Very Concerned						China	Brazil
	North America	South America	North Europe	South Europe	India			
Growth & physical development (height, bones, muscles)	78%	72%	39%	45%	81%	84%	76%	
Protection against disease later in life (i.e., heart disease, diabetes, etc)	68%	54%	40%	43%	73%	78%	77%	
A balanced diet	68%	50%	40%	39%	70%	81%	64%	

All Are Concerns Soy Protein Can Help Address

Moms Seeking Simple, Natural Goodness First, Then Classic Nutrition

Balanced Nutrition*	79%
Good, not empty, calories*	74%
Fresh	74%
Energy to keep child going until next meal*	73%
Good source of vitamins (A, B, C, D)	72%
Protein*	69%
Contains multiple food groups	68%
Calcium	68%
Helps maintain weight*	68%
Whole grain	57%
All Natural*	53%
Nothing artificial	48%
Omega 3	38%
Electrolytes	30%
DHA	27%
Organic	26%
Probiotic	25%
Choline	17%



Simple Goodness



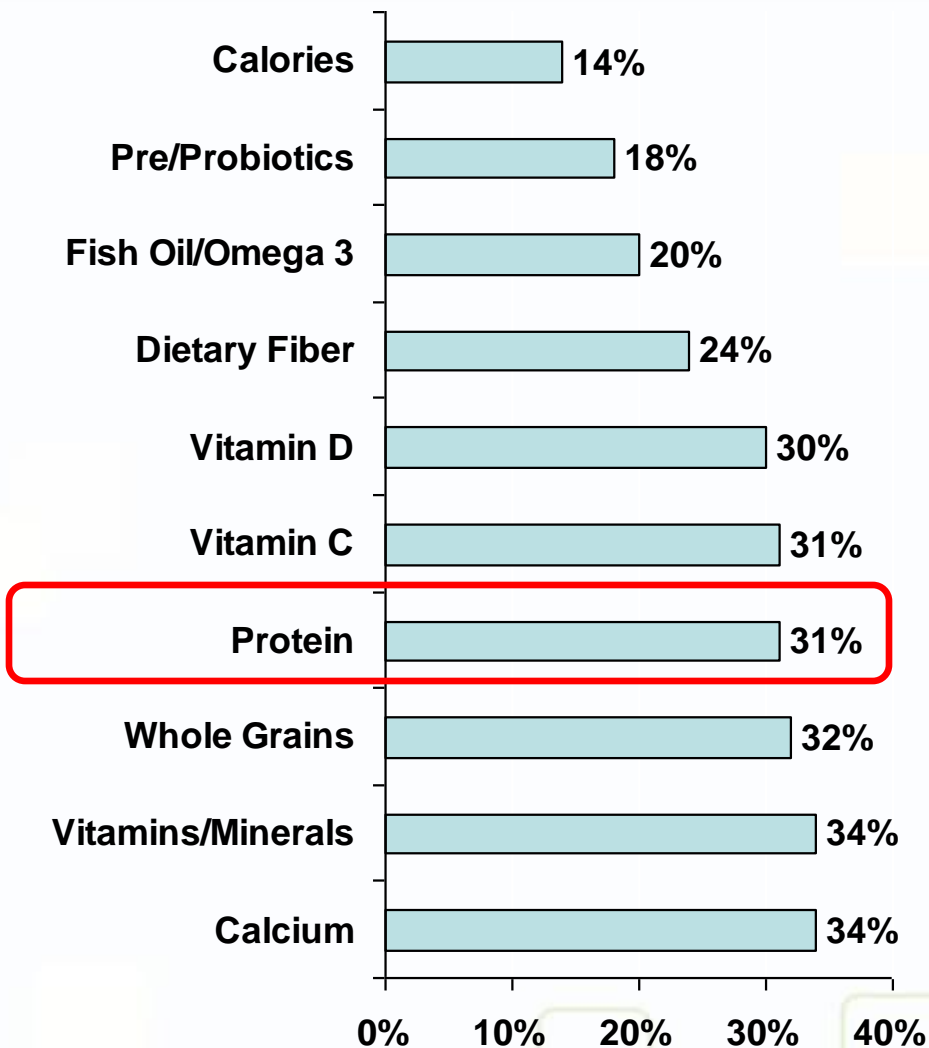
Classic Nutrition



Trendy Ingredients

*Where protein can deliver

% of Mothers Making A Strong Effort To Increase Child's Consumption of . . .

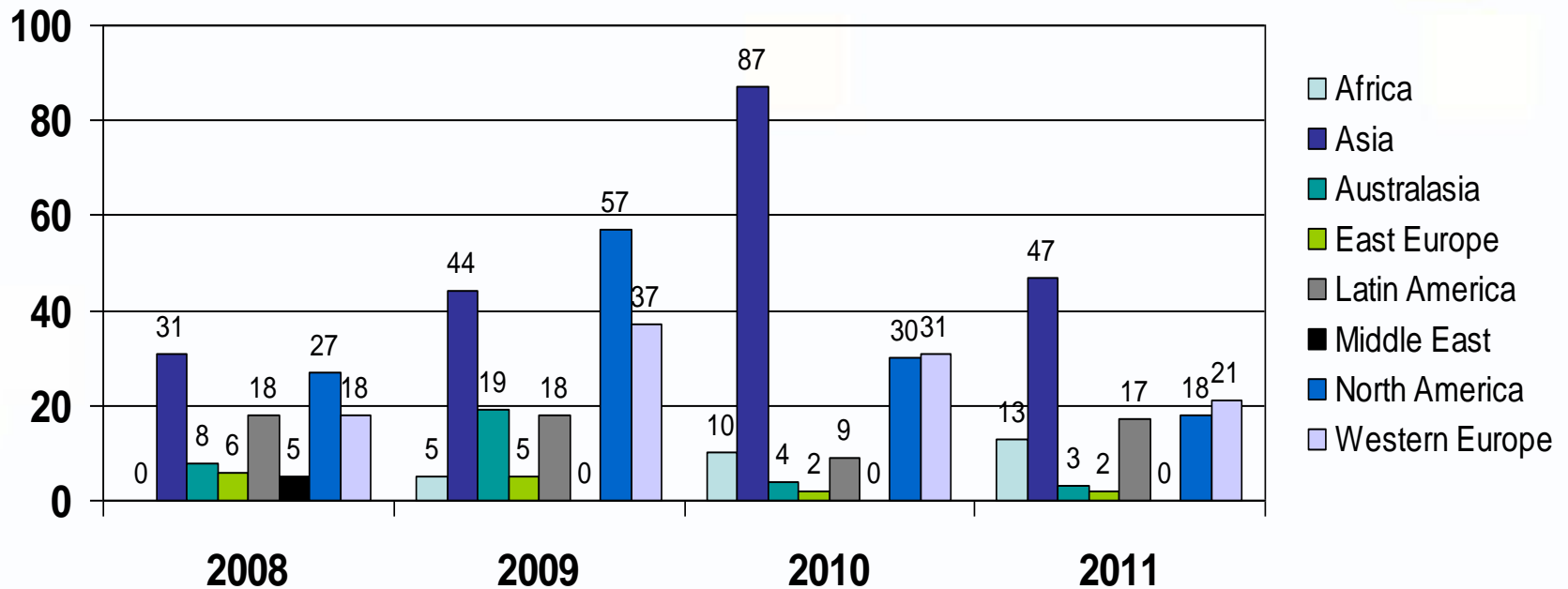


*31% of mothers are
trying to increase their
child's consumption of
protein*

Source: Sloan Trends, Inc. 2011

Global Child-Positioned Launches, 2008-11

Product Launches Mentioning “Protein” in Claims or Positioning



- Asia leads in the number of product launches which have focused on “Protein” in claims or positioning – most associated with the large and growing Growing Up Formula segment.
- Elsewhere in the world, few protein-positioned products targeting children have been launched.

Support For Protein & Children Opportunity

- Protein's well-proven positive role in children's growth & development
- Growing number of moms seeking to increase the amount of protein in their children's diets
 - Lack of new product introductions focusing on children/protein
- Growing global childhood obesity crisis and resulting health problems
 - Heart disease, diabetes incidence growing among children
 - Protein's growing association with effective weight management
- Increasing numbers of children involved in organized sports
 - Strong usage of energy beverages, sports bars among children, but not necessarily formulated to children's needs
 - Protein's strong connection to muscle support
- Growing evidence supporting positive impact of protein at breakfast – on weight management, cognition
 - Lack of protein-fortified breakfast offerings targeting children

Protein is Critical for Growth & Development

Protein is a critical nutrient for healthy growth and development.

Soy protein is a high-quality, plant-based protein that meets the protein and amino acid needs of children age 2+.



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Soybean Composition

40% Protein



storage proteins
whey proteins
isoflavones saponins

15% Sugars &
Oligosaccharides



sucrose, raffinose, stachyose

15% Dietary Fiber



soluble & insoluble fiber

20% Oil



lecithin, sterols, vitamin E

10% Other



moisture, ash

How is protein quality measured?

Protein Digestibility-Corrected Amino Acid Score (PDCAAS)

Method for determining protein quality based on the principle that the nutritive value of a protein depends on its ability to provide amino acids in adequate amounts to meet the requirements of children and adults

Protein Quality Evaluation Report published as FAO Food and Nutrition Paper 51, Rome, 1991

Protein Digestibility-Corrected Amino Acid Scores (PDCAAS) for Soy Protein Isolates and Concentrate: Criteria for Evaluation

Glenna J. Hughes,* David J. Ryan, Ratna Mukherjea, and Charles S. Schasteen

J. Agric. Food Chem. 2011, 59, 12707–12712

Soy protein has the highest possible PDCAAS of 1.0, same as eggs and dairy

PDCAAS values of selected foods

Isolated Soy Protein	1.00
Milk (Casein)	1.00
Egg White	1.00
Beef	0.92
Pea Protein Concentrate	0.73
Kidney Beans	0.68
Pinto Beans	0.63
Rolled Oats	0.57
Rice	0.53
Peanut Meal	0.52
Whole Wheat	0.40
Wheat Gluten	0.25
Almonds	0.23

Hughes, GJ, et al. (2011) J. Agric. Food Chem 59 (23) 12707–12712.

Provide Dairy-Free Alternatives with A Plant-Based High Quality Protein

- Incidence and consumer awareness of lactose intolerance and cow's milk allergy is growing, particularly in those cultures which are incorporating more dairy products into their diets.
- Soy protein enables dairy-free alternatives for infants and children who are lactose intolerant, allergic to dairy protein, or generally avoiding dairy for religious or philosophical reasons.



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Cow's Milk Intolerance in Children

- Estimates of the incidence of cow's milk intolerance vary from 0.1% to 7.5%
 - This variation mainly reflects differences in criteria for diagnosis, differences in study design (retrospective versus prospective), different composition of the materials, and maybe also geographical differences

Host, A. *Pediatr Allergy Immunol* 1994; 5 (Suppl 51): 5-36

Avoidance

- Avoidance of a food due to allergy/intolerance can have nutritional consequences
 - Milk provides important vitamins, minerals and protein to children during important times of growth and development

Reasons for Consuming Soy

- Management of cow's milk allergy
- Management of cow's milk intolerance
- Part of a vegetarian diet
- Based on religious

USDA and Milk

- Soy milks are mentioned in the dairy section under "Calcium-fortified soy milk (soy beverage)"
- The USDA mentions soy milk as an effective option for the lactose intolerant
 - If you avoid milk because of lactose intolerance, the most reliable way to get the health benefits of dairy products is to choose lactose-free alternatives within the Dairy Group, such as cheese, yogurt, lactose-free milk, or **calcium-fortified soy milk (soy beverage)** or to consume the enzyme lactase before consuming milk."
- Calcium-fortified soy milk is singled out as the sole plant-based source in the dairy group.
 - The USDA says "Calcium-fortified foods and beverages such as cereals, orange juice, rice milk, or almond milk may provide calcium, but may not provide the other nutrients found in dairy products."



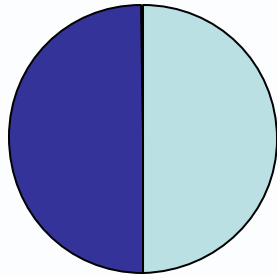
Applications for Soy Protein in Children's Foods and Beverages

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Solae Confidential

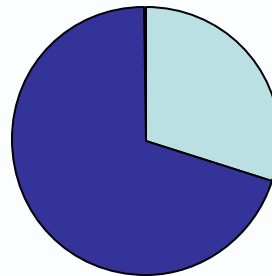
Examples of Commercial Soy Protein Products

Soy Flour



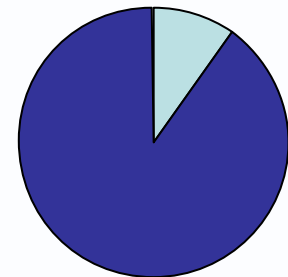
~50% Protein

Soy Protein Concentrate



~70% Protein

Soy Protein Isolate



~90% Protein

Soy Protein Product Forms



Powders



Textured
Flake



Extruded Crisp

- Example Applications:
 - Powders:
 - Beverages
 - Liquid/Semi-Liquid Systems
 - Nutrition Bars
 - Bakery
 - Extruded Systems
 - Meat/Poultry
 - Textured Flake
 - Meat/Poultry
 - Breakfast Cereal
 - Extruded Crisp
 - Nutrition Bars
 - Breakfast Cereal
 - Snack Mixes
 - Toppings

How Soy Protein is Relevant

Growth & Development

Soy protein is a high-quality, plant-based protein that supplies all of the essential amino acids needed to support healthy growth and development of children, age 2+.

Breakfast

Protein at breakfast can help children feel full longer and avoid distractions caused by hunger. Soy protein can be used across many breakfast food formats, to boost protein levels & satiety.

Childhood Obesity

As a high-quality protein source, soy protein can provide satiety and may be an effective tool in managing weight in children

Heart Health

Research demonstrates that soy protein is a heart healthy protein source, that can reduce the risk of cardiovascular disease by reducing total and LDL cholesterol levels.

Nutrient Density

Adding protein to children's snacks and beverages can improve the macronutrient balance of those foods, delivering a more ideal ratio of protein:fat:carbohydrate. Soy protein is versatile across many snack & beverage formats.

Sports Performance

As a high-quality protein source, soy protein can support muscle growth. Emerging research supports that blends of dairy and soy protein may be ideal for optimal muscle development.

Opportunities for Protein In Child Nutrition

✓ **Products Positioned to Support Healthy Growth & Development**

- #1 Global Concern of Moms
- High Consumer Recognition of Protein as Essential Nutrient
- Opportunities in toddler markets & beyond

✓ **Foods Delivering Improved Nutrient Density/ Balance**

- Improve macronutrient balance (protein:carbohydrate:fat)
- Transform “empty” calories into calories that matter
- Opportunities in snacks, beverages

✓ **Breakfast Foods & Beverages**

- Provide Satiety/Energy Bridge to Lunch
- Weight management
- Improve readiness for learning

✓ **Nutritional Support for Active Kids**

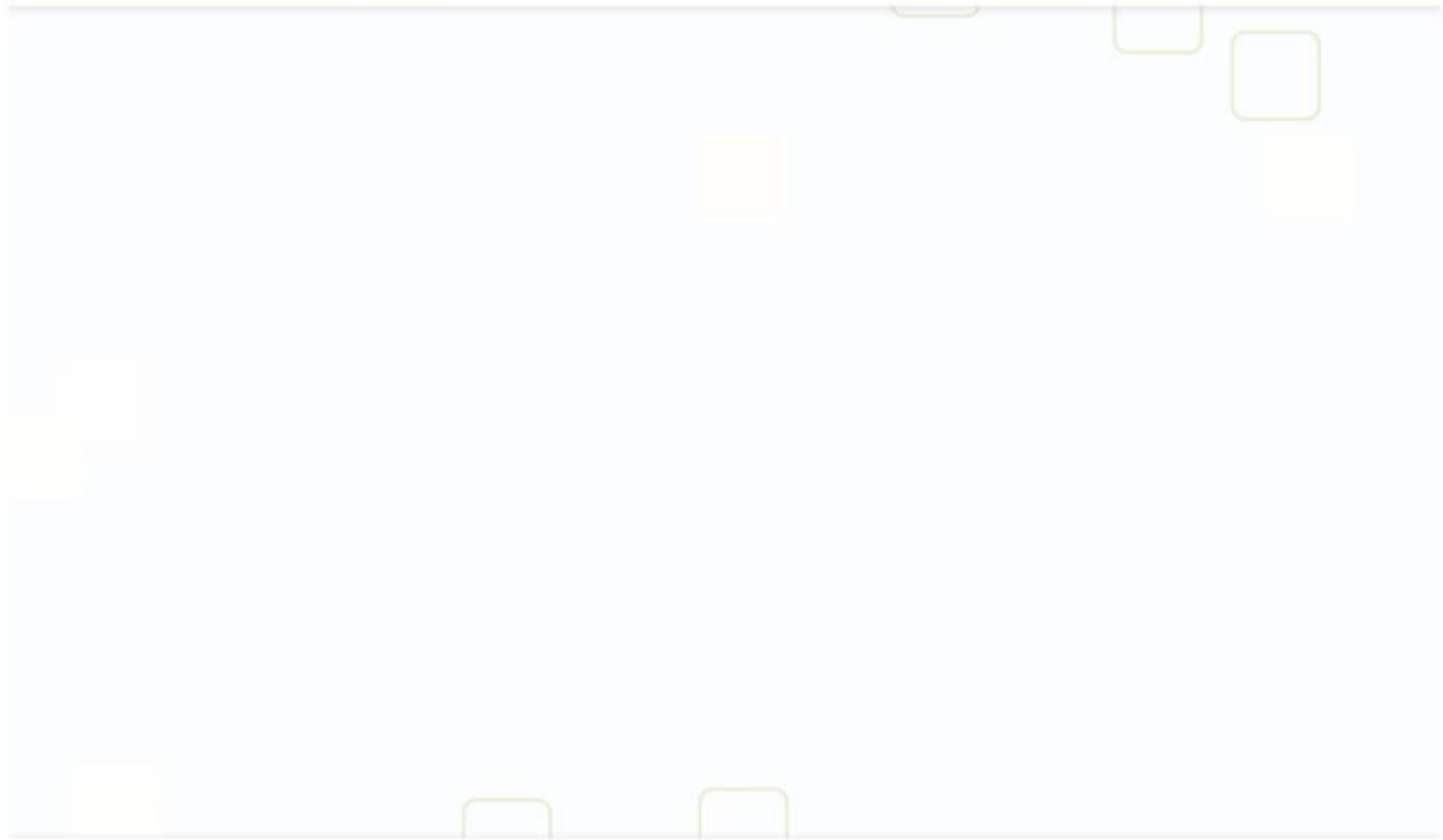
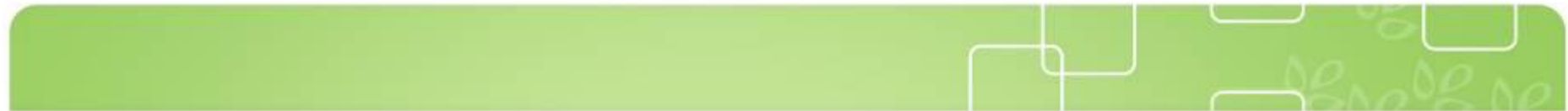
- Strong association of protein benefits and building muscle

✓ **Foods for Weight Management**

- Deliver satiety
- Manage appetite

✓ **Nutritional Solutions to Manage The Consequences of Obesity**

- Diabetes, Heart Health



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Value of Solae's Soy Proteins In Child Nutrition

- ✓ **High-Quality, *Plant-Based* Protein Nutrition**
 - Protein Quality = Dairy
 - Lactose, dairy-free
 - Low Fat, cholesterol-free

- ✓ **Economic Alternative to Dairy**
 - Price/Supply Stability
 - Cost Savings



- ✓ **Environmental Sustainability**
 - Lower carbon footprint versus animal proteins (meat, dairy, egg)

- ✓ **Performance/Versatility in Food and Beverage Systems**
 - Able to protein-fortify a broad range of food/beverage products

Solae's Application Development In Children's Foods



Nutrition Bars: Baked, Extruded, Slab (Sheet & Cut)



Snacks, Breakfast Cereals & Desserts

Beverages: Dry-Blended, Spray-Dried, Acidic (i.e., Smoothies) & Neutral (Milk-Type)



How We Support Our Customers

- Technologically advanced products
- Technology innovation
- Application and formulation expertise
- Nutrition science
- Marketing and positioning support



Thank You!

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