



Addressing the Protein Need in Product Formulation

Mary Wilcox, V.P. Business Development-Mfg & Research

**‘Protein is the hottest functional food ingredient trend in the United States’:
Packaged Facts**

foodnavigator.com

2015 Trends: Pack in the Protein

restaurant-hospitality.com

**The Protein Trend is HOT and
Growth is Expected to Grow**

drinkpreneur.com

Americans are actively seeking protein



- ✓ 62% of consumers try to get more protein in their diets
- ✓ The top four benefit claims driving the growth of healthy snacks are calcium, protein, energy and fiber.

Source: Food Service Director, "Consumer continue to seek health snack options", September 2014

IRI, "State of the Snack Food Industry", March 2015

Dairy Protein's Nutritional Strengths

Protein is part of a healthy diet



Dairy contains essential amino acids

✓ 88% of consumers recognize that protein helps build muscle



Also helps with:

- ✓ Exercise recovery
- ✓ Appetite control
- ✓ Weight management



Source: *New Nutrition Business*, 12 Key Trends in Food, Nutrition and Health 2014

Protein is Mainstream



- ✓ From 2010-2014, new product launches with a protein claim have grown at a 29% annual growth rate.

Source: InnovaDatabase, “Key Trends in the Global F&B Industry,” April 2015

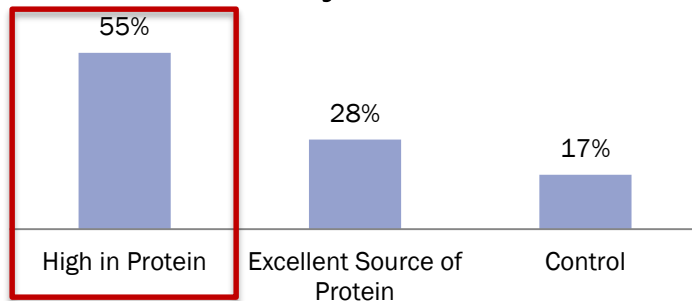


Intent To Purchase

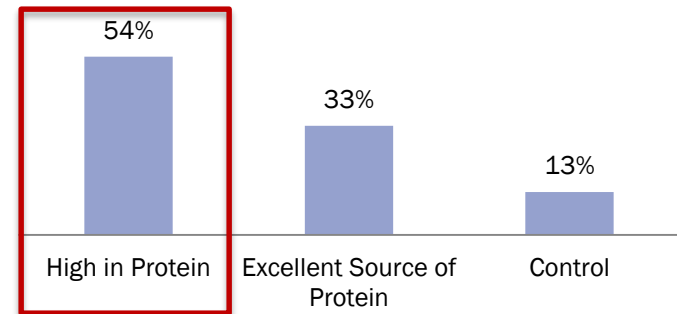
Yogurt Protein Benefit-Intent to Purchase Results

When compared directly, *High in Protein* was the clear winner

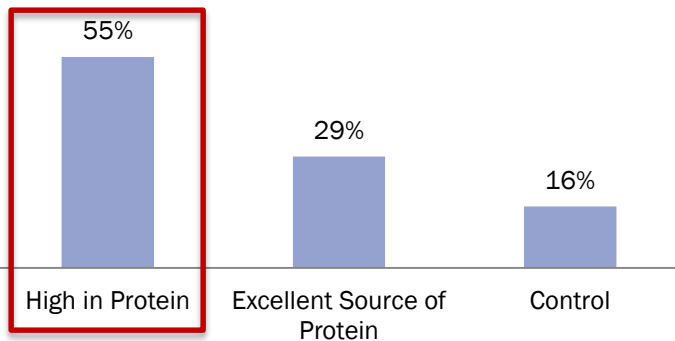
Most Likely to Purchase



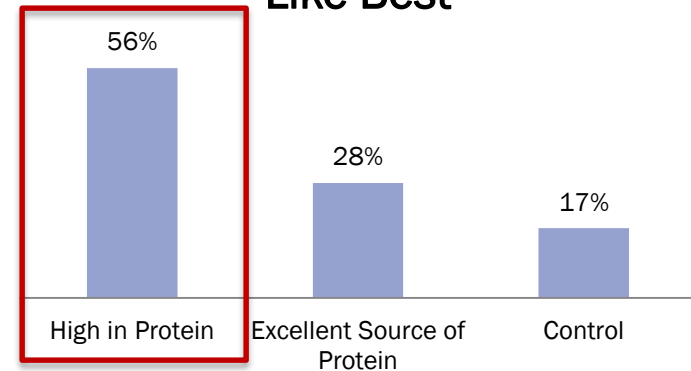
Most New & Different



Purchase Most Often



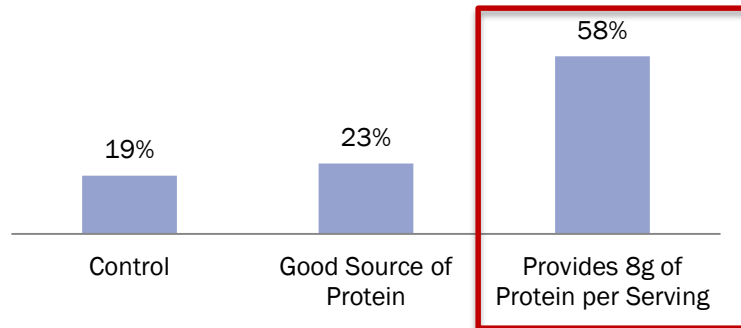
Like Best



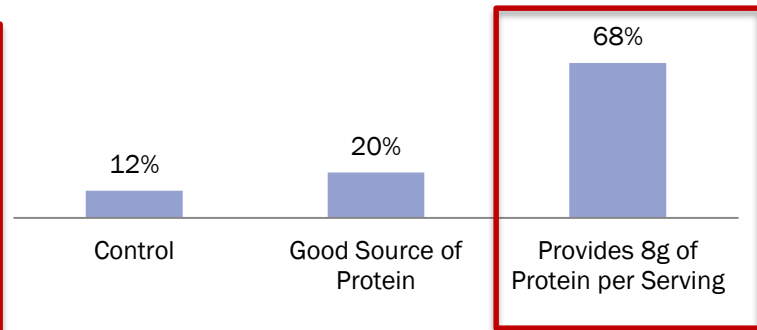
Milk Protein Benefit-Intent to Purchase Results

Provides 8g of Protein per Serving was by more compelling claim when compared directly against *Good Source of Protein* and no claim.

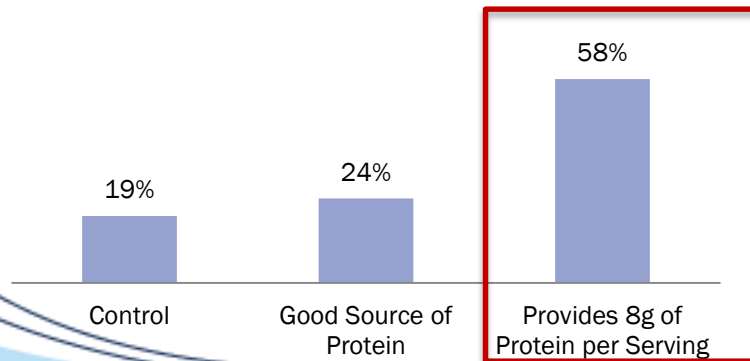
Most Likely to Purchase



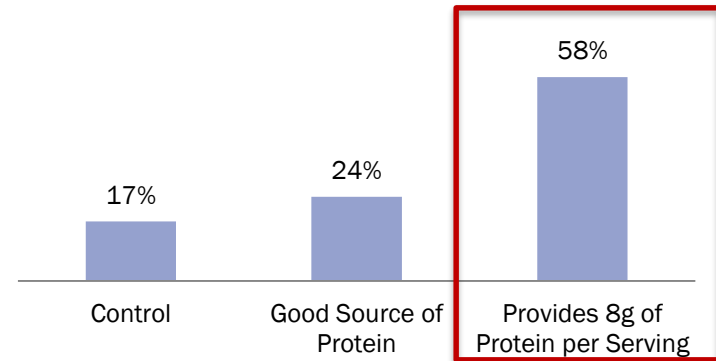
Most New & Different



Purchase Most Often

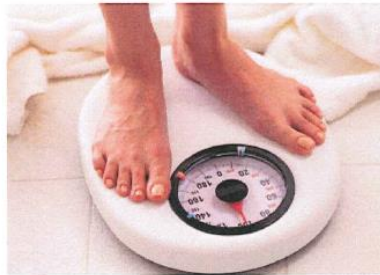


Like Best



Upside Potential for Dairy Protein

- New science/technologies = New Channels
- Neutral Flavor = Easy to Formulate
- Increasing need to communicate benefits to consumers



Top 3 Opportunities for Dairy



Sports
Performance



Healthy
Aging



Weight for Wellness

Protein Innovation Guide

Sports Performance



Competitive Spirit

I love the high of crossing the finish line and achieving a personal best

On Top

- Elite athlete
- Skew to young adults
- Competing professionally, nationally or internationally



Pushing Up

- Serious recreational competitor
- Trains aggressively
- Competes monthly
- Not sponsored
- Has a “day job”



Fired Up

- Sports/fitness enthusiast
- Skew to middle age
- Fitness oriented and in shape



Protein Innovation Guide

Weight for Wellness

Weight Management in Wellness Context

People Concerned about Weight but Not Obese

Looking Good

“Look & feel good in my jeans”

- Care about weight primarily for appearance
- Skews toward younger demographic
- Likely to engage in physical activity with eating well to fit into clothes



Feeling Good

“Taking care of my health”

- Strive to maintain a healthy weight for health:
 - Blood pressure/cholesterol
 - Blood sugar
 - Orthopedic issues
- Seek greater comfort and mobility with less weight



Body + Mind + Spirit

“Nurturing my whole self”

- Positive sense of self from being at a healthy weight
- Feeling good about choices and lifestyle
- Enjoying life and getting the most out of it by being fit and toned



Protein Innovation Guide

Healthy Aging

Forever Young

Staying Youthful & Active As You Age

Older Boomers

“Enjoying the next chapter”

- Skew toward 60s
- Volunteering/giving back
- May still work or in second career
- Pursuing travel/leisure activities
- Grandparenting
- Health changes may alter lifestyle & priorities
- Seeking food for health, taste, fun, & family connections



Young Boomers

“Taking care of my family”

- Skew toward early 50s
- Supporting kids at home
- Still working
- Noticing signs of aging
- Experiencing health changes (sleep, joints, vision, weight)
- Possibly caring for ailing parents



Aging Well

Defying Aging through Healthy Living

Product Research

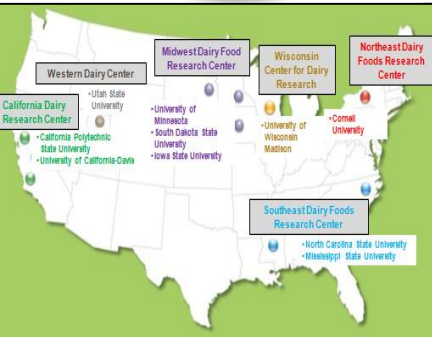
**Applications
& Technical
Support**

**Fluid Milk
Revitalization**

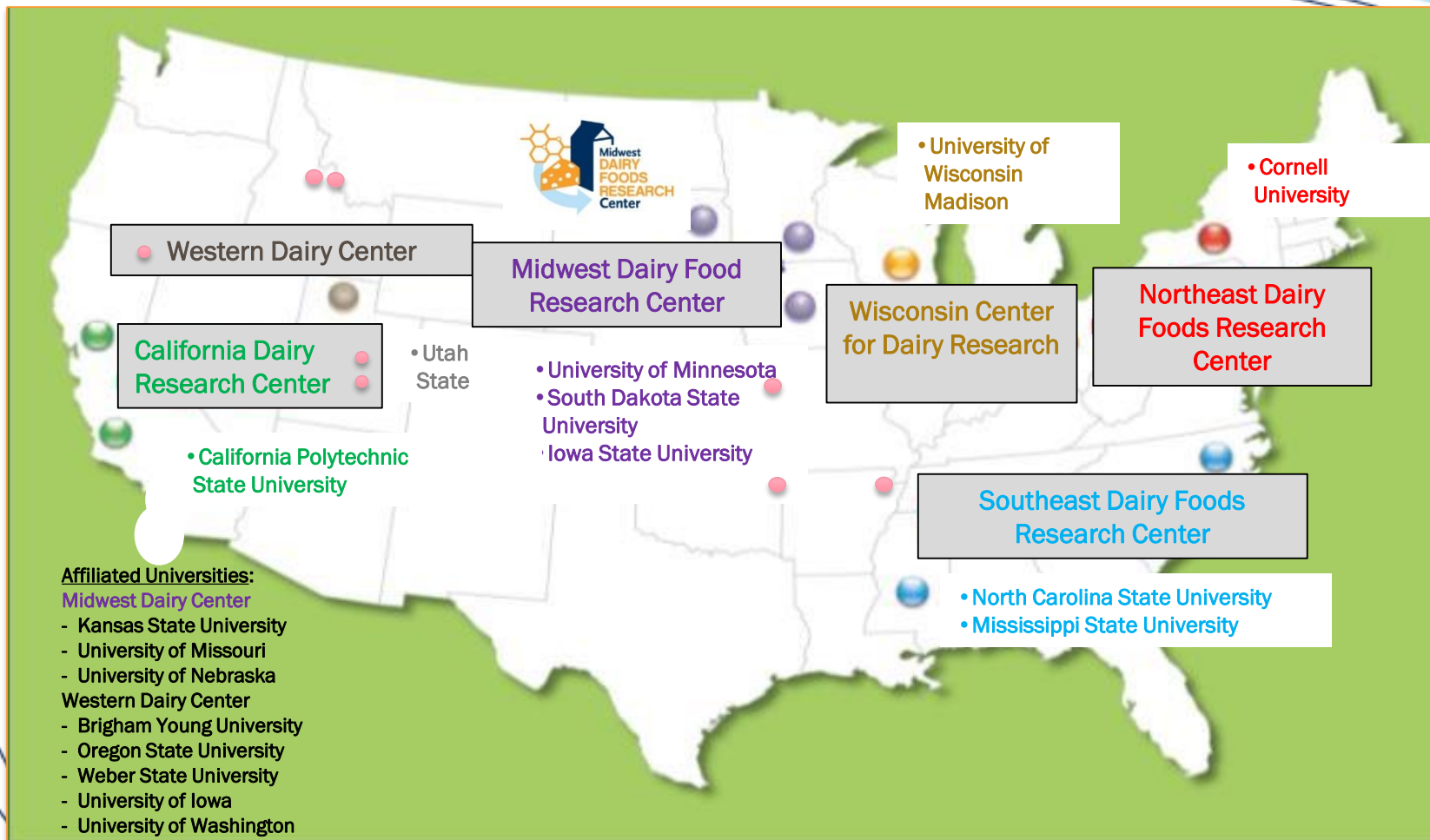
**Milk, whey,
value added
ingredients
and co-
products**

**Milk
Powders**

**Food Safety
and Cheese**



National Dairy Foods Center Program





How Do We Address Industry Needs: Midwest Dairy Foods Research Center





Step 1: Listen to Industry Identify Barriers or Opportunities



Millennials : Consumers between the ages of 18-37.

27%
of the population
(81.2 million consumers)



***3 Distinct Characteristics of Millennials:**

- 1. Racially and Ethnically diverse**
- 2. Fiercely independent**
- 3. Millennials feel powerful**

**Source: The Millennials: Americans Born 1977-1994*



Making More Conscious Choices

- **Millennials are trying to avoid additives**
- **Less swayed by traditional health claims**
- **Pay more attention to social callouts, product/point of origin narratives**

Hartman Group, 2014

INGREDIENTS: ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMIN MONONITRATE [VITAMIN B₁], RIBOFLAVIN [VITAMIN B₂], FOLIC ACID), CORN SYRUP, SUGAR, SOYBEAN AND PALM OIL (WITH TBHQ FOR FRESHNESS), CORN SYRUP SOLIDS, DEXTROSE, HIGH FRUCTOSE CORN SYRUP, FRUCTOSE, GLYCERIN, CONTAINS 2% OR LESS OF COCOA (PROCESSED WITH ALKALI), POLYDEXTROSE, MODIFIED CORN STARCH, SALT, DRIED CREAM, CALCIUM CARBONATE, CORNSTARCH, LEAVENING (BAKING SODA, SODIUM ACID PYROPHOSPHATE, MONOCALCIUM PHOSPHATE, CALCIUM SULFATE), DISTILLED MONOGLYCERIDES, HYDROGENATED PALM KERNEL OIL, SODIUM STEAROYL LACTYLATE, GELATIN, COLOR ADDED, SOY LECITHIN, DATEM, NATURAL AND ARTIFICIAL FLAVOR, VANILLA EXTRACT, CARNAUBA WAX, XANTHAN GUM, VITAMIN A PALMITATE, YELLOW #5 LAKE, RED #40 LAKE, CARAMEL COLOR, NIACINAMIDE, BLUE #2 LAKE, REDUCED IRON, YELLOW #6 LAKE, PYRIDOXINE HYDROCHLORIDE (VITAMIN B₆), RIBOFLAVIN (VITAMIN B₂), THIAMIN HYDROCHLORIDE (VITAMIN B₁), CITRIC ACID, FOLIC ACID, RED #40, YELLOW #5, YELLOW #6, BLUE #2, BLUE #1.

“I look at ingredient lists. And, really for most foods these should be pretty simple. But, instead of 2-3 ingredients there’s usually a list of things you can’t read. I try to avoid foods like that.” – Christie, 31

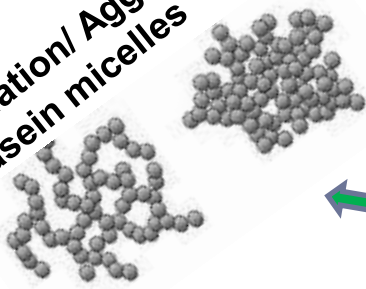
Milk Has Many Functions

- Viscosity
- Water Binding
- Thickening
- Gelation
- Foaming
- Emulsification
- Heat Stability



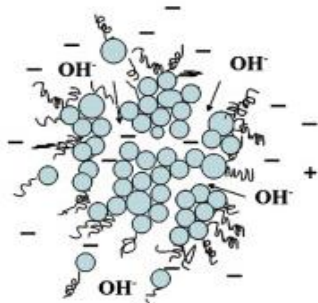
Different Structures/Textures

Association/ Aggregation
of Casein micelles



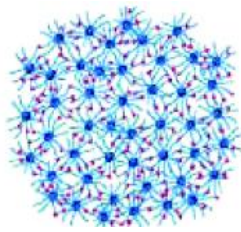
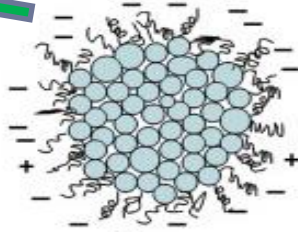
Acid / salt

Dissociated / non-
micellar casein (e.g.
sodium caseinate)



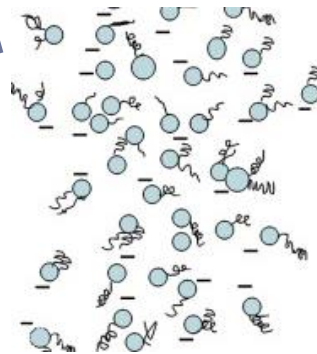
pH

Casein micelles

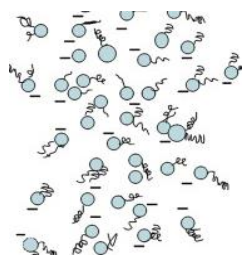


High pressure/
Very high temp

CO2 treatment



Bio-compatible
microgel particles



Non-micellar /dissociated casein

Dissociated casein

Cleaner Label Yogurt



Research Outcomes


- Improvement in texture without added starch or gelatin
- Simple, minimally processed solution
- Applicable to many other food systems



Grade A Nonfat Milk, Cultures and Sugar



IFT 2015

	IFT Chai Pudding	Ensure Abbott	Boost Nestle	Snack pack Pudding	Nature's Pudding Pouches
Serve size	1 cup (100g)	4oz (113g)	5oz (141g)	1 cup (90g)	1 Pouch (85g)
Calorie	150	170	240	110	100
Protein (g)	12g	4	7	<1g	3
Total Fat (g)	1.5	5	9	2.5	2.5
Total Carbohydrate(g)	24	30	33	20	16
Dietary Fiber (g)	3	3	0	2	1
Sodium (mg)	38	120	140	115	35
Calcium %DV	35	10	25	30	8

Application Lab:

- **Screening of dairy ingredients in various applications such as process cheese, beverage**
- **Optimization of formulations and processing conditions**
- **Understand the impact of ingredients and process on textural and rheological properties melting, heat stability**

Let Us Know If We May Be Of Assistance

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Product Samples

Savory Kimchee-se Pancake



12g protein per 110g serving

- ✓ Contains cheese, milk protein concentrate & whey permeate

Reduced-sodium BBQ Sauce



115g per serving

- ✓ Whey permeate > 60% sodium reduction