Milk, the Original Clean Label, Nutrient Dense Beverage

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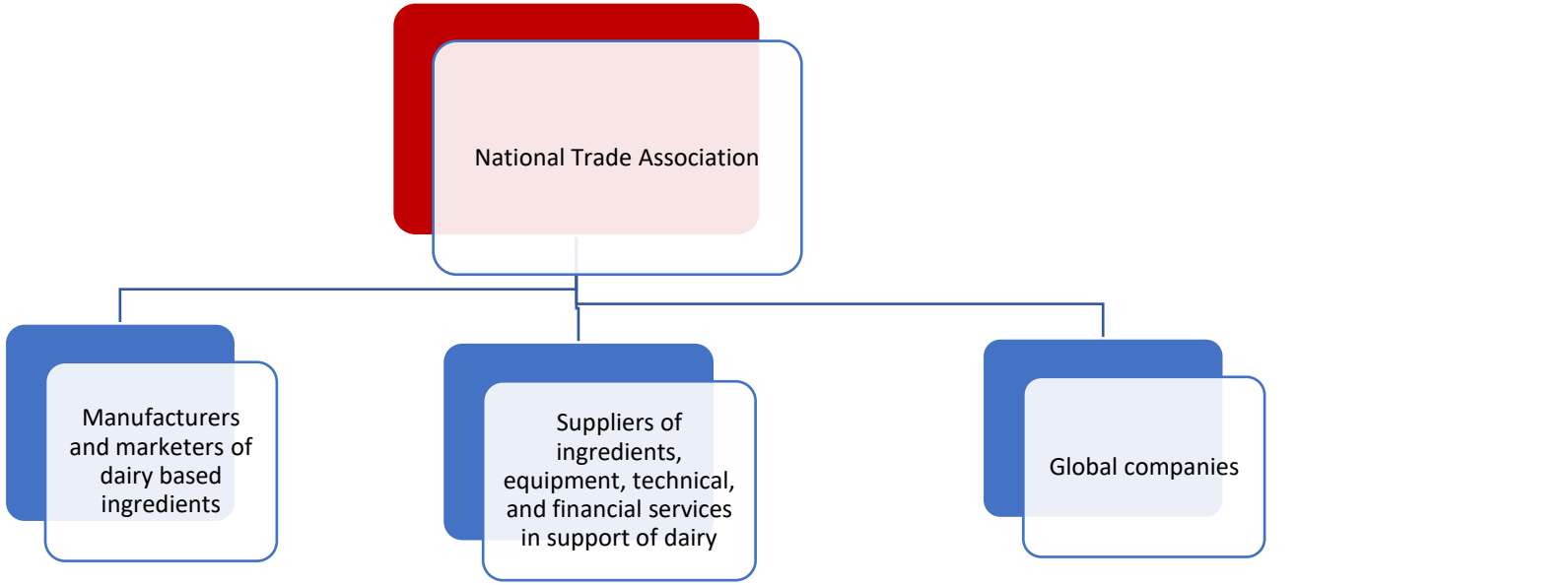
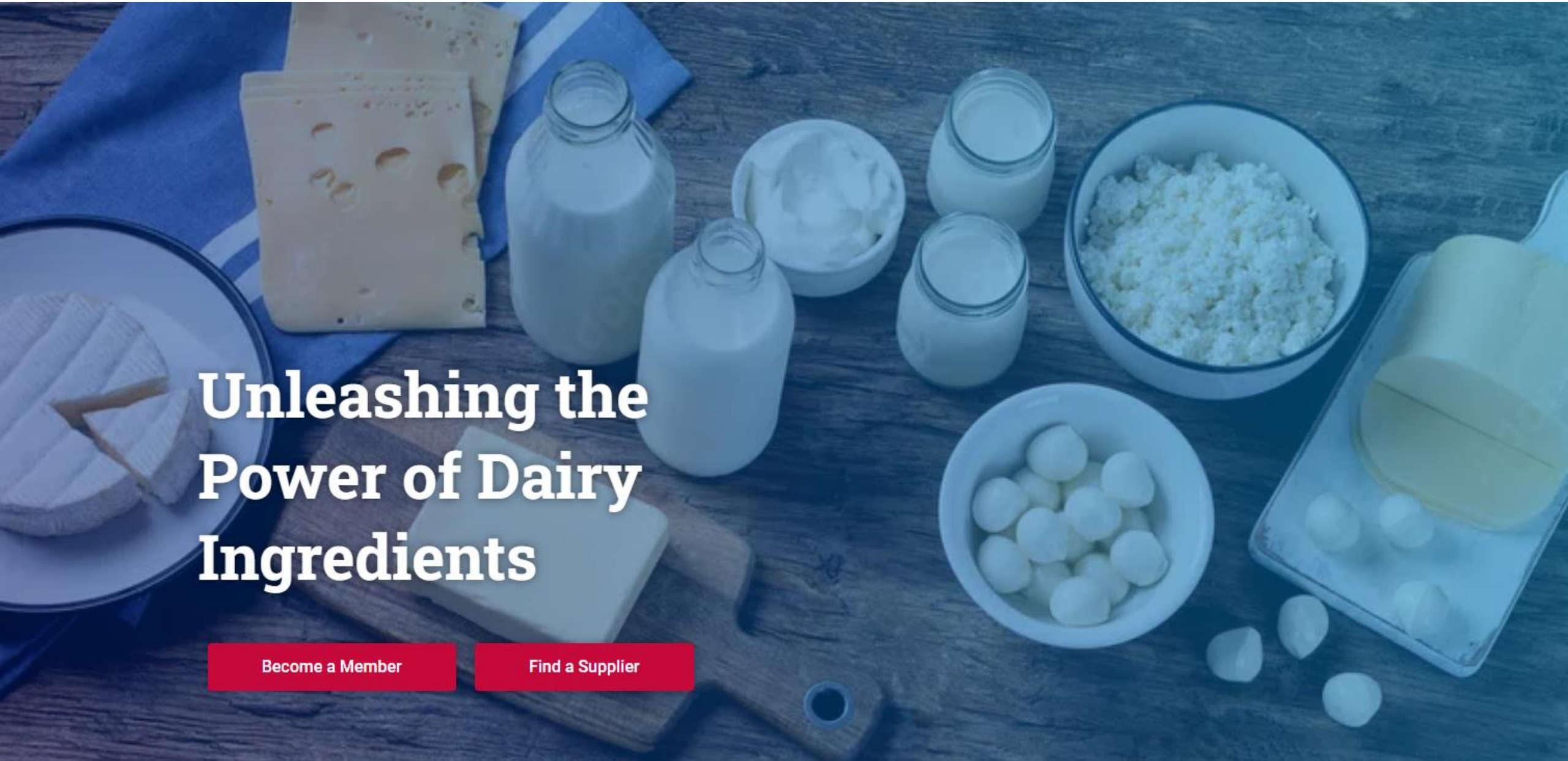
About ADPI



Vision: To be the world's go to authority on dairy ingredients.

Mission: Increase the world-wide use of dairy ingredients by marshaling the technical, manufacturing and marketing resources of our members and others.

Resources


Unleashing the Power of Dairy Ingredients
Become a Member
Find a Supplier

Dairy Foods Provide a Powerful Nutrient Package

Cheese*:
6 essential nutrients

Protein
Calcium
Phosphorus
Vitamin B12
Niacin
Vitamin A

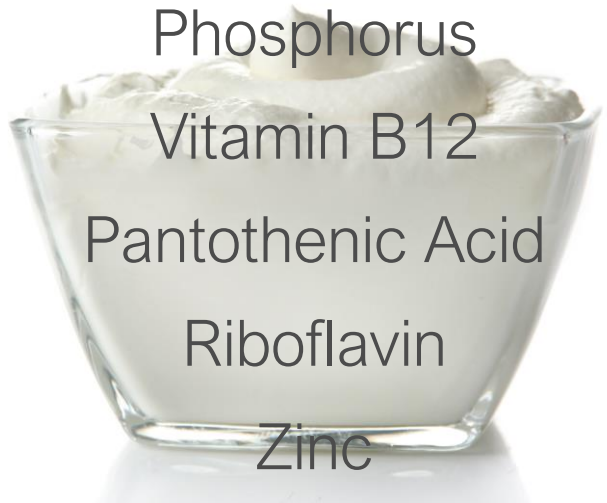
Nutrients based on USDA Database for Cheddar #01009

Milk:
13 essential nutrients

Protein
Calcium
Vitamin D
Phosphorus
Vitamin A
Riboflavin
Potassium*
Pantothenic acid
Niacin
Vitamin B12
Zinc
Selenium
Iodine

Yogurt:
7 essential nutrients

Protein
Calcium
Phosphorus
Vitamin B12
Pantothenic Acid
Riboflavin
Zinc



*FDA's Daily Value for potassium of 4700 mg is based on a 2005 DRI recommendation. In 2019, NASEM updated the DRI to 3400 mg. Based on the 2019 DRI, a serving of milk provides 10% of the DRI. FDA-rule making is needed to update this value for the purpose of food labeling

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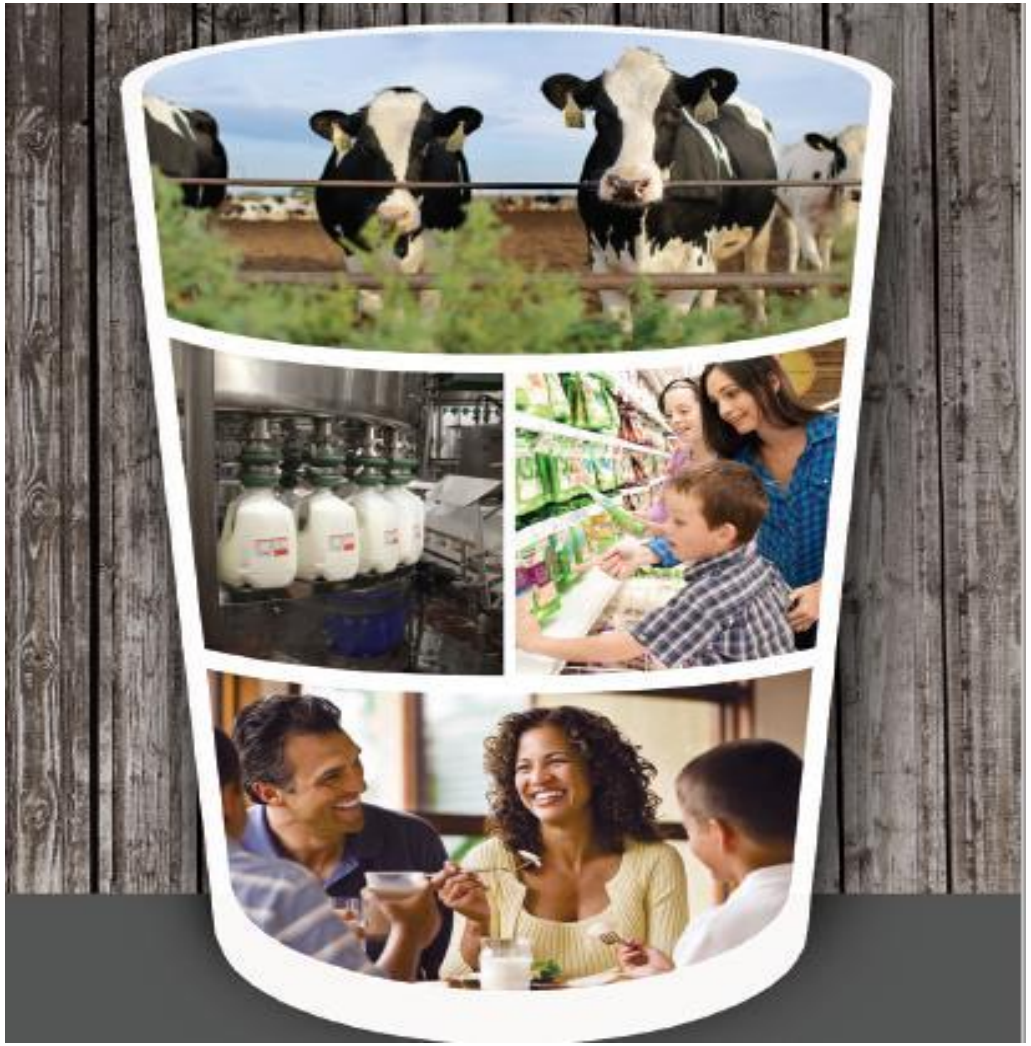
Dairy foods contribute significant amounts of essential nutrients to the diets of Americans

56% Vitamin D
54% Calcium
29% Vitamin A
28% Phosphorus
27% Vitamin B12
24% Riboflavin
18% Protein
17% Zinc
14% Potassium

Dairy is the #1 food source for 3 of the 4 nutrients of concern identified by the US Dietary Guidelines



Data from NHANES 2011-2014 (n=15,829).
Citation:
National Dairy Council. NHANES 2011-2014. Data Source: Centers for Disease control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey Data. Hyattsville, MD: U.S. Department of Health and Human Services.http://www.cdc.gov/nchs/nhanes.htm.

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Leading health organizations identify milk & water as go-to beverages for 1- 5-year-olds

American Heart Association.

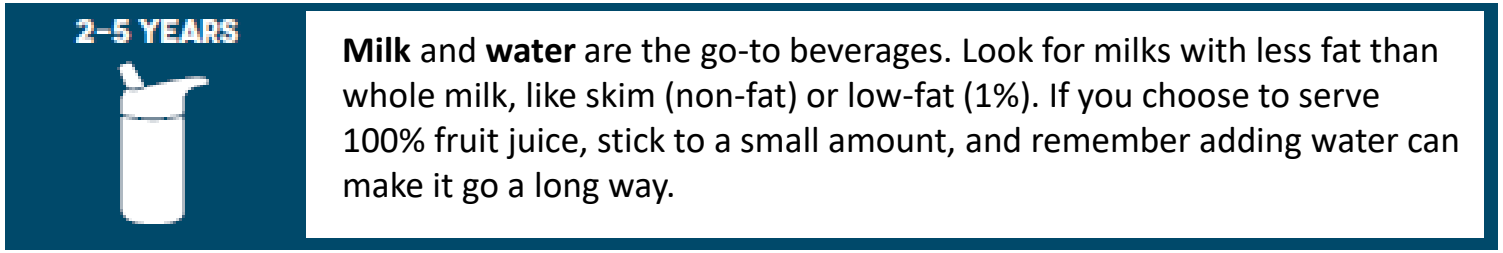
AMERICA'S PEDIATRIC DENTISTS
THE BIG AUTHORITY on little teeth

American Academy of Pediatrics

eat Academy of Nutrition

- Report states that plant-based alternatives (except for fortified soy beverage) are NOT RECOMMENDED for 2 reasons:
  - ✓Inconsistent formulations
  - ✓Lack of evidence for adequate bioavailability of nutrients

…trients, along
…of juice is okay,
…Better yet, serve



https://healthydrinkshealthykids.org/

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All proteins are not created equal

PDCAAS & DIAAS for Isolated Proteins and Foods

Food	PDCAAS	DIAAS
Milk Protein Concentrate	1.00	1.18
Whey Protein Isolate	1.00	1.09
Soy Protein Isolate	0.98	0.90
Pea Protein Concentrate	0.89	0.82
Rice Protein Concentrate	0.42	0.37
Whole milk	1.00	1.14
Chicken breast	1.00	1.08
Egg (hard boiled)	1.00	1.13
Cooked peas	0.60	0.58
Cooked rice	0.62	0.59
Almonds	0.39	0.40
Chickpeas	0.74	0.83
Tofu	0.56	0.52

- **Protein Quality**: The ability of a food protein to meet the body's metabolic demand for amino acids and nitrogen

- Food proteins vary in their protein quality based on:
  - Amino acid composition
  - Digestibility
    - Animal based proteins >90%
    - Plant based proteins 45 – 80%
  - Bioavailability

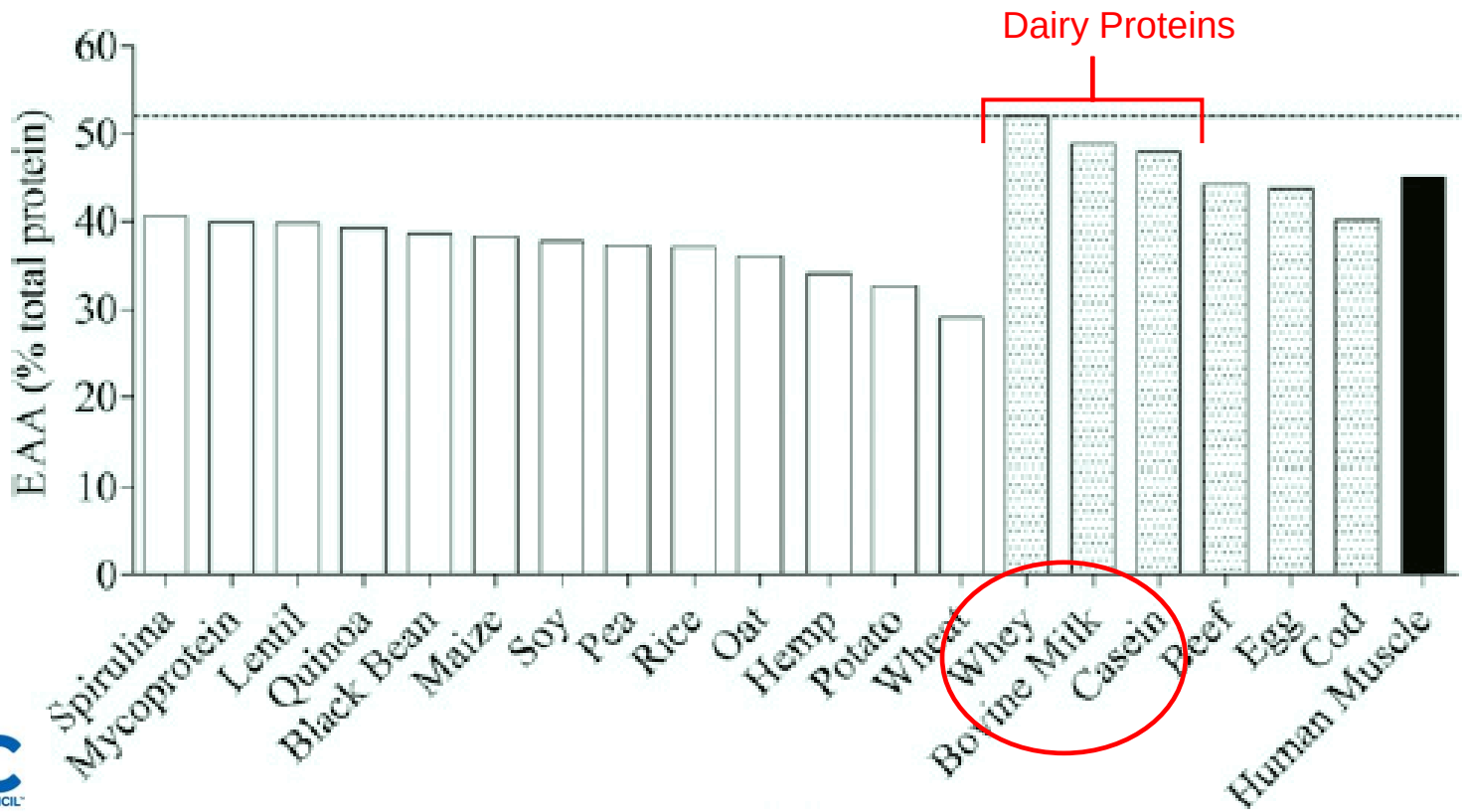
- **Protein Digestibility Corrected Amino Acid Score (PDCAAS):** the current gold standard for assessing protein quality

- **Digestible Indispensable Amino Acid Score (DIAAS):** new model of protein quality assessment recommended by panel of experts convened by FAO*

Table adapted from Phillips SM, *Front. Nutr.*, 2017
*FAO. Report of an FAO Expert Consultation. Dietary Protein Quality Evaluation in Human Nutrition. Rome: FAO, 2013

Essential amino acid concentrations of various protein sources

A higher concentration of essential amino acids (EAAs) is one of the main indicators of protein quality: higher concentration = higher quality



Protein Source	EAA % total Protein
Whey	52
Casein	48
Soy	38
Rice	37
Pea	37
Potato	33

Van Vliet S et al., J. Nutr. 2015.

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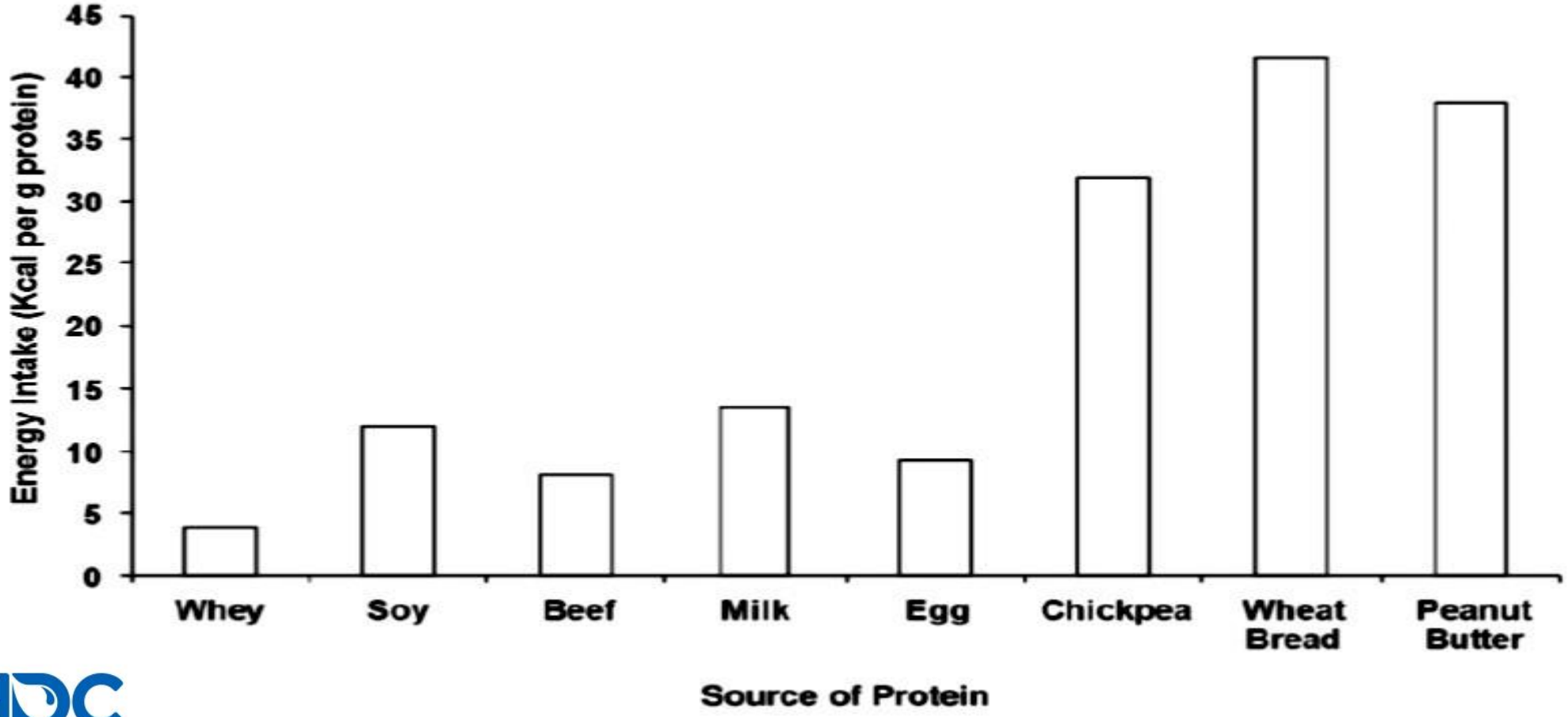
Energy intake of different protein sources to meet minimal requirements of adults for all essential amino acids



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Wolfe RR (2015). Nutr Rev 73(S1):41-47

Real World Application of Protein Quality: Nutrition Facts Labeling

% DV shows how much of a nutrient is in a standard serving of the food in relation to one's approximate requirement for it. The DV for protein (ages 4+) is 50g/day based on a 2,000 kcal diet.

- Protein quality (via PDCAAS) is factored into the calculation of the % DV for protein on the nutrition facts label and in support of nutrient content claims
  - Excellent source: ≥ 20% of DV
  - Good source: 10-19% of DV

Food	Protein Content (g)	PDCAAS	Corrected Protein Content(g)	%DV (corrected pro / 50)
Milk	8g	1.0	8g	16%
Original Silk Protein	10g	0.7	7g	14%

21 CFR 101.9(c)(7)

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Comparing Ingredients, Nutrition, and Cost

$3.19 $0.02/fl oz

Roundy's® Select 2% Reduced Fat Milk

1 Gallon | 1 more size

Nutrition Facts	
servings per container	
Serving size	**8fl oz (240 ml)**
Amount per serving	
Calories	**120**
	% Daily value*
Total Fat 5g	**6.41%**
Saturated Fat 3g	**15%**
Trans Fat 0g	
Cholesterol 20mg	**6.67%**
Sodium 105mg	**4.57%**
Total Carbohydrate 12g	**4.36%**
Dietary Fiber 0g	**0%**
Sugar 12g	
Protein 8g	
Calcium 325mg	25%
Iron 0mg	0%
Potassium 376mg	8%
Vitamin A 135mcg	15%
Vitamin D 2mcg	10%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Reduced fat milk, Vitamin A Palmitate, Vitamin D3

$3.99 $0.06/fl oz

Silk® Original Almond & Cashew Protein Milk

64 fl oz

Nutrition Facts	
servings per container	
Serving size	**1cup (240 ml)**
Amount per serving	
Calories	**130**
	% Daily value*
Total Fat 8g	**10.26%**
Saturated Fat 0.5g	**2.5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 230mg	**10%**
Total Carbohydrate 3g	**1.09%**
Dietary Fiber 1g	**3.57%**
Sugar 2g	
Protein 10g	
Calcium 450mg	35%
Iron 1.7mg	10%
Vitamin D 2.5mcg	15%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Almondmilk (Filtered Water, Almonds), Cashewmilk (Filtered Water, Cashews), Pea Protein, High Oleic Sunflower Oil, Cane Sugar, Calcium Carbonate, Salt, Sunflower Lecithin, Gellan Gum, Ascorbic Acid (To Protect Freshness), Natural Flavor, Vitamin E Acetate (To Protect Freshness), Vitamin D2

Dairy's environmental impact: Grounded in science

- Life cycle science establishes baseline environmental footprint for U.S. Dairy
- Peer-reviewed, published, and contributed to open-source National Agricultural Library

U.S. Dairy is:
- **2%** of U.S. GHG emissions
- **5.1%** total water withdrawal
- **3.7%** of total U.S. farmland

International Dairy Journal, Volume 31 Supplement 1 April 2013

http://www.usdairy.com/sustainability/environmental-research

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U.S. dairy is an environmental solution

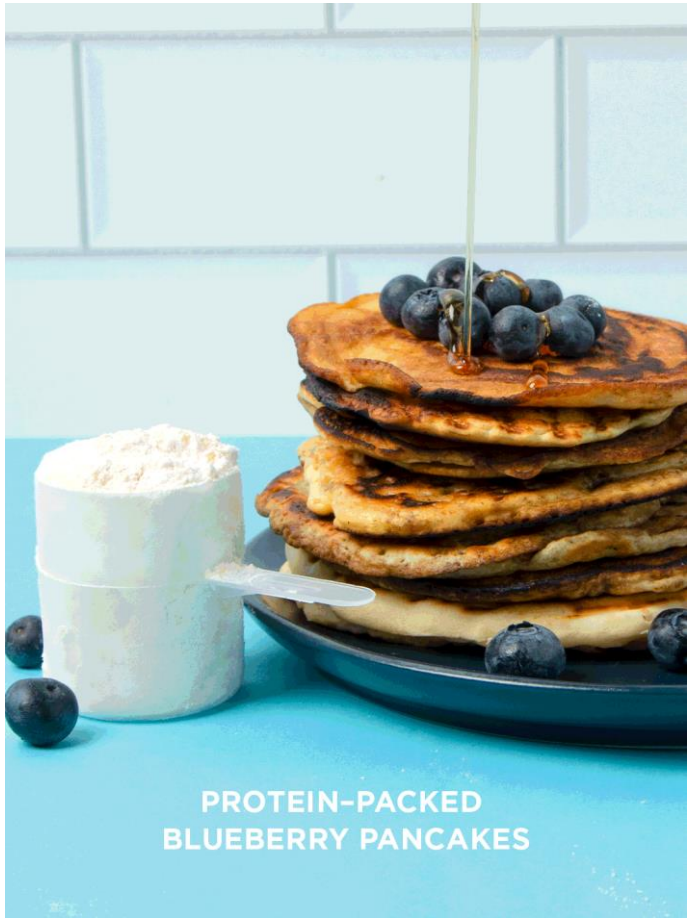
By 2050, U.S. dairy collectively commits to:

- Achieve **greenhouse gas (GHG) neutrality**
- **Optimize water use** while maximizing recycling
- **Improve water quality** by optimizing utilization of manure and nutrients

INNOVATION CENTER FOR U.S. DAIRY®
HEALTHY PEOPLE • HEALTHY PRODUCTS • HEALTHY PLANET

ADPI American Dairy® Products Institute

Thank you!



PROTEINS FROM MILK
THE STRONG INSIDE™

Hashtags:

#thestronginside

#wheytogo

#protein

#wheyprotein

#proteinsfrommilk

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