

Beyond Calcium: The Dairy Matrix and the Impact of Milk and Dairy Foods on Health

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About Us

Dairy Council of California is a leading nutrition organization working in collaboration to elevate the health of children and communities through fostering lifelong healthy eating patterns.

- Education
- Advocacy
- Collaboration

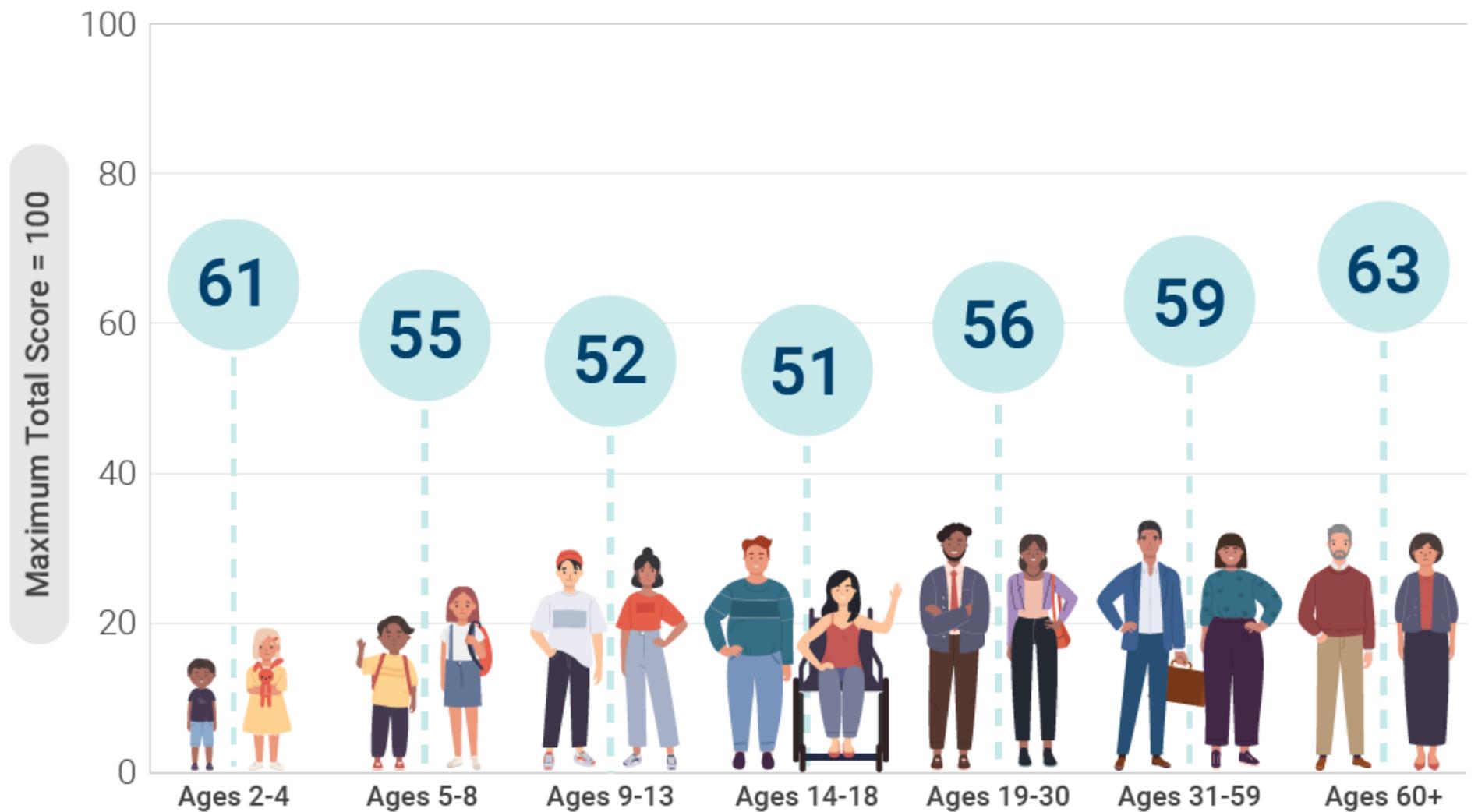


Learning objectives

- 1 Describe the shift from a nutrient-based approach to food-based dietary guidance.
- 2 Explore how the structure and combination of nutrients in milk and dairy foods, known as the dairy matrix, makes them effective at delivering nutrients.
- 3 Recognize the impact of dairy foods on health outcomes across the life span and on chronic disease risk.
- 4 Identify ways the food matrix concept can enhance public health by supporting more holistic, food-based nutrition interventions.

Most Americans Do Not Meet Dietary Recommendations

Adherence of the U.S. Population to the *Dietary Guidelines Across Life Stages*, as Measured by Average Total Healthy Eating Index-2015 Scores



NOTE: HEI-2015 total scores are out of 100 possible points. A score of 100 indicates that recommendations on average were met or exceeded. A higher total score indicates a higher quality diet.

Data Source: Analysis of What We Eat in America, NHANES 2015-2016, ages 2 and older, day 1 dietary intake data, weighted.

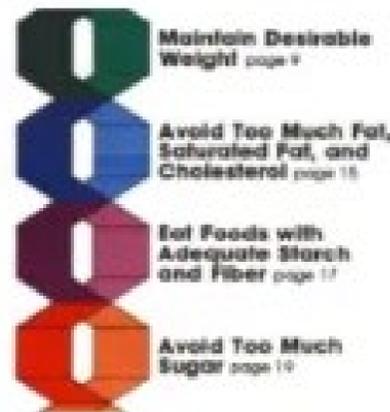


The Dietary Guidelines for Americans Through the Years

The Dietary Guidelines for Americans Through the Years

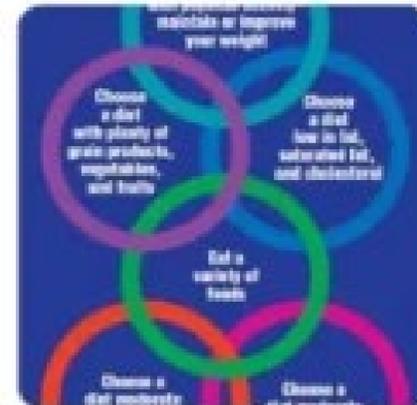
1985-1990

Maintain "desirable" weight



1995-2000

Food pyramid introduced



2005-2010

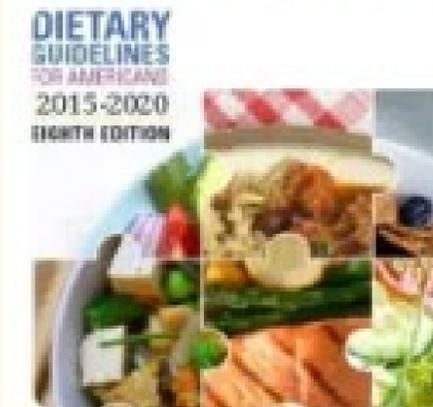
Core message: "Health promotion & disease prevention"



Dietary Guidelines for Americans 2005

2015-2020

MyPlate & healthy eating patterns



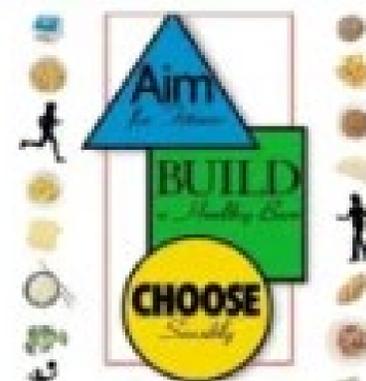
Eat a variety of foods

1980-1985



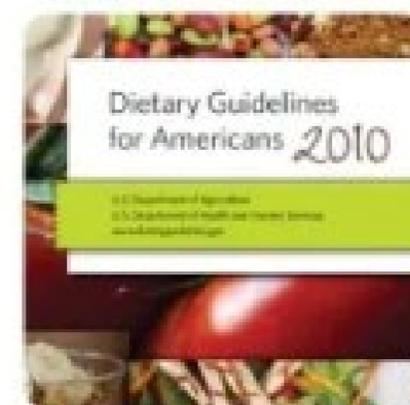
Serving suggestions for food groups

1990-1995



"Aim for fitness, build a healthy base, choose sensibly"

2000-2005



Emphasizes diet & obesity epidemic link

2010-2015



Healthy eating patterns for every life stage

2020-2025

Shifting Dietary Patterns



ENERGY SUFFICIENT DIET
meets needs for short-term subsistence

NUTRIENT ADEQUATE DIET
meets required levels of all essential nutrients

HEALTHY DIET
includes foods from several food groups and
has greater diversity within food groups

Shifting from Isolated Nutrients to the Food Matrix



Food Matrix

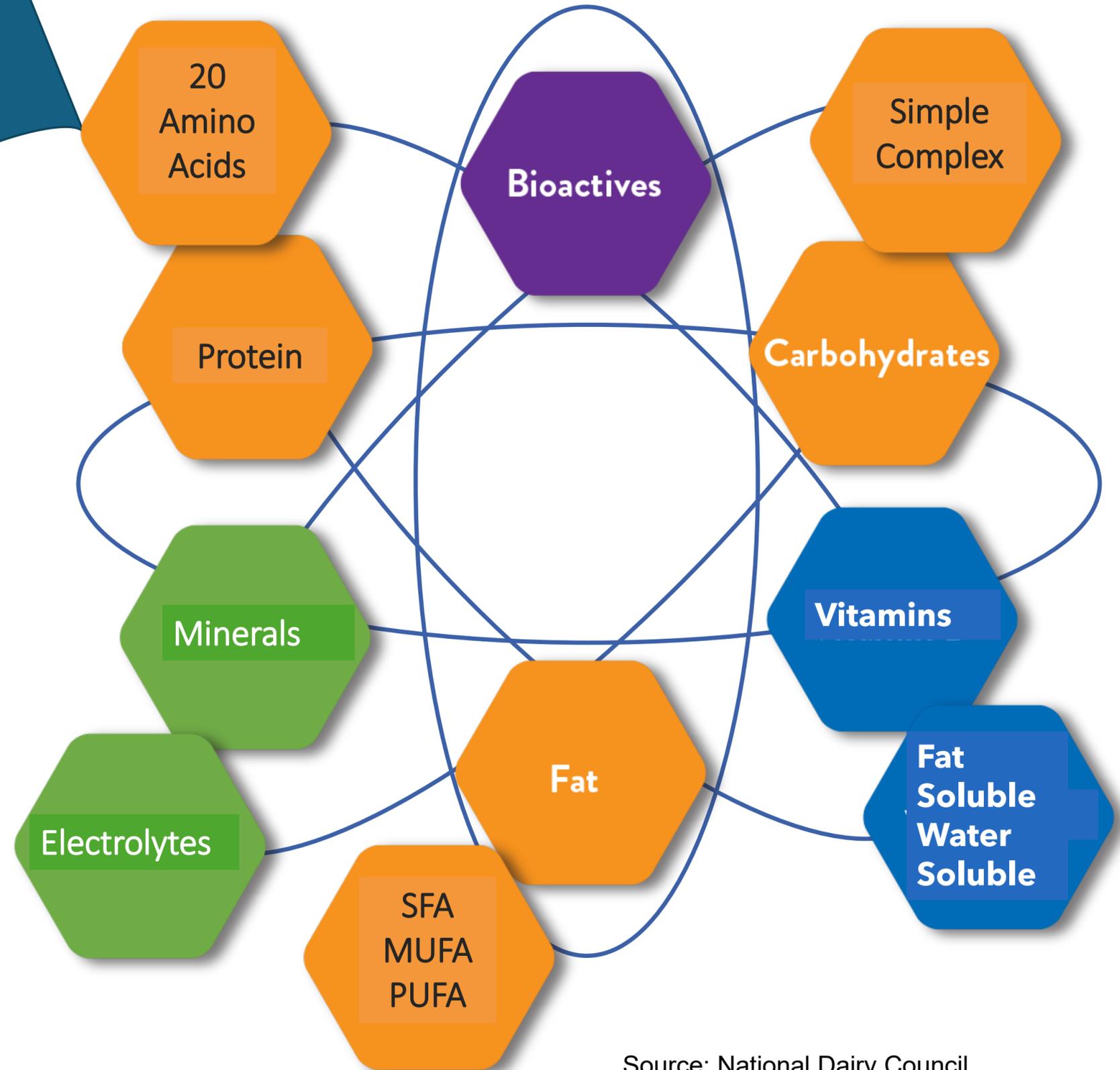
food ma·trix

noun

The nutrient and non-nutrient components of foods and their molecular relationships, i.e. chemical bonds, to each other.

-USDA

Emerging
Concept



Dairy Foods' Matrix is Unique: Whole is Greater than the Sum of its Parts

- Protein
- Fat
- Carbohydrates
- Bioactives
- Vitamins
- Minerals

- Macronutrients
- Minerals
- Vitamins
- Bioactives

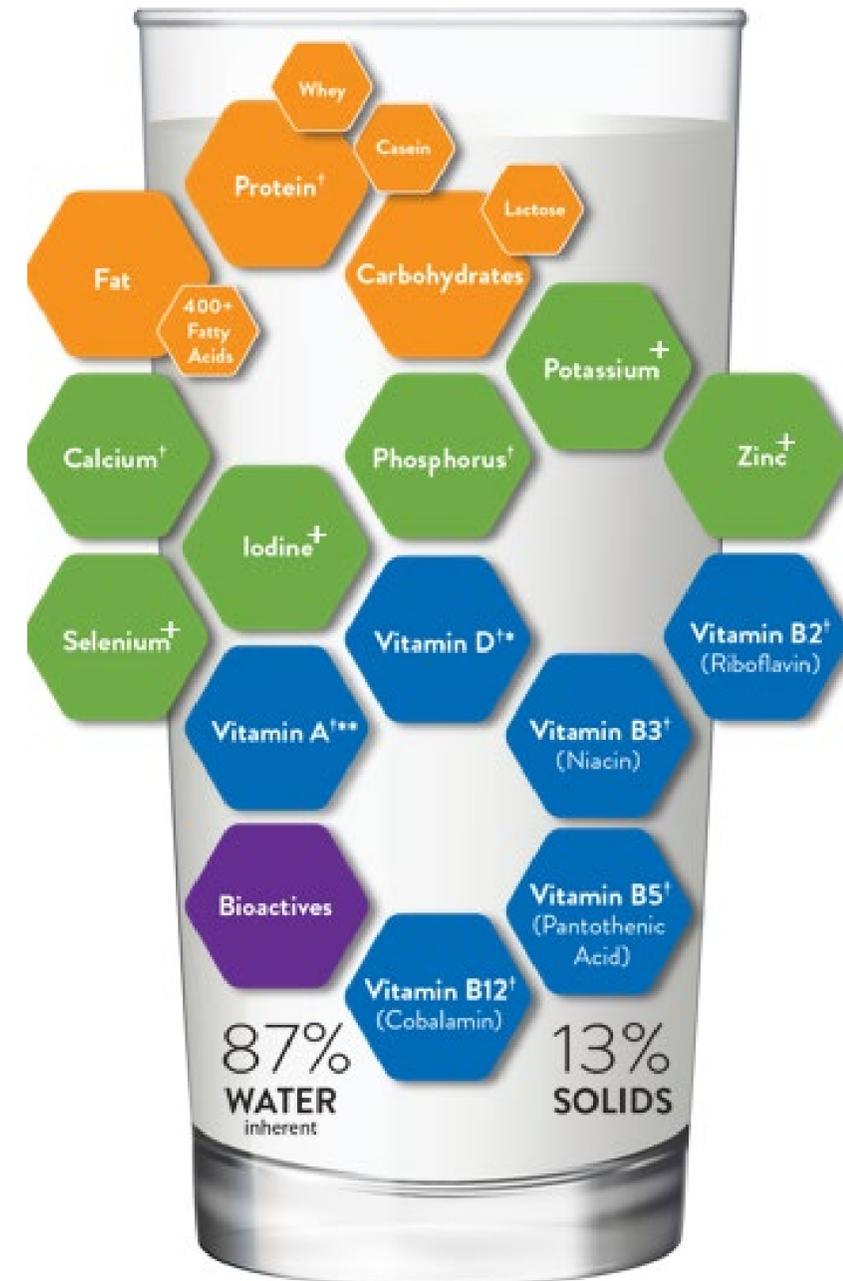
† Milk is a good or excellent source of 13 essential nutrients.

* Vitamin D is added to milk

** Vitamin A is naturally occurring in whole milk and added to reduced-fat, low-fat and fat-free milks

Source: National Dairy Council

Liquid Matrix

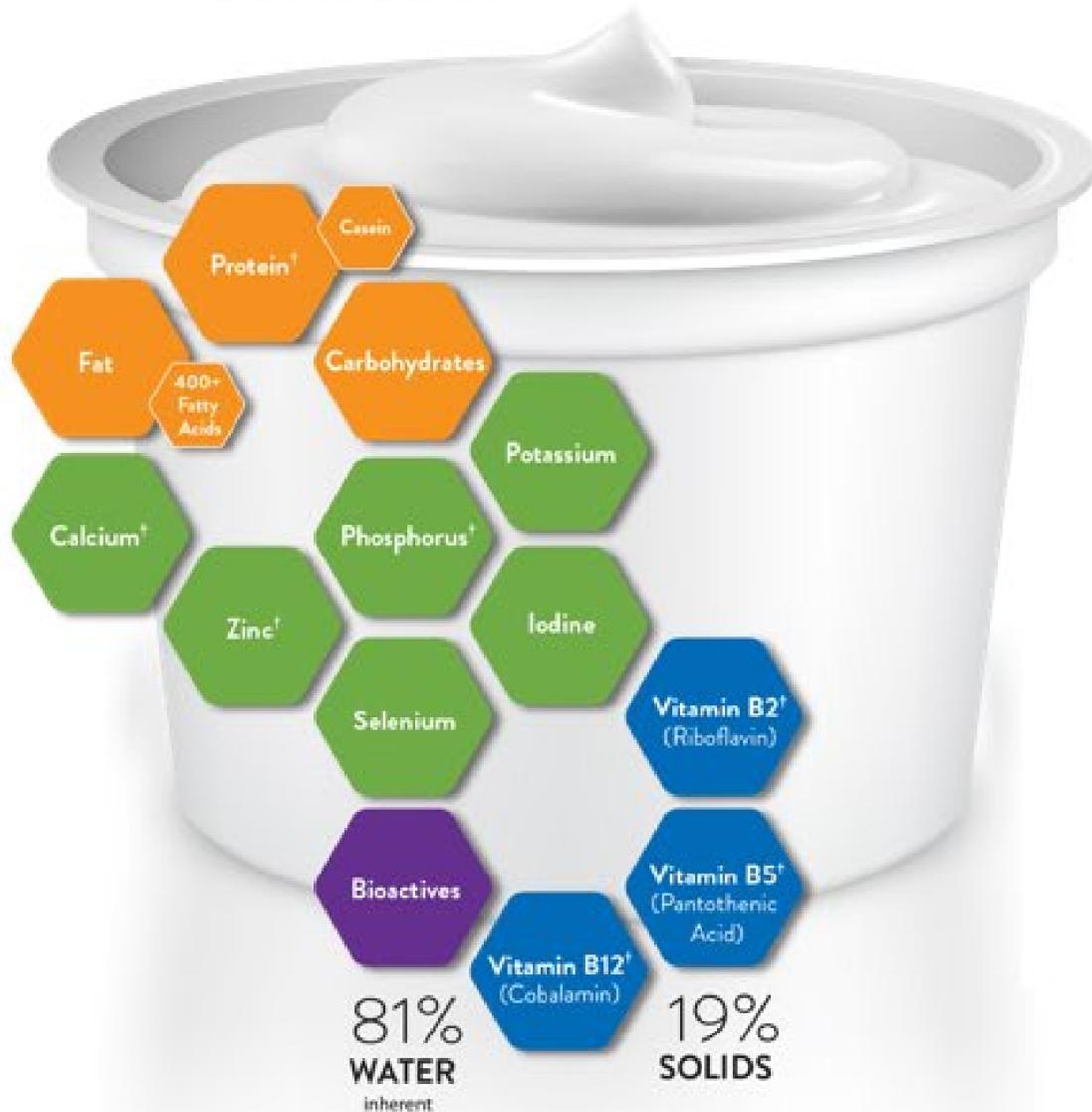


FDA's Daily Value (DV) for potassium of 4700 mg is based on a 2005 DRI recommendation. In 2019, NASEM updated the DRI to 3400 mg. Based on the 2019 DRI, a serving of milk provides 10% of the DRI. FDA rule-making is needed to update this value for the purpose of food labeling.

Nutrition Data sourced and calculated from FoodData Central: 1077

Milk Matrix Transformation: Fermentation → Yogurt and Cheese

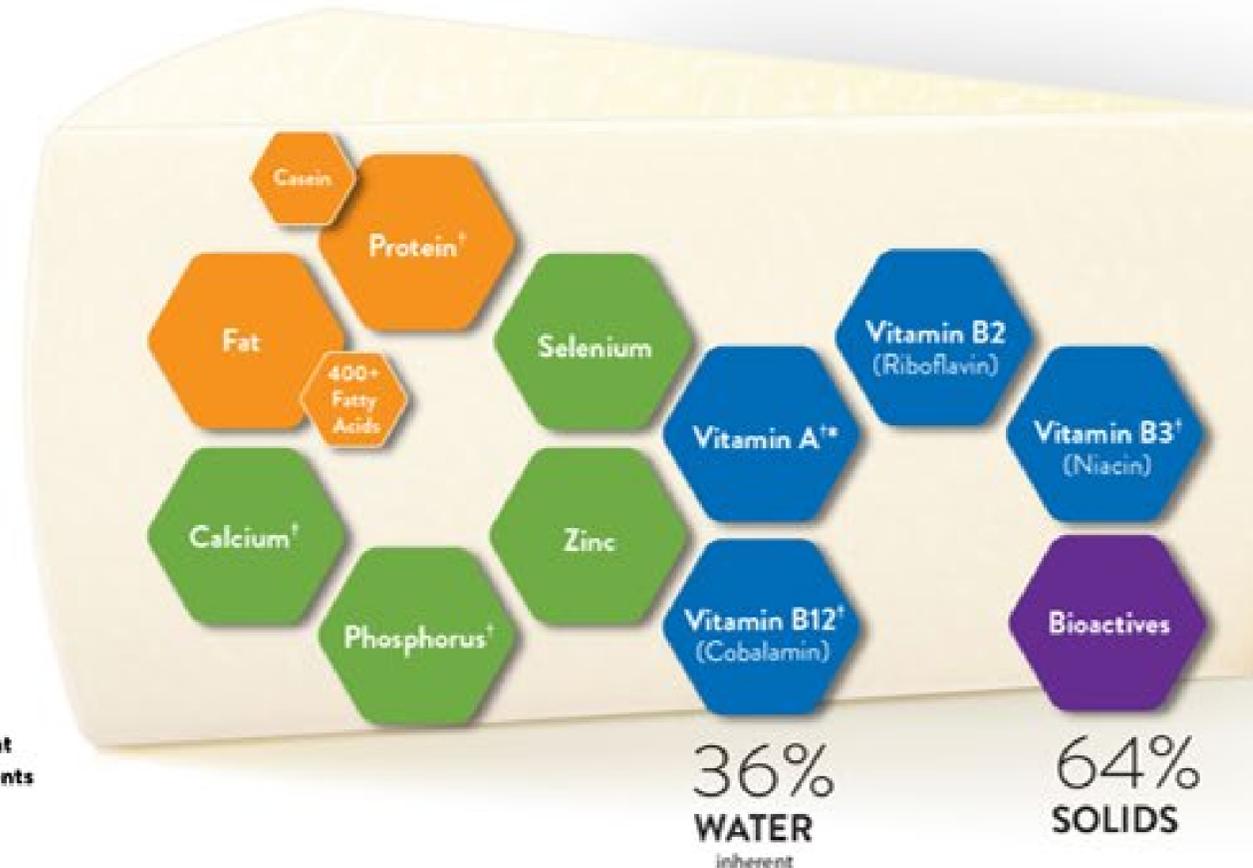
Gel Matrix



- Macronutrients
- Minerals
- Vitamins
- Bioactives

[†] Yogurt is a good or excellent source of 7 essential nutrients

Solid Matrix



- Macronutrients
- Minerals
- Vitamins
- Bioactives

[†] Cheese is a good or excellent source of 6 essential nutrients

^{**} Vitamin A is naturally occurring in whole milk and added to reduced-fat, low-fat and fat-free milks.

Milk Bioactives

“Bioactives are constituents in foods, other than those to meet basic nutritional needs, that are responsible for a change in human health.”

-Office of Disease Prevention & Health Promotion, National Institutes of Health

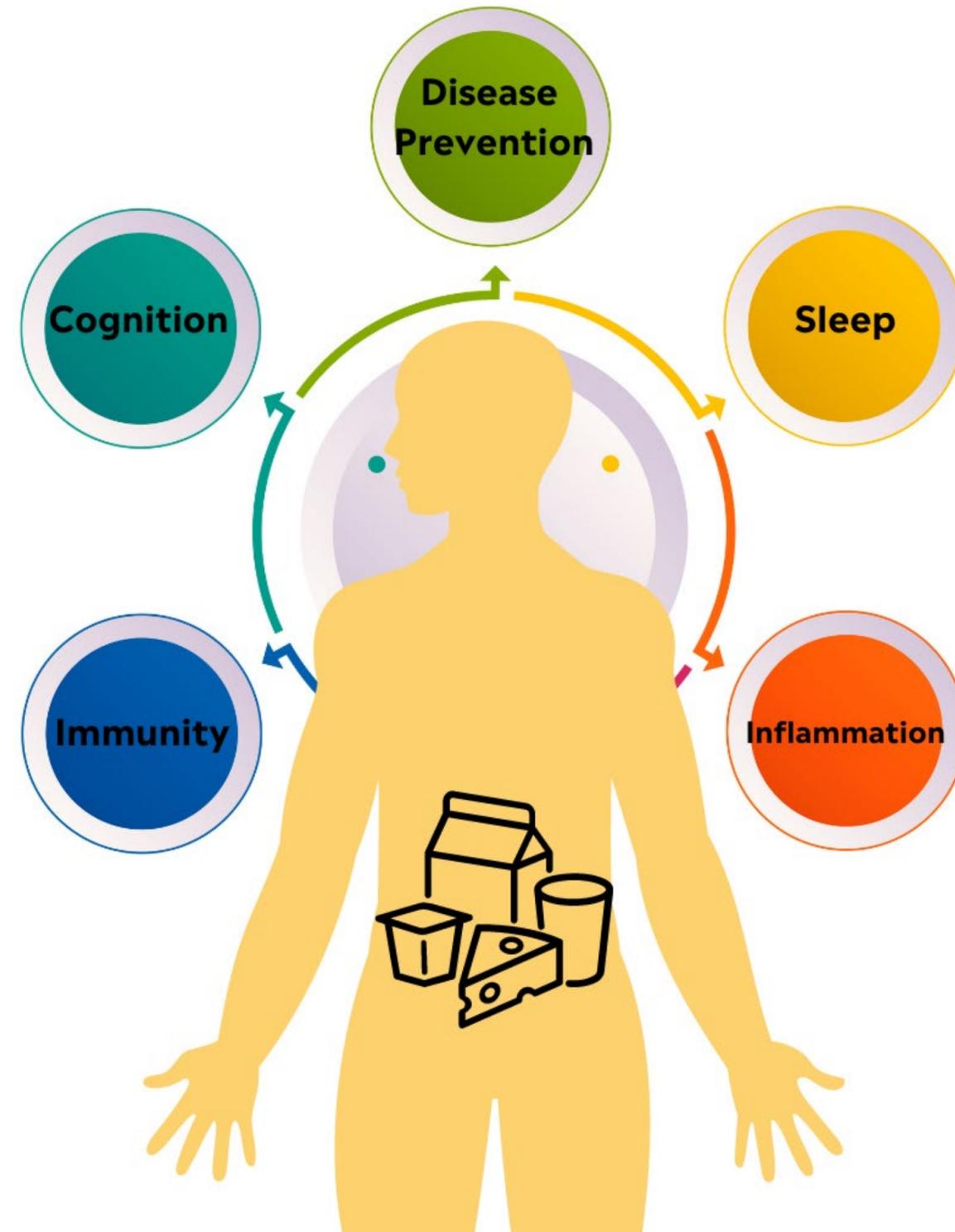
Bioactive Peptides

Bioactive Fatty Acids

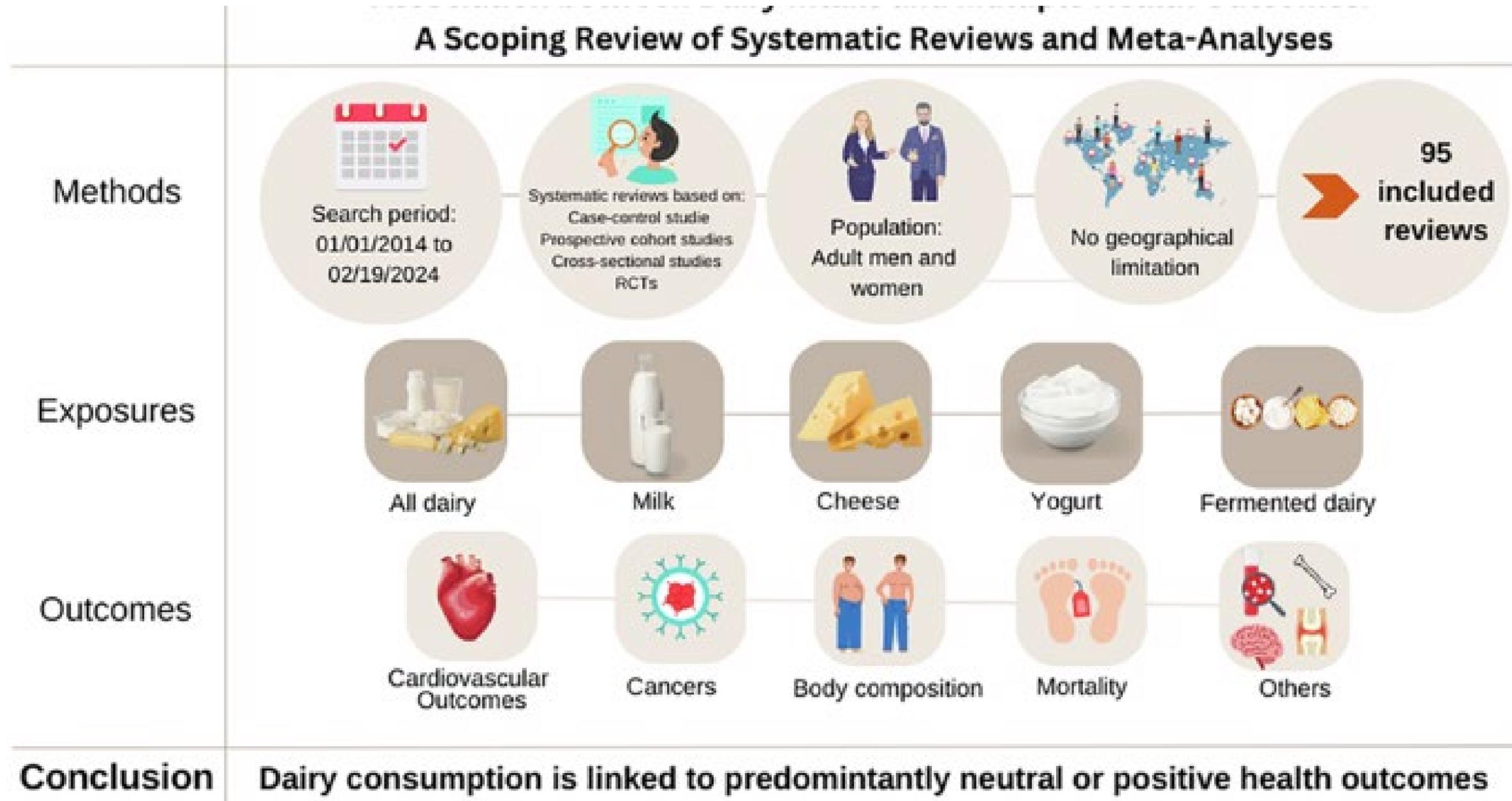
Bioactive Carbohydrates

Functional Health Benefits of Dairy

- Inflammation
- Cognition
- Sleep
- Immunity
- Disease prevention



Association between dairy intake and multiple health outcomes



Qualified Health Claim for Yogurt + Reduced Risk of Type 2 Diabetes

“Eating yogurt regularly, at least 2 cups (3 servings) per week, may reduce the risk of type 2 diabetes according to limited scientific evidence.”



Dairy Supports Health at Every Life Stage



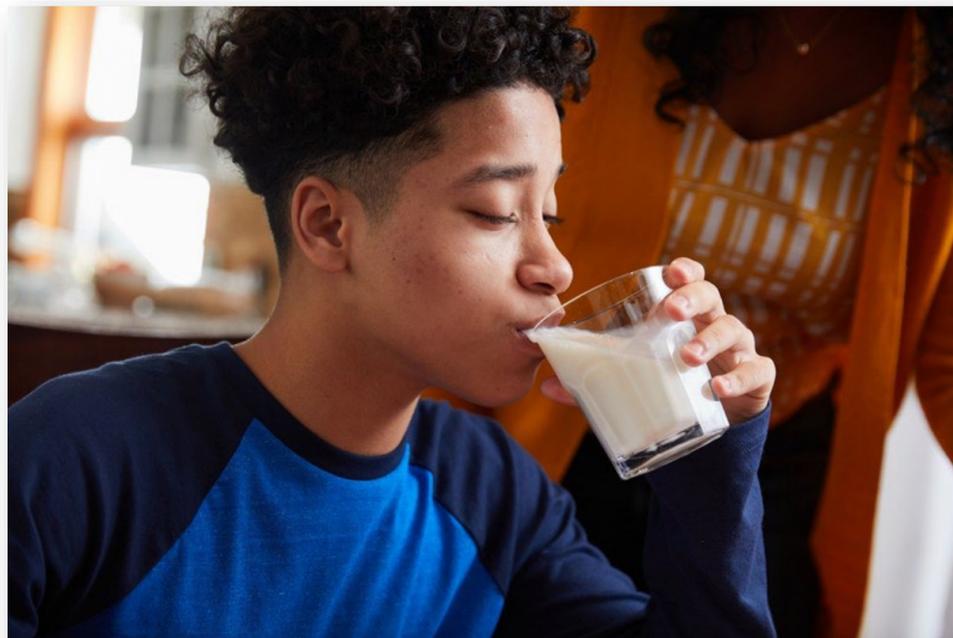
Dairy Foods Fit Within Diverse and Cultural Eating Patterns



- Yogurt
- Cultured Buttermilk
- Sour Cream
- Kefir
- Koumiss
- Labneh (pictured)

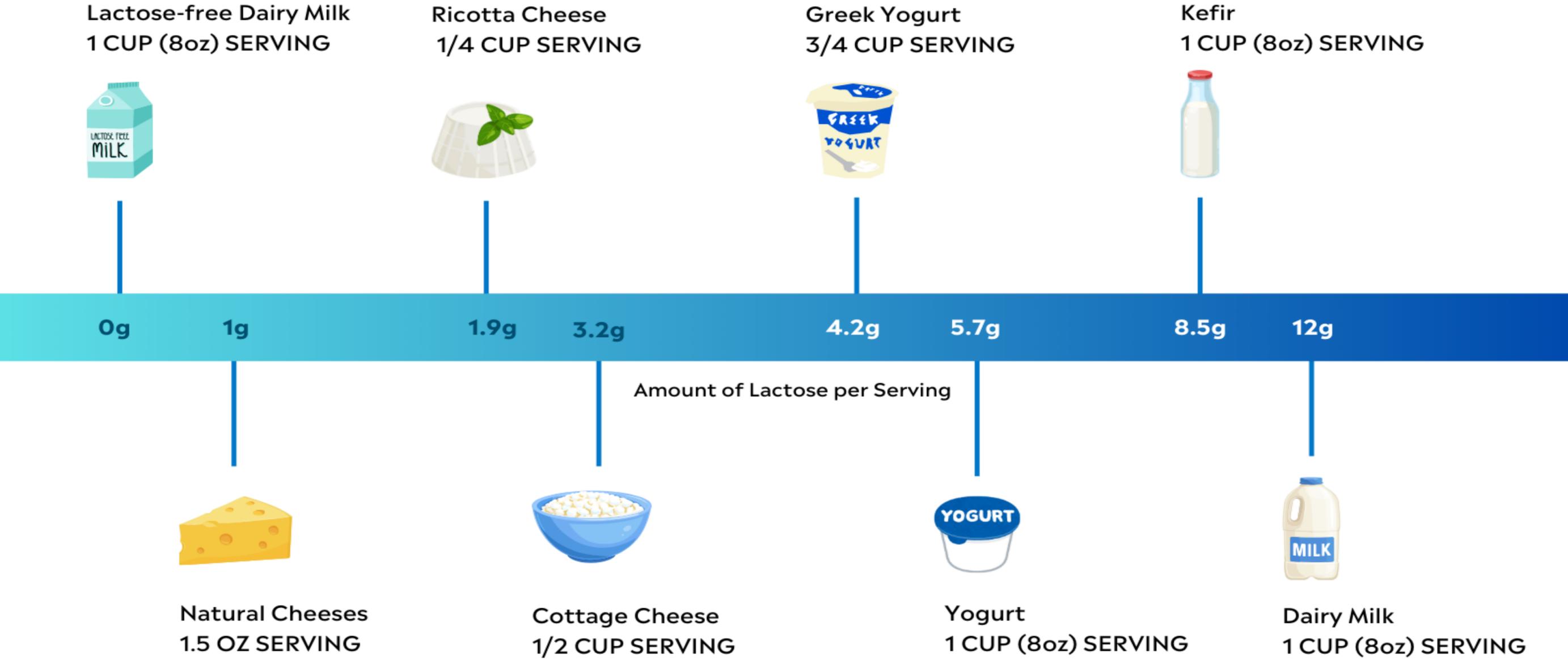
Lactose Intolerant?

- Lactose-free milk is an excellent option for children and teens who are lactose intolerant.
- Yogurt with live cultures or cheese are also nutritious choices and contain lower lactose levels than milk.



Lactose in Dairy

Lactose in Dairy



Source: National Dairy Council

Recommended Eating Patterns Include Dairy

Mediterranean Diet



2 ½ servings/day

DASH Diet



2-3 servings/day

Dairy adds to the nutrients, flavor and texture in plant-forward plates.

Tips for Adding Daily Dairy

- Add milk to oatmeal or cheese to grits in the morning
- Add yogurt to fruit and/or vegetable-packed smoothies
- Add cheese to fresh chopped salads or steamed vegetables
- Top cottage cheese with fresh or canned fruit
- Make savory dips with thick protein-rich yogurt
- Sip on kefir for a probiotic boost



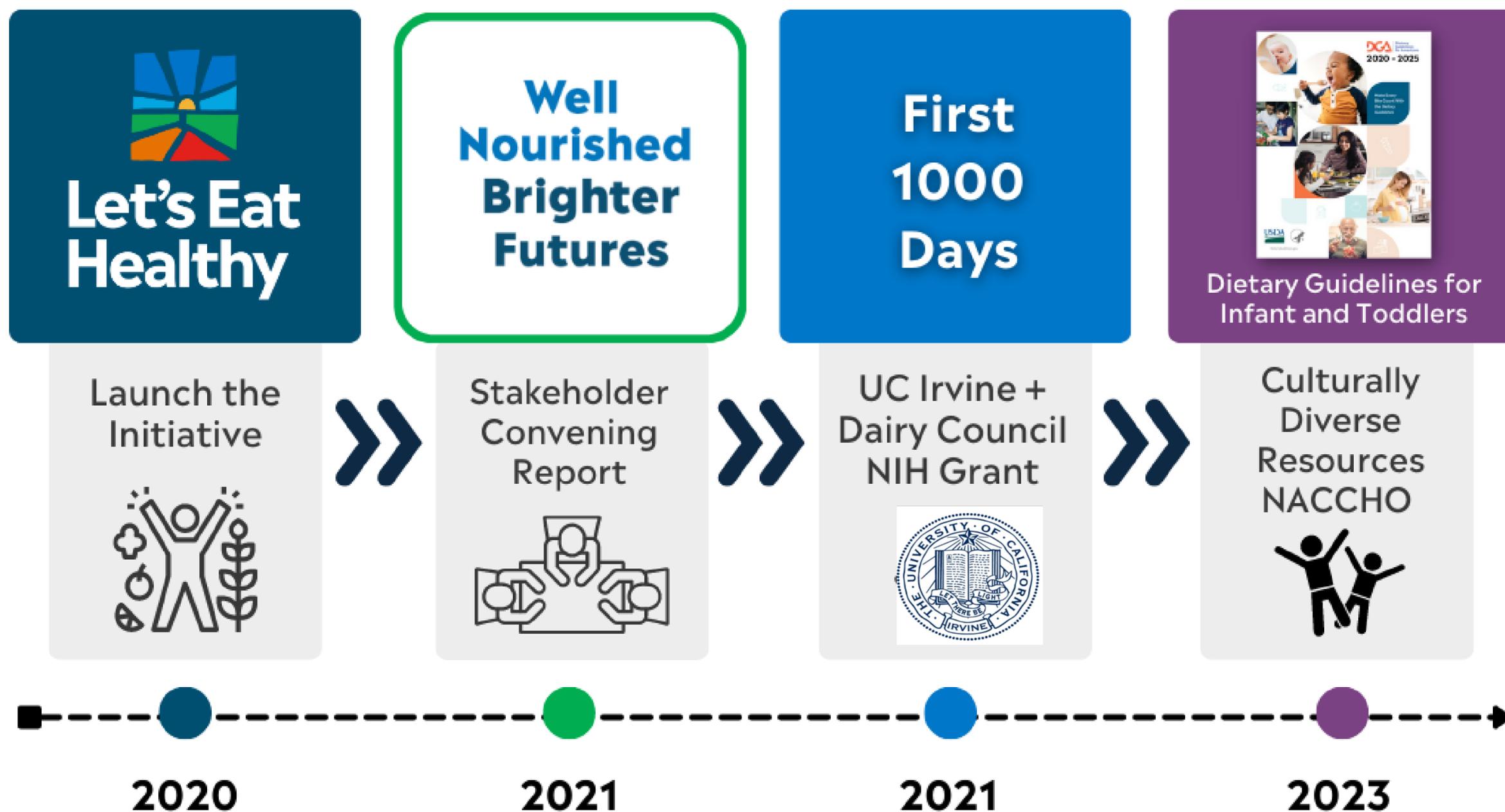


In Summary...

- Nutrition science continues to evolve
- Foods are more than the sum of their nutrients
- The dairy food matrix and its unique combination of nutrients and bioactives may help explain:
 - why dairy foods are associated with functional health benefits and multiple positive health outcomes
- Dairy foods fit into healthy, culturally relevant eating patterns

Ways to Collaborate: Public Health – Community Partnership

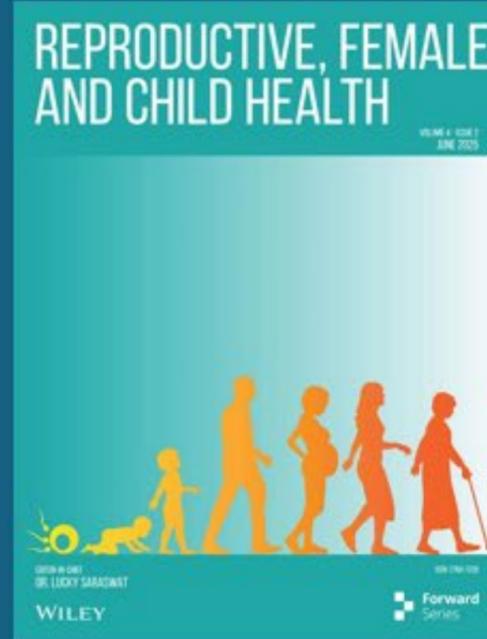
Continuum of Collaboration



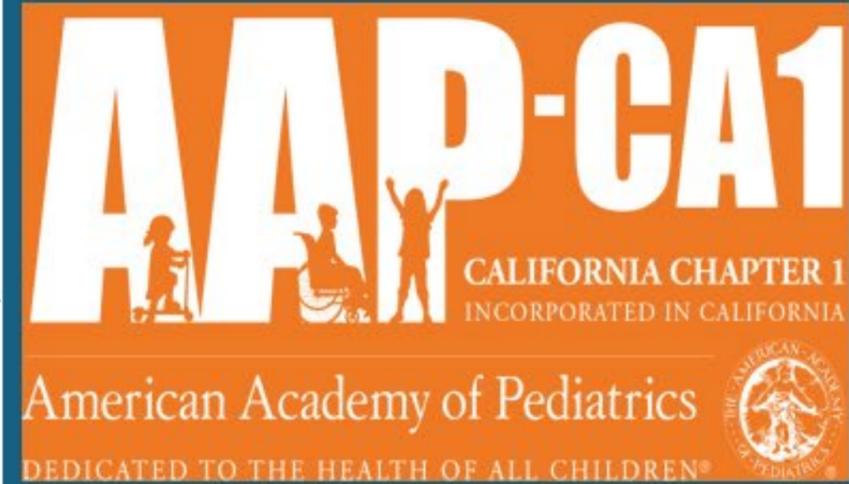
Professional Development Opportunities and Publications



Conference Presentations



Journal Publications



Professional Associations

Professional Development Opportunities and Publications



California Local School Wellness Policy Collaborative

Uniting state leaders committed to improving student wellness and academic success.



The California Local School Wellness Policy Collaborative empowers school communities and partners to strengthen local school wellness policies and systems in California. Through free resources, training and statewide collaboration, we help school wellness leaders put policies into action—supporting whole child health and academic achievement.

- **Access** ready-to-use tools and templates
- **Participate** in training on policy implementation, evaluation and compliance
- **Learn** best practices from districts across California
- **Connect** with statewide

PSE Nutrition Support



Action Items for Service Providers & Advocates:

- Engage in multi-sector collaboration with diverse partners
- Advocate for maternal and child nutrition policies and programs
- Participate in professional training on early life nutrition
- Provide families nutrition resource navigation
- Provide families simple, effective nutrition education

Nutrition Equity in the First 1,000 Days

Lindsay et al 2024

Communications and Local Health Departments Support

"What you offer your child to drink in the first 5 years of life can shape taste preferences and health outcomes for a lifetime. Thankfully, the best-choice beverages are simple: water and milk."

Clarisse Casilang, MD, FAAP (Cohort 5, Orange County)



Make Every Sip Count

Drinks can impact health.

Sugary drinks may cause weight gain and cavities, especially for children. Over time, drinking sugary drinks may lead to obesity, type 2 diabetes and heart disease.

Beverage choices matter.

Drink water to stay hydrated. Drink nutrient-packed beverages like low-fat (1%) or fat-free milk to boost your nutrition.

Choose water most often.

Drinking tap water with ice saves money. For flavor, add sliced fruit or cucumber.

Milk nourishes your body.

Aim to consume 2-3 servings of dairy such as low-fat (1%) or fat-free milk, yogurt, cheese or fortified soy beverage, to help build strong teeth and bones and refuel muscles.

Drink juice in small amounts.

Choose whole fruit most often. If you drink juice, make sure it is 100% fruit or vegetable juice and limit to 1/2 cup for children and one cup for adults per day.

Search [ChooseMyPlate.gov](https://www.choosemyplate.gov) for more "better beverage" ideas.



What's in Your Drink? Read the Label

Find the serving size.

One container isn't always one serving. This label shows 2 servings. How many calories would that be? (210 calories)

Limit added sugars.

- No more than 50 grams for adults each day (12 teaspoons).
- No more than 25 grams for children each day (6 teaspoons).

1% Low-fat milk	
Nutrition Facts	
2 servings per container	
Serving size 1 cup (245g)	
Amount Per Serving	
Calories	105
% Daily Value*	
Total Fat	2.5g 4%
Saturated Fat	1.5g 3%
Trans Fat	0g 0%
Cholesterol	15mg 3%
Sodium	130mg 5%
Total Carb	13g 4%
Dietary Fiber	0g 0%
Total Sugars	12g
Includes 0g of Added Sugars 0%	
Protein	8g
Vitamin D 2.5mcg 25%	
Calcium 300mg 30%	
Iron 0.12mg 0%	
Potassium 307mg 10%	

Choose Most Often

Drinks with no added sugars

- Water
- Low-fat (1%), fat-free or lactose free milk
- Fortified plain soy beverages
- Unsweetened tea or coffee

Drink Less Often

Drinks with added sugars

- Soda
- Sports drinks
- Fruit drinks
- Energy drinks
- Sweetened and/or blended coffees

All of these drinks have more than the limit of 25 grams of added sugars for children. Some may have up to 50 grams of added sugar.



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Ensuring Healthier Children and Communities through Collaboration



**IF YOU WANT TO GO FAST,
GO ALONE.
IF YOU WANT TO GO FAR,
GO TOGETHER.**
AFRICAN PROVERB



University of California, Irvine
School of Medicine
Early Life Nutrition Research Team

Access Nutrition Resources and Publications



Available at no charge @ DairyCouncilofCa.org

Invitation

Nuestros Sabores/Our Flavors: A Culinary Medicine Symposium

Nuestros Sabores/Our Flavors: A Culinary Medicine Symposium
Tuesday, October 28 (start at 11:30am) through Wednesday, October 29 (finish at 4:15pm)
University of California at Davis

Join National Dairy Council and Dairy Council of California to celebrate culinary heritage with Nuestros Sabores!

This invite-only event will bring together thought leaders in healthcare, nutrition and culinary medicine from across the nation.

Together, we will:

- Explore with behind-the-scenes milk processing and innovation tours
 - Experience flavors with cheese and honey tasting
- Learn about the impact of nutrition in the First 1,000 Days of Life
 - Optimize gut health with fermented foods
 - Discuss culinary medicine case studies and application
 - Share emerging health and nutrition trends

Join us for this memorable experience that will inform you about dairy science, connect you with passionate colleagues and equip you with knowledge and resources to share the importance of food choices to enhance health outcomes.

DAIRY COUNCIL
OF CALIFORNIA

RSVP!

Seats are limited for this invite-only engagement.

NDC
NATIONAL DAIRY COUNCIL

Questions?

Thank you!

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[Survey Link](#)