# The Food Matrix Matters for Health Outcomes

By Bessie O'Connor, RDN (Dairy Council of California)

For decades, nutrition guidance has focused on individual nutrients, often cautioning against excess fat, sodium and sugar while encouraging nutrients of concern such as potassium, fiber, calcium and vitamin D. Although this nutrient-based approach remains important, emerging research suggests that health outcomes are influenced not only by the nutrients a food contains, but also by how those nutrients are packaged within the food itself. This has led to growing interest in the concept of a food matrix and its role in health outcomes.

The food matrix refers to the physical and chemical structure of a food, including how components such as fats, protein, carbohydrates and micronutrients are organized and interact during digestion and metabolism.[1] It encompasses factors such as texture, particle size, degree of processing and naturally occurring bioactive compounds, including polyphenols in fruits and vegetables and milk fat globule membranes in dairy foods. Together, these characteristics influence how nutrients are absorbed and utilized by the body, helping explain why foods with similar nutrient profiles can have different health effects.







The dairy food matrix provides a compelling example. Despite containing saturated fat and sodium, cheese has been associated with lower risks of mortality and

cardiovascular disease.[2] Researchers believe these benefits are influenced by the interaction of nutrients such as protein, calcium, phosphorus and magnesium within the cheese structure, along with unique components including milk fat globule membranes. Similarly, yogurt consumption is associated with a lower risk of type 2 diabetes, improved weight maintenance and better cardiovascular health.[3] Fermented dairy foods, including yogurt, kefir and some cheeses, deliver probiotics and nutrients within a food structure that may slow digestion supporting gut health and disease prevention.

For pediatricians, understanding the food matrix can support more holistic, food-based nutrition guidance. Rather than focusing solely on individual nutrients, this approach emphasizes whole foods and dietary patterns that patients can realistically adopt and allows flexibility to include dairy foods at varying fat levels that meet taste and cultural preferences.[4] Importantly, the foods within an eating pattern work together in interactive and cumulative ways that may better predict health outcomes than individual nutrients, foods or food groups alone. Two and a half to three servings of milk, cheese and yogurt a day alongside fruits, vegetables, whole grains, eggs, nuts, seeds, fish and lean meats, create balanced eating patterns that align with evidence-based nutrition guidance and ensure proper child growth and development.[5]

Access Dairy Council of California health professional resources to support nutrition conversations in practice or contact Bessie O'Connor, RDN at boconnor@dairycouncilofca.org to explore opportunities for collaboration and professional education.

**References:**

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