



The food matrix: is it time to rethink how we evaluate the health effects of food?

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In the last several decades, the predominant focus of nutrition research has been a reductionist view focusing on the potential influence of single nutrients, or dietary constituents, on the diet-disease relationship. This approach fails to consider the possibility that the interaction between nutrients within the food matrix, and also between foods in the diet, has a unique influence on health. Of course, the study of single or a few nutrients still has demonstrable value as knowledge about the individual parts is essential to inform an understanding of the whole. However, nutrition research in the last decade has recognised the need to begin to unravel the relationship between foods, food groups and wider dietary patterns and health. This complementary approach will help to evolve a more comprehensive and new understanding of the relationship between diet and health.

In relation to milk and dairy foods, the concept of the dairy matrix encompasses this holistic approach and proposes that the unique combination of nutrients and bioactive factors within the physical dairy matrix work together to promote health, with the combined effects of the matrix extending beyond the sum of the individual parts. There is evidence to suggest that the dairy matrix may have unique health promoting properties, for example in relation to bone health, blood pressure and weight management.

The food matrix concept and its implication for dietary guidelines will be discussed in this presentation.



Abstract



Dairy Matrix and health from a holistic point of view

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The nutritional evaluation of the relation between diet and health has traditionally focused on individual food constituents and nutrients. But when we eat, we do not consume individual nutrients, we eat the whole food, alone or together with other foods in a meal.

Recent data show that the effects of nutrients on health can be different within the special structures formed by the food matrix. Different foods with the same amount of a component will not necessarily be equivalent in terms of nutrition or health and the actual effects of a food are not always those expected on the basis of its nutrition content.

Examples supporting this matrix concept are emerging, especially concerning dairy products which is the most studied food group.

Calcium bioavailability is considerably higher when provided by dairy products in comparison to most vegetables, due to matrix. Dairy matrix contains phosphopeptides and lactose which potentiate calcium uptake whereas plants contains absorption inhibitors such as oxalates and phytates.

Recent research has shown that the various saturated fatty acids exert very different biological effects, which are substantially modified by the food matrix. One example is cheese, which might be expected to increase cardiovascular disease risk due to high content of saturated fatty acids, but studies indicate the opposite. The explanation seems to be in the matrix, where the high calcium content plays an important role by interfering with fat digestion and absorption in the intestine.

Another example is from two large epidemiological studies from Harvard in which each serving of milk was associated with a significant 8% lower risk of fracture. The benefit was not explained by the calcium, vitamin D or protein content of milk, suggesting that interactions within the dairy matrix could be responsible.