

Invited Speaker Abstract

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Title

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

1. Abstract

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.

2. Key references

1: Astrup A, Bertram HC, Bonjour JP, de Groot LC, de Oliveira Otto MC, Feeney EL, Garg ML, Givens I, Kok FJ, Krauss RM, Lamarche B, Lecerf JM, Legrand P, McKinley M, Micha R, Michalski MC, Mozaffarian D, Soedamah-Muthu SS. WHO draft guidelines on dietary saturated and trans fatty acids: time for a new approach? *BMJ*. 2019 Jul 3;366:l4137. doi: 10.1136/bmj.l4137.

2: Feeney EL, Barron R, Dible V, Hamilton Z, Power Y, Tanner L, Flynn C, Bouchier P, Beresford T, Noronha N, Gibney ER. Dairy matrix effects: response to consumption of dairy fat differs when eaten within the cheese matrix—a randomized controlled trial. *Am J Clin Nutr*. 2018 Oct 1;108(4):667-674. doi: 10.1093/ajcn/nqy146. Erratum in: *Am J Clin Nutr*. 2018 Dec 1;108(6):1356.

3: Thorning TK, Bertram HC, Bonjour JP, de Groot L, Dupont D, Feeney E, Ipsen R, Lecerf JM, Mackie A, McKinley MC, Michalski MC, Rémond D, Riséus U, Soedamah-Muthu SS, Tholstrup T, Weaver C, Astrup A, Givens I. Whole dairy matrix or single nutrients in assessment of health effects: current evidence and knowledge gaps. *Am J Clin Nutr*. 2017 May;105(5):1033-1045. doi: 10.3945/ajcn.116.151548. Epub 2017 Apr 12.

3. key messages

The food matrix impacts nutrient absorption and digestion and, ultimately, the health effects of food.

The health effects of a food may differ from what is predicted based on our knowledge of its nutrient content owing to the food matrix effect.

Understanding the health effects of whole foods is important to inform dietary guidelines which have more traditionally been based on what we know about individual nutrients and health.