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# Nutrikinetics: Journey of nutrients through the body

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There is one area where food industry, regulatory bodies and nutrition scientists have a common interest. It is the question of cause-effect relationship in nutrition research: is a specific health outcome caused or affected by a specific nutrient, a whole food or a food constituent? The classic approach for demonstrating cause-effect relationships are intervention studies where disease related end outcomes are determined and biochemical responses of the body remains largely a black box. Biomarkers were used to gain more insight into potential biological effects of the intervention. However in the last years we have learned that many biomarkers did not correlate with hard end-outcome measures, for example plasma antioxidant capacity and coronary heart disease. Since end-outcome measures in nutrition research are a function of long term dietary intake it is not easy to conduct appropriate human trials confirming cause-effect relationships. A new approach, called "nutrikinetics", may assist nutrition research to design human intervention trials with more precision. If a food constituent is causing a health beneficial biological effect in a specific tissue or organ, the active molecule must have physically reached this tissue (or its active metabolite). Nutrikinetics investigates questions such as: Does proposed bioactive arrive at proposed site of action? Is the active compound a metabolite? Does the presence of proposed bioactive coincide with a measured biochemical effect? It also needs to be considered at what point in time the bioactive is present and at what point in time the biochemical effect occurs. In the development of functional food, food supplements, medicinal food, optimised food for the elderly population and also for cost-optimized food in developing nations, good absorption of functional ingredients is of great interest. If the kinetics and body distribution of nutrients (or bioactives) are known, better choices can be made in nutrition intervention trials with regards to dose and duration of the intervention and time point when to collect which biological sample.

## Biography

Brigitte A Graf, after gaining a first class degree in Human Nutrition in Germany (1999), completed her PhD at the University of Glasgow (2003), investigating absorption, metabolism and body distribution of flavonoids using radiolabelled quercetin (Prof. Mike Lean, Prof. Alan Crozier). After her postdoc at the Antioxidants research lab (Prof. Jeffrey B. Blumberg) at the USDA Human Nutrition Research Center on Ageing at Tufts in Boston (US), she joined Unilever R&D (Vlaardingen, The Netherlands) as a Bioavailablity Research Scientist, focusing on absolute bioavailability, body distribution and metabolic transformation of potentially bioactive food ingredients (2006-2010). Before she accepted an Associate Professorship at the University of Nottingham Malaysia Campus (2012), she served as advisor and appointed German delegate to support scientific cooperation between the European Food Safety Authority (EFSA) and national scientific institutions within Germany. Her current research interests focus on the question whether bioactive food ingredients (or their metabolites) are absorbed and subsequently transported to proposed target organs where a biochemical effect might occur. A better understanding of the journey of nutrients through the body (Nutrikinetics) will support nutrition studies aiming to show cause effect of bioactive food ingredients.

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