

The Nutrition and Mental Performance Task Force

Recommendations for long-term nutritional intervention studies on cognitive function

2011 Member Companies: Abbott Nutrition, Barilla G&R Fratelli, Chiquita Brands International, Coca-Cola Europe, Danone, DSM, Kellogg Europe, Kraft Foods Europe, Martek Biosciences Corporation, Naturex, Nestlé, Pepsico International, Pfizer Consumer Healthcare, Royal FrieslandCampina, Schwabegroup, Soremartec Italia – Ferrero Group, Südzucker/BENEOL Group, Ülker Bisküvi, Unilever



Diet, Health and Disease

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Background

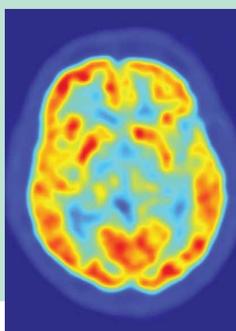
On November 12-13, 2009, the Task Force “Nutrition and Mental Performance” of the International Life Science Institute (ILSI) Europe, organised the workshop “Methodologies to assess long-term effects of nutrition on brain function”¹. The objective of this workshop was to review the methodological limitations and emerging opportunities in the assessment of long-term nutritional effects on cognitive processes including stimulation of neurodevelopment and prevention of neurodegeneration. While current psychopharmacological and neuro-psychological methods offer a straightforward assessment of acute nutrient effects on the brain, the assessment of long-term nutrient effects still represents a challenge.



Source: Jeroen Schmitt © Nestlé

Discussion

Although beneficial effects of regular long-term nutrient consumption have been reported, the poor feasibility of conducting successful randomised clinical trials (RCTs) over decades is a major hurdle to demonstrating clear long-term nutritional influences on cognitive function. This is why early diagnostic or early efficacy markers that can accurately and easily detect cognitive changes after intervention and reliably predict long-term outcomes are of paramount importance. Advanced techniques such as brain imaging,



genetics and epigenetics, and sensitive domain-specific cognitive tests for inclusion in RCTs should be sufficient to capture enough data without introducing overburdening participants. Along with the requirement for high-quality RCTs in substantiation of health-effects, the current knowledge on mechanistic animal or epidemiological studies on long-term nutritional effects was considered an important contributor to establishing health-relationships. Also, the population, nutritional status and specific mechanism of action of the nutrients under assessment were proposed as important factors in determining successful intervention.

Outcome

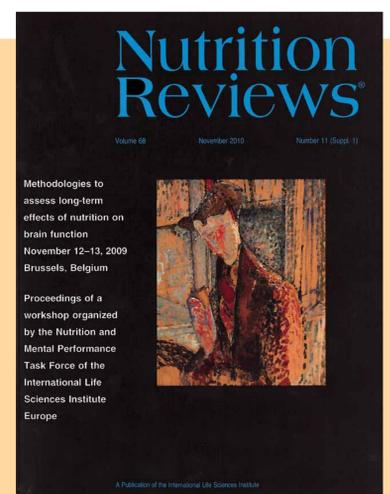
The review of knowledge related to the methodologies to assess long-term effects of nutrition on brain function¹ served as a basis to derive key learnings and to propose recommendations for future long-term nutritional intervention studies.

Briefly these include:

- use biomarkers to supplement functional measures,
- include modifiable risk factors as study measures,
- for preventive studies, target younger people with relatively uncompromised brain function,
- RCTs are the gold standard, but epidemiological studies could be conducted to provide observational information,
- cognitive tests need careful selection based on their validity, sensitivity, reliability, and utility to cover the most relevant domains of cognition,
- use of computerized tests may be desirable.

The proposed recommendations aim at primarily supporting scientists from neurosciences, psychology and nutrition, but also those who benefit from high quality scientific data in this field: regulatory bodies, governmental policy makers, industry and ultimately the general public/consumers.

It was concluded that proposed long-term nutritional intervention studies on cognitive function need strong consideration given to better study design, more efficient statistical modelling, and the use of well-validated novel and established biomarkers.



1. How to Assess Long-term Effects of Nutrition on Brain Function? Nutrition Reviews 2010;68(Suppl.1):S1-S58.