Pleiotropic neuroprotection as basis for multinutrient intervention targeting AD - LipiDiDiet consortium results

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Epidemiological data strongly suggest a significant impact of diet on the relative risk of developing AD dementia. However, although single nutrient based interventions showed some very promising results in preclinical studies, clinical trial results have been disappointing. Diets contain a variety of nutrients and epidemiological studies indicate that dietary patterns (e.g. Mediterranean Diet) are more effective in risk reduction than single nutrients.

The previous LipiDiet and the current LipiDiDiet consortia investigated the role of dietary lipids and other dietary factors for AD prevention. Our research showed that indeed the neuroprotective potential of individual nutrients can be drastically increased by combination with other nutrients with neuroprotective properties. The earlier LipiDiet work identified DHA (omega-3 C22:6 fatty acid) as a key component for multinutrient neuroprotective diets, although DHA used as single nutrient had not been clinically successful in AD treatment. Importantly, the results by the LipiDiDiet consortium clearly show that the multi-nutrient intervention targeting neuronal membranes has an effect on various biological pathways that contribute to the overall neuroprotective or anti-neurodegenerative effect. These actions include the potential to increase synapse numbers, cholinergic neurotransmission and other synaptic functions, protection of neurons by reducing oxidative stress and damage, lowering of inflammation, protection of endothelial cells and the BBB, restoration of the function of ApoE e4 and, last but not least, amyloid reduction.

This approach appears to be especially suitable for early intervention and prevention. Based on extensive preclinical investigation the most promising multinutrient combination (Fortasyn Connect) is currently studied in a multinational trial by the LipiDiDiet consortium to evaluate its effectiveness in prevention of clinical AD, first outcome results are expected within a year from now. This nutrition combination was previously tested in clinical AD dementia trials (Souvenaid, Souvenir I + II trials).