# Nutrition and Cognitive Decline in the Elderly

De Vreese, Luc P.[1], Bellei, G.C.[2] & Belloi, L.[3]

## Abstract

*Alzheimer's disease (AD) affects 40% of the population now over the age of 85 years. As population ages all over the world, AD will become a major health and economic burden to society. Interventions to prevent or delay its clinical manifestation are urgently needed.*

*AD is a genetically complex disorder associated with multiple genetic defects, either mutational or of susceptibility. Current AD genetics does not explain in full the etiopathogenesis, suggesting that environmental factors may also contribute to AD pathology. For instance, the death rates in England and Wales mainly due to AD comparing the years 1979–81 and 1995–97 more than tripled in men and rose nearly to 90% among women, strongly suggesting an important role of environmental rather than genetic factors. Changes in food intake habits and reduced quality of food due to air, sea, and soil pollution may all play a potential role in fueling the epidemic of AD.*

*There is growing evidence that abnormalities of lipid metabolism play a pivotal role in the AD process. Long-chain polyunsaturated fats (LC-PUFA), particularly the omega-3 fatty acids, also stimulate plasmatic and cerebral antioxidants enzymes and inhibit acute phase cytokines and interleukins. For instance, a diet rich in saturated and trans fat and in linoleic acid, a precursor of omega-6 fatty acids, almost halves the conversion rate from alfa-linolenic acid, present in some vegetables oils and some nuts and seeds, to docosahexaenoic and eicosapentaenoic acids (DHA-EPA), requiring an almost fourfold increase in fish consumption. Indeed, numerous prospective studies demonstrate that high intake of fish slows age-related cognitive decline and reduces the risk of AD.*

*Whether oxygen free radical and oxidative stress related to neuronal damage in AD represents a primary or a secondary event is unknown. Yet, data from recent prospective studies stress the neuroprotective effects against AD of high antioxidant vitamin intake, especially from vegetables (including carotenoids, ascorbic acid, and polyphenols).*

*Therefore, nutritional interventions show great promise in slowing and possibly averting the development of AD, including dietary changes (n6:n3 ratio), increased fish consumption, and daily intake of fruit/vegetables, preferably from biological cultivation.*

[1] Special Care Unit for Dementia, Teaching Nursing Home Facility RSA 9 Gennaio, Modena, Italy

[2] Council of Agriculture, Province of Modena, Italy

[3] Chair of Geriatrics, University of Modena and Reggio Emilia, Italy