

Vitamin C and beta-carotene might protect against dementia

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Forgetfulness, lack of orientation, cognitive decline... about 700, 000 Germans suffer from Alzheimer's disease (AD). Now researchers from the University of Ulm, among them the Epidemiologist Professor Gabriele Nagel and the Neurologist Professor Christine von Arnim, have discovered that the serum-concentration of the antioxidants vitamin C and beta-carotene are significantly lower in patients with mild dementia than in control persons. It might thus be possible to influence the pathogenesis of AD by a person's diet or dietary antioxidants. 74 AD-patients and 158 healthy controls were examined for the study that has been published in the "*Journal of Alzheimer's Disease*" (JAD).

AD is a neurodegenerative disease: Alterations in the brain caused by amyloid-beta-plaques, degeneration of fibrillae and a loss of synapses are held responsible for the characteristic symptoms. Oxidative stress, which constrains the exploitation of oxygen in the human body, is suspected to promote the development of AD. Whereas so called antioxidants might protect against [neurodegeneration](#). In their study, the researchers have investigated whether the serum-levels of vitamin C, vitamin E, beta-carotene as well as lycopene and coenzyme Q10 are significantly lower in the blood of AD-patients. "In order to possibly influence the onset and development of Alzheimer's disease, we need to be aware of potential risk factors", says Gabriele Nagel.

Participants were recruited from the cross-sectional study IMCA ActiFE (Activity and Function in the Elderly in Ulm) for which a representative population-based sample of about 1,500 [senior citizens](#) has been

examined. The 65 to 90 years old seniors from Ulm and the surrounding area underwent neuropsychological testing and answered questions regarding their lifestyle. What is more, their blood has been examined and their [body mass index](#) (BMI) was calculated. For the present study, scientists have compared 74 patients with mild dementia (average age 78.9 years) with a control group consisting of 158 healthy, gender-matched persons of the same age. Results are quite interesting: The concentration of vitamin C and beta-carotene in the serum of AD-patients was significantly lower than in the blood of control subjects. Whereas no such difference between the groups could be found for the other antioxidants (vitamin E, lycopene, [coenzyme Q10](#)). Potential confounding factors such as education, civil status, BMI, consumption of alcohol and tobacco have been considered in the statistical analysis. Nevertheless, additional parameters such as the storage and preparation of food as well as stressors in the life of participants might have influenced the findings. Therefore, results need to be confirmed in prospective surveys. "Longitudinal studies with more participants are necessary to confirm the result that vitamin C and beta-carotene might prevent the onset and development of Alzheimer's disease", says Gabriele Nagel. Vitamin C can for example be found in citrus fruits; beta-carotene in carrots, spinach or apricots.

More information: Christine A.F. von Arnim, Florian Herbolzheimer, Thorsten Nikolaus, Richard Peter, Hans K. Biesalski, Albert C. Ludolph, Matthias Riepe, Gabriele Nagel, and the ActiFE Ulm study group: Dietary Antioxidants and Dementia in a Population-Based Case-Control Study among Older People in South Germany. *Journal of Alzheimer's disease*, [DOI 10.3233/JAD-2012-120634](https://doi.org/10.3233/JAD-2012-120634)

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