

## **Molecular bases of the treatment of Alzheimer's disease with antioxidants: prevention of oxidative stress.**

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Alzheimer's disease is associated with a systemic oxidative stress situation which can be followed in vivo by determining biomarkers such as plasma lipoperoxides and TBARS levels and the oxidation degree of glutathione in red blood cells. It has been observed that Alzheimer's patients show an increased level of plasma TBARS, which indicates a higher free radical oxidation of plasma unsaturated phospholipids, and an increased oxidation of red blood cells glutathione, which indicates oxidative stress in peripheral cells. This latter, glutathione oxidation, was found to correlate statistically with the cognitive status of the patients. Treatment with vitamin E resulted in an improved cognitive performance only of those patients in which the tocopherol acted as an antioxidant, according to blood indicative markers of oxidative stress. Indeed, the effect of vitamin E on Alzheimer's disease patients showed considerable variations both in its antioxidant function and in its capacity to improve cognitive functions. An important conclusion from the reported results is that epidemiological or clinical studies that aim to test the effect of antioxidant supplementation on given functions should include the determination of the antioxidant status of the patients by the measurement of blood markers of oxidative stress.

