Alzheimer’s abstract Kiko 2012

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Amyloid β levels in human red blood cells.

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Source

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Abstract

Amyloid β-peptide (Aβ) is hypothesized to play a key role by oxidatively impairing the capacity of red blood cells (RBCs) to deliver oxygen to the brain. These processes are implicated in the pathogenesis of Alzheimer's disease (AD). Although plasma Aβ has been investigated thoroughly, the presence and distribution of Aβ in human RBCs are still unclear. In this study, we quantitated Aβ40 and Aβ42 in human RBCs with ELISA assays, and provided evidence that significant amounts of Aβ could be detected in RBCs and that the RBC Aβ levels increased with aging. The RBC Aβ levels increased with aging. On the other hand, providing an antioxidant supplement (astaxanthin, a polar carotenoid) to humans was found to decrease RBC Aβ as well as oxidative stress marker levels. These results suggest that plasma Aβ40 and Aβ42 bind to RBCs (possibly with aging), implying a pathogenic role of RBC Aβ. Moreover, the data indicate that RBC Aβ40 and Aβ42 may constitute biomarkers of AD. As a preventive strategy, therapeutic application of astaxanthin as an Aβ-lowering agent in RBCs could be considered as a possible anti-dementia agent.

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