INCREASE OF Aβ PEPTIDE SECRETION OF HUMAN MONOCYTES DURING MATURATION

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Introduction: The association of cells of the mononuclear phagocyte system (MPS) with neuritic and vascular β-amyloid (Aβ) plaques in Alzheimer’s disease (AD) is well documented. Blood monocytes contribute to this cell pool by migration through the blood-brain-barrier and transformation into perivascular cells and microglia.

Aims: The aim of this study was to investigate the effect of in vitro maturation of cultured human monocytes on their secretion of distinct Aβ peptide species.

Methods: We assessed the influence of the maturation state of monocytes on the patterns of Aβ peptides released into the cell culture medium with Aβ-SDS-PAGE/immunoblot. Monocyte maturation was assessed by flow cytometric analysis of macrophage-specific transferrin receptor (CD71) expression.

Results: The total amount of secreted Aβ peptides correlated with the expression of the macrophage-specific maturation marker CD71 as assessed by flow cytometry. Furthermore, the proportion of Aβ1-40 increased significantly, while the proportions of the C-terminally truncated variants Aβ1-38, Aβ1-39 and Aβ1-42 decreased.

Conclusions: These findings indicate that blood-derived mononuclear phagocytes may be a relevant source of Aβ peptide species present in β-amyloid plaques.