6. SUMMARY

This study focuses on inflammatory aspect of Alzheimer's disease, and the role of AD-related proteins in mechanisms that underlie local chronic inflammation in the vicinity of amyloid plaques. Microglia, as the main immunoresponsive element of the brain, is central to the proposed model. Release of cyto/chemokines (TNFα, IL-6, MIP-1α/ß, MCP-1, GROα/KC) and nitric oxide is followed as the main parameter of its activity. In order to test potency of several AD relevant proteins (IL-1ß, IL-18, IL-6, α2M) to amplify otherwise weak release-inducing activity of amyloid ß peptide, primary murine microglial culture is used. As expected, when used alone, Aß branches consisting of a fibrillar Aß 1-40/ Aß 1-42 mixture induce a minimal effect on primary microglia *in vitro.* A stronger response is elicited only when additional proinflammatory stimuli are combined with Aß preparations. Some of the physiologically critical soluble factors, present in chronic inflammatory media in AD, such as cytokine interleukin-1ß and even at the higher extent acute phase protein α2 macroglobulin, appear to be important synergistic partners of Aß. Regulation of microglial release activity by α2M, whose implication in the ongoing pathology was already considered but not really studied in context of occurring inflammatory process, is also reported.