

P008 Studies into the production of hydrogen peroxide during the aggregation of β -amyloid using Amplex red
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The aggregation and deposition of β -amyloid ($A\beta$) in the brain has long been implicated in the neurotoxic pathways causing Alzheimer's disease. Cell toxicity data suggest that the early, soluble oligomers of $A\beta$ are the toxic species. Oxidative stress may be partly responsible for the toxicity of the peptide as hydrogen peroxide has been found to be produced during the early stages of aggregation. A variety of methods can be utilised to detect this hydrogen peroxide production and the associated redox reactions involving transition metal ions. The data presented here uses the fluorescence-based Amplex red assay, which provides a sensitive and quantitative method for measuring hydrogen peroxide. We have developed this method for detecting the hydrogen peroxide formed within aggregating solutions of $A\beta$ 1-40 and $A\beta$ 1-42. By closely monitoring hydrogen peroxide production in conjunction with different oligomerisation assays it is hoped to determine whether hydrogen peroxide is formed as a by-product of the aggregation process itself (i.e. the binding of monomers to a growing oligomer), or, whether it is produced from an 'enzymatic site' on a specific type of oligomer. Preliminary experiments suggest that the latter may be the case. It is important to determine how and when hydrogen peroxide is produced by $A\beta$ in order to design an effective therapeutic intervention.