SPECTROSCOPIC INVESTIGATIONS OF THE BETA-AMYLOID PEPTIDE

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ABSTRACT

The focus of this project is two-fold: examining the native structures of three different fragments of the beta-amyloid (Aβ) peptide, and attempting to overcome some of the difficulties encountered in such an examination. The first part uses two different spectroscopic methods to compare the native structures of the hydrophilic Aβ(1-16) fragment, the hydrophobic Aβ(25-40) fragment, and the longer Aβ(1-40) fragment. The second part focuses on replacing the counter-ion used in peptide purifications, including the purification of the Aβ peptide, with a counter-ion that is less likely to alter the secondary structure and will not interfere with vibration-based spectroscopic studies. The third part highlights an attempt to improve upon current methods of peptide concentration estimation. Many experimental measurements require an accurate estimate of peptide concentration, which can prove to be particularly problematic for peptides such as Aβ that are not easily soluble in aqueous solvents.