

Alternative Origin for “Gain-of-Function“ by Mutant SOD Enzyme and for Conformational Change of Normal Prion Protein

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Gain-of-function of Mutant SOD, Hydroperoxo-copper(II) Complex, Amyloid- β -peptide

Capillary electrophoresis and ESI-Mass spectrometry methods have revealed that a hydroperoxo-copper(II) complex with (tpa) (=tris(2-pyridylmethyl)amine) reacts with carbonic anhydrase or amyloid beta-peptide (1–40) as a nucleophile to induce the conformational change of the protein structure, while the Cu(bdpg)-complex ((bdpg)=N,N-bis(2-pyridylmethyl)-beta-alanineamide) acts as an electrophile toward the proteins to degrade them under the same experimental conditions. This will lead to suggest that enhanced nucleophilic attack by a copper(II)-peroxide adduct to peptide bonding may be one of the serious origins for the “gain-of-function“ by mutant superoxide dismutase and for conformational change of normal prion protein.