ELEVATED NITRIC OXIDE PRODUCTION MEDIATES β-AMYLOID-INDUCED MITOCHONDRIA FAILURE

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Mitochondrial dysfunction has been identified in a large proportion of neurodegenerative disorders including Alzheimer’s disease (AD). In addition, the involvement of nitric oxide (NO) has been implicated in the pathogenesis of AD. Thus, we investigated the effects of the Swedish double mutation (K670M/N671L) in the β-amyloid precursor protein (APPsw) on NO levels and mitochondrial function in PC12 cells. Interestingly, APPsw PC12 cells showed increased NO levels, decreased cytochrome C oxidase activity and reduced ATP levels compared to wild-type APP bearing cells and empty vector transfected cells. On the basis of our data, we propose a hypothetical sequence of events linking amyloid β-peptide and NO production with mitochondria failure.

Key words: Alzheimer’s disease, β-amyloid, mitochondria, nitric oxide, oxidative stress, PC12 cells, apoptosis

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