The role of malfunctional mitochondria in the development of Parkinson's disease

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Statement of the Problem: Parkinson's' Disease is the second most common neurodegenerative disorder in the world. It is thought to occur due to degradation of dopaminergic neurons within the substantia nigra pars compacta of the basal ganglia. This paper elucidates on a theory that one potential reason for Parkinson's developing is due to problems with mitochondria.

Methodology & Theoretical Orientation: A literature review of 2 web databases (PubMed, Web of Science) yielded the papers which were used in this review.

Findings: The problems with mitochondria are thought to come by a variety of factors. Factors offered in this paper include the mutation or absence of parkin or PINK1 genes. This alteration in parkin and PINK1 leads to changes in the mitochondria which are present in the human body. These can lead to compromised complex activity and increased oxidative stress. Increased oxidative stress (via free radicals or reactive oxygen species) can lead to deletion of mtDNA (with mitochondria having its own genome). The deletion of mtDNA is a problem as it is known to be one of the factors leading to Parkinson's.

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