A STUDY OF CASPASES AND EXERCISE IN PARKINSONS DISEASE: DOES EXERCISE SUPPRESS CELL DEATH?

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Caspases and Reactive Oxygen Species (ROS) have been shown to be contributed to the dopaminergic neuronal death and play a vital role in PD pathogenesis. Caspases are a group of proteases that play a vital role in cell apoptosis, prevention of DNA repair enzymes, activation of DNases and catabolism of proteins within the nucleus via activation of the caspase pathway, through prolonged stimulation of various routes (NFκB, c-Jun N-terminal Kinase and p38 pathways). Physical exercise has been shown to be effective in decreasing the progression of diseases such as common hear disease and multiple sclerosis. The aim of this study was to determine level of different caspases alongside the effect of exercise in various brain regions (cerebellum, brain cortex, midbrain and striatum) of normal (C), normal exercised (Ex), Parkinsonian (PD) and Parkinsonian exercised (PDEx) rat brain via western blot analysis.

The results have indicated that exercise was able to decrease caspase levels in most regions of the PD brain, suggesting that exercise has beneficial effects in PD treatment. Exercise was able to reduce the amount of various caspases, which could be due to suppression of caspase pathways and thereby improve PD symptoms. In addition, the role of ROS which increased Caspase amount in other regions of PD brain has been appreciated in this study. The results of this study, puts forward a new challenge to explore different types of and different levels of exercise that can aid in the treatment of and possible cure of PD.