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## THE POTENTIAL THERAPEUTIC USE OF OMEGA-3 FATTY ACIDS IN PARKINSON'S DISEASE

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### ABSTRACT

Omega-3 fatty acids are polyunsaturated fatty acids that are important for a number of physiological functions in the body. They are found in foods such as fish, eggs and vegetable oil, and are also available as over-the-counter dietary supplements. Although safety and cardiovascular benefits of omega-3 fatty acids are well established, there is no direct evidence that shows the protective role of omega-3 fatty acids in *in vitro* Parkinson's model to date. Here, we investigated the potential of omega-3 fatty acids [i.e. eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)] to protect neurons from death in Parkinson's disease simulated by exposing PC12 cells to MPP<sup>+</sup>. Cell viability was assessed by using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. A day treatment with MPP<sup>+</sup> (500  $\mu$ M) yielded significant cell death by one-fourth of untreated control. EPA (250  $\mu$ M) significantly protected PC12 survival to ~80% in response to MPP<sup>+</sup> toxicity (500  $\mu$ M) when treated simultaneously with MPP<sup>+</sup>. This effect could be mimicked by DHA (250  $\mu$ M), restoring the cell viability by 15% in comparison to MPP<sup>+</sup>-treated control value. These results suggest that EPA and DHA are capable of protective effects in *in vitro* Parkinson's disease model. Therefore, dietary supplement of omega-3 fatty acids could be a potential therapeutic tool for Parkinson's disease.

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