Novel Therapeutic Efficacy of Curcumin and Fish Oil (Omega-3 Fatty Acids) on Inhibiting Neuroinflammation and Neuronal Apoptosis in Mus musculus Microglial Cells

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Neurological disorders, such as Parkinson's Disease and Alzheimer's Disease, have become more common in recent years, with the number of deaths due to neurological disorders increasing by about 39% since 1990 (Neurol, 2019). Additionally, another common cause of death is a traumatic brain injury. Traumatic brain injury is one of the most common causes of death in children and young adults (BIRI). Traumatic brain injuries can vary from something as common as a concussion to severe as a skull fracture or hemorrhage. The key consequence as a result of both these things is neuroinflammation. Neuroinflammation(NI) is an inflammatory response within the brain or even the spinal cord. For example, excessive NI has been shown to accelerate the development of diseases such as Parkinson's, Alzheimer's, and others. These customary drugs to treat NI can be decently expensive and leave financial burdens on many people if treatment continues for months. My goal is to recognize possible natural alternatives that control NI and stable cell morphology. One possible alternative is Curcumin, which is a chemical compound produced by plants(Curcuma Longa) and is found in turmeric. The other possible alternative is Fish Oils, specifically Omega-3 Fatty Acids. The technique which I will be using in this novel study is enzyme-linked immunoassay(ELISA) on microglial cell medium to measure cytokine levels and fluorescent staining by Caspase 3/7 green dye on neuronal cells to determine cell apoptosis. Based on my experimentation, both Curcumin and Fish Oil were successful in the suspension of Neuroinflammation and impedance of Neuronal Apoptosis.

Awards Won:

Fourth Award of $500