Analyzing the Effects of Curcumin and Turmeric on the Accumulation of Tau and Amyloid Protein and Its Further Implications Into Alzheimer's Disease

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Alzheimer's Disease is one of the leading causes of death of adults in the USA. The primary hallmarks of Alzheimer's are Amyloid-Beta plaques and Tau-Aggregation, known for causing inflammation in the brain. These plaques and aggregations result from the accumulation of Amyloid protein and Tau protein, respectively. Turmeric and curcumin are recognized for their anti-inflammatory properties and could potentially help slow down the progression of neurodegenerative diseases. This project aimed to determine whether curcumin and turmeric treatments effectively targeted the root of the problem, which, in this case, was the growth of Tau and Amyloid proteins. This was achieved by age-synchronizing the C. elegans and administering the turmeric or curcumin treatments. Protein and tissue samples were then extracted from the C. elegans to run an ELISA and measure differences in the amounts of Tau and Amyloid proteins found before and after treatment. The ELISA results revealed that the mutated C. elegans receiving the treatments exhibited significantly lower levels of Tau and Amyloid proteins compared to those not receiving the treatments. Additionally, the researcher also tested whether the turmeric and curcumin treatments affected the lifespan and overall quality of life of the mutated C. elegans. After treatment, there was a notable increase in lifespan and overall quality of life in the treated C. elegans, as they had a longer average lifespan and reproduced at a faster rate. This new insight could potentially pave the way for cures or more affordable and accessible treatments for Alzheimer's.

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