Investigating the Effects of Cannabidiol-Medium Chain Triglyceride Oil on Locomotion and Tap Withdrawal Response Using Caenorhabditis elegans as a Model for Alzheimer's Disease

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Alzheimer’s Disease (AD) is the world’s leading cause of dementia in older populations, impacting more than 6 million individuals in the U.S. alone. Although FDA approved treatment has been made available, options are limited to monoclonal antibodies, which reach upwards to prices that a vast majority can not afford. Therefore, now more than ever, the need for treatment and preventative measures is essential. While cheaper treatment options like Cannabidiol (CBD) have proven to be effective, its limitations with oral digestion and bioavailability made it a weak contender for the market. However, once coupled with Medium Chain Triglycerides (MCT), the bioavailability of CBD increases tenfold. Current research in vitro demonstrates a positive synergic effect of the two combined, with each offering its own prospects to counteract plaque aggregation in AD brains. The present study explored effects of CBD-MCT on in vivo transport between treatment types in the C. elegans strain CL2355 using locomotion and head-tapping assays. Data was then analyzed with a ranked-ANOVA and a post hoc Tukey's HSD test; CBD-MCT was revealed to have the highest percentage of successful head tapping assays out of all groups, and the combination also outperformed the control and MCT in locomotion assays. This novel synergic route offers opportunity for further investigation, keeping in mind the ultimate goal to offer broad, cheap options for all affected by this pervasive disease.

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