The Plausibility of Using Plant Based Extracts as Acetylcholinesterase Inhibitors

Patrick, Thea (School: Mitchell High School)

Currently, the effects of Alzheimer's disease can be mitigated by using medicines that increase the amount of the neurotransmitter acetylcholine (ACh). Drugs that inhibit the acetylcholinesterase (AChE), which breaks down ACh, do exist, but many are somewhat ineffective and all affect AChE inhibition in muscarinic receptors, sometimes resulting in serious side effects. This project focused on determining the effects of the plants Rhododendron 'Nova Zembla,' Tabernaemontana divaricata, and Fumaria officinalis on ACh retention in the central nervous system (mouse brain tissue) versus the peripheral nervous system (mouse trachea tissue). Other researchers investigated AChE repression but failed to distinguish between impacts on the brain and the rest of the body. Also, previous researchers have used plants in the same family as R. 'Nova Zembla' and F. officinalis but not those particular species. AChE inhibition was measured using the Ellman method. From this data, the rate of AChE inhibition and the percentage of normalized activity were also calculated. Results showed a statistically significant amount of AChE inhibition with both the R. 'Nova Zembla' and F. officinalis for the brain tissue and no notable results for the trachea tissue. Thus, the experiment suggests that additional research into R. 'Nova Zembla' and F. officinalis as Alzheimer's mitigating drugs would be worthwhile because both exhibited notable effects on ACh amounts in the central nervous system but less in the peripheral nervous system, indicating fewer side effects than current drug regimens.

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