**Ferrocenyl derivatives with potential cholinergic effects**

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Alzheimer's is the leading neurological degenerative disease in elderly people of the entire world. A recent estimation by the National Institute on Aging of National Institute of Health (NIH) said that more than 5.5 million Americans, most of them age 65 or older, may have dementia caused by Alzheimer's. This disease is ranked as the third leading cause of death in older people, following heart diseases and cancer. The causes of Alzheimer's are not clear for scientist, they propose that a combination of genetic, environmental, and lifestyle factors probably is the trigger for this condition. Alzheimer's disease is associated with some characteristic brain changes; the presence of amyloid plaques or tangles and low concentrations of acetylcholine, among others. Acetylcholine is an important neurotransmitter necessary for the muscular function of the body. Some of the actual treatments for Alzheimer's disease are compounds that act as acetylcholinesterase (AChE) inhibitors, like Donepezil and Rivastigmine. The AChE is the enzyme that catalyzes the breakdown of the acetylcholine in the neuromuscular junctions. This project is focused on the synthesis, characterization and biological evaluation of the new ferrocenyl derivatives that is expected to act as reversible AChE inhibitors. The rationale is that introducing the ferrocene moiety to analogues of donepezil and rivastigmine drugs, will enhance their lipophilicity, bioavailability and biological activity. The characterization will includes $^{1}H$ and $^{13}C$ NMR, IR and UV/VIS techniques. The biological assay will be performed using the Acetylcholinesterase Inhibitor Screening Kit, which is a colorimetric assay developed by BioVision Inc. We will obtain the data to calculate the $IC_{50}$ of the synthetized compounds and compare them with the $IC_{50}$ obtained under the same assay for Donepezil and Rivastigmine drugs.