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Synthesis of Fluoroflavonoids As Potential Antioxidant Against Alzheimer's Disease.

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Graduate Student Council Research Grant Application Summary, 2020

Maali Alshammari
Ph.D., Medicinal Chemistry

1. Overview

Maali Alshammari joined the lab of Professor David A. Colby in spring of 2017; she's currently a third-year Ph.D. student in medicinal chemistry in the graduate program in the Department of BioMolecular Sciences at the University of Mississippi. Maali's project involves the syntheses of fluoroflavones to improve the potency of the antioxidant activity of the original non-fluorinated flavones. The fluoroflavones will potentially be used as neuroprotective agents to prevent the toxic effect of ROS and used to prevent neurodegenerative diseases like Alzheimer's.

2. Intellectual Merit

Intellectual Merit: We are in need of medications that prevent Alzheimer's disease or even reverse its damage; all of the approved medications are aimed to manage its symptoms delaying the progression of them; most importantly, none of the approved ones target the toxic reactive oxygen species (ROS). I'm designing fluoroflavones to improve the potency of the antioxidant activity and potentially use them as neuroprotective agents. A monofluorinated flavone will be synthesized by using commercially available starting materials and fluorination reagents. After the synthesis of the desired flavones and their monofluorinated derivatives, biological testing will be conducted to see if the fluorinated flavones are more potent than their non-fluorinated derivatives.

3. External Opportunity

I'm applying to the 2020 Alzheimer's drug discovery foundation (ADDF) young investigator travel scholarship and award; it also includes graduate students who're conducting research related to Alzheimer's. This funding opportunity will cover the registration fee to attend the 14th drug discovery for neurodegeneration workshop, I will be presenting a poster with my research findings and I will also have the chance to win the outstanding poster presentation award that will be awarded to three individuals from the 25 young investigator travel scholarship winners. Each scholarship provides a name recognition in the program and on the conference website. Attending this workshop will give me insights on the current research projects targeting Alzheimer's and the chance to network with pharmaceutical companies, this meeting which will be held in Philadelphia, PA from April 26th to 28th, 2020, I'm planning to submit the abstract (the proposal) in the last week of January, before the deadline on January 31, 2020.