FACULTY OF PHARMACY

2016/17 Summer Scholarship Project

Project title: Investigate the cellular toxicities of several pentacyclic triterpenoids on human retinal cells

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Co-supervisors: N/A

Project type: Pharmaceutical Science

Research theme: Cancer

Project description:
Our capacity to see the world starts in the retina, a thin layer of neural tissue found at the back of the eye. The initial step in processing light information relies on the normal function of the visual cycle, where retinoids are exchanged between photoreceptors and the Retinal Pigment Epithelium (RPE). Disrupting the visual cycle causes accumulation of cytotoxic products within the outer retina, leading to retinal degeneration including Age-related Macular Degeneration (AMD), a major cause of irreversible vision loss in aging population. It is known that accumulative oxidative stress on RPE and several other retinal cells is one leading cause of human retinal degenerative diseases.

Many natural compounds and their derivatives have been indicated to have anti-oxidative effects including various triterpenoids. We have a collection of a number of triterpenoids and their derivatives in our laboratory. One of our projects is to assess the anti-oxidative effects of these compounds on human RPE and other retinal cells. Prior to this, it is important to assess the cellular toxicity of these compounds. The triterpenoids with significant cellular toxicity will be excluded from the follow-up study. In this summer scholarship project, the student will work with the PhD students in our laboratory to establish the safety profile of these triterpenoids, which data will form the basis of the future study to investigate the anti-oxidative effect of such compounds in human retinal cells. The involved methods include tissue culture and cell viability assay, which protocols are already developed in our laboratory.

The candidate student working on this project will need to have interests in molecular biology and is motivated to work on this lab-based project.