



THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES

Nutritional Sciences
& Wellness

SEMINAR ANNOUNCEMENT

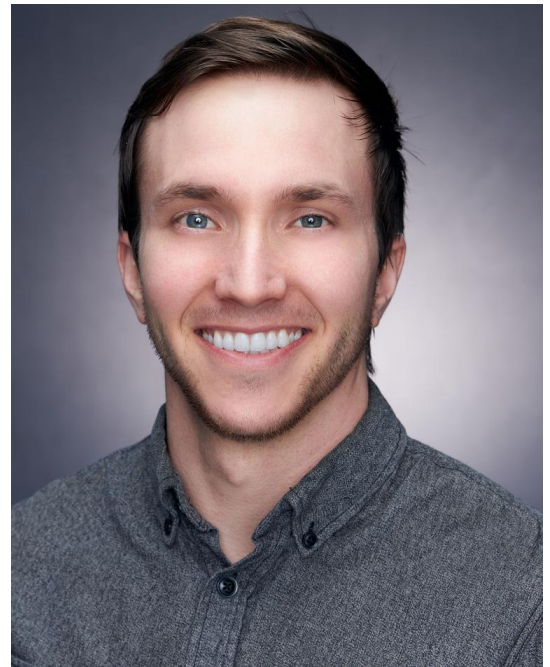
The School of Nutritional Sciences and Wellness presents:

“Sulforaphane inhibits blue light–induced inflammation and apoptosis by upregulating the SIRT1/PGC-1 α /Nrf2 pathway and autophagy in retinal pigment epithelial cells”

By
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Moderated by: Maren Sfeir



Wednesday, March 30th 2022

12pm

Shantz Building, Room 247

<https://arizona.zoom.us/j/82678706371>

Sulforaphane inhibits blue light–induced inflammation and apoptosis by upregulating the SIRT1/PGC-1 α /Nrf2 pathway and autophagy in retinal pigment epithelial cells

Age-related macular degeneration (AMD) results in the progressive loss of central vision and is the leading cause of blindness in older adults. Epidemiological studies have demonstrated that sunlight exposure plays a pivotal role in the pathological process of AMD. Blue light has the highest energy and shortest wavelength in the visible light spectrum, and frequent exposure to blue light can damage retinal pigmented epithelial (RPE) cells. With the increase in blue light exposure due to technological devices, the rate of AMD could significantly increase for each generation. In this study, Dr. Po-MinYanga looks to prevent AMD by using sulforaphane (SFN) to protect RPE cells from blue light exposure. Sulforaphane is an isothiocyanate found in cruciferous vegetables and is an activator of the NRF2 pathway and promotes autophagy.

Human arising retinal pigmented (ARPE)-19 cell lines were used and grown in 96 well plates. The ARPE-19 cells were exposed to blue light (400 nm) at an intensity of 2000 ± 500 lx for 24 hours to establish the model of light-induced injury and treated with 5–25 μ M of SFN. Cells were assessed by measuring cytotoxicity, morphological analysis with DAPI, intracellular ROS, quantification of glutathione, monocyte adhesion, and protein expression. Dr. Po-MinYanga demonstrated that SFN had a protective effect on RPE cells under blue light exposure by increasing NRF2 related redox and upregulating SIRT1 and PGC-1 α expression. SFN was also shown to have a autophagy inducing effect which may serve as a protective mechanism in dysfunctional organelles. Finally, these studies need to be conducted in human subjects to increase our understanding of SFN and retinal health.