Effect of CaS Dispersion Concentration on Human Skin Benign and Melanoma Cell Viability

Gonzalez, Kiara (School: Escuela Superior Patria Latorre Ramirez)

Melanoma is a dangerous form of skin cancer (Rodriguez, 2022). The purpose of this research is to contribute to develop new technologies to limit growth and proliferation of skin melanoma selectively. Our hypothesis is that CaS nanostructures dissociate selectively in the extracellular environment of melanoma cells to induce apoptosis. To test this hypothesis, we measured the viability of skin melanoma and benign cells using digital confocal fluorescence microscopy. Cell viability was found to be a sensitive function of the amount of CaS nanostructure dispersion. Dispersion concentrations were assigned a letter from A to F to protect intellectual property, with A and F representing the lowest and highest concentrations, respectively. We found that benign cell viability fluctuated between 100 and 87 % in the first 24 hours with dispersions corresponding to A, B, C and D. Benign cell viability was lower for higher concentrations and higher than 93% in the first 48 hours. In contrast, melanoma cell viability decreased sharply with dispersion concentration in the first 24 and 48 hours and could be as low as 13 %. I performed computer simulations to learn if the difference in extracellular pH between melanoma and skin cells is responsible for the observed selectivity.

Awards Won: