Antioxidants, Nicotine, Skin Injury

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E-cigarettes are becoming even more popular than conventional cigarettes. Few studies have been done on the harmful effects of e-cigarettes as compared to conventional cigarettes. Since both contain nicotine, harmful results are evident. Glutathione (GSH), as proven in previous experiments, is an antioxidant, which can slow the process of aging and can help prevent harmful diseases. Therefore, GSH in the form of fresh blueberry juice (BBJ) was applied to two groups of cells, HaCaT and BJ5ta in hopes that it would improve wound healing to cells also containing extracts. The purpose of this project was to determine the effects of e-cigarette extracts on cells exposed to e-cigarette vapors, and the results were compared to the same cells exposed to conventional cigarette smoke. The nicotine extracts from both e-cigarettes and conventional cigarettes went through a sterile filter, turning yellow. Results from the In Vitro Scratch Assay did show an increase in the wound closure of cells containing both blueberry juice and extracts but only slight differences. It is hard to say if blueberry juice improves wound healing in the long run. For the In Vitro Scratch Assay, a scratch was made with a pipette tip on the surface of the bottom of culture dishes, which contained the cells, and two areas of the scratch margins were viewed every 24 hours with an EVOS microscope attached with a camera until scratches were completely closed. It was hypothesized that e-cigarette vapors would cause mitochondrial dysfunction and oxidative stress at levels similar to those produced by conventional cigarette smoke exposure and also that by adding BBJ, wound healing would improve. This was proven correct. It is hard to say whether BBJ will be enough to get rid of harmful effects of nicotine.

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