Potential Neuronal Toxicity Associated with Cellular Exposure to Electronic Cigarette Fluids

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Electronic cigarettes are battery operated devices using nicotine and liquids to produce vapor. They are comprised of three parts: a cartridge, a heating device, and a power source. The cartridge holds e-liquid, nicotine, flavoring, water, and either propylene glycol or vegetable glycerine. When on, the e-cigarette vaporizes the contents in the cartridge. The cells were grown and established before testing began. The e-liquid was diluted using 1 mL of distilled water and 35 micro liters of e-liquid. Four mL of complete growth medium was placed in each of 5 chambers. 1 mL cell culture was placed in each of the 5 chambers. Fifty micro liters of e-liquid solution was placed in each of the 5 chambers. This process was repeated for each strength of e-liquid. The control group followed the same process except no e-liquid solution was added. The test groups were incubated at 37 degrees C for 4 days. The cells were counted using a hemocytometer. This process was completed for each test. The data collected shows that e-cigarette liquid had a negative impact on the cells. The concentration of nicotine did not have as big of an impact as the chemicals in the e-liquid. The e-liquid caused a greater negative impact on the cells than the nicotine. There was a 30.8% reduction of cells from the 0% nicotine e-liquid to the 10% nicotine e-liquid. The nicotine only contributed to 12.44 cell decrease.

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