The Toxic Truth, Part 2

Puderbaugh, Nicole (School: Grants High School)

This project helped determine which type of toxic chemicals found in vaping products would have the greatest impact on growth/development of yeast cells in both liquid and aerosol cultures. Vaping products actually form an aerosol rather than a vapor. Mixing different concentrations-70ul/140ul-exposing cells, observing/ measuring growth, and using a makeshift aspirator system for an aerosol was conducted. The goal was to determine which chemicals-with Cherry and Eucalyptus essential oils-cause the most damage, aiding in an attempt to study lung injuries caused from vape products. Upon determining the toxicity level of chemicals, along with review of prior research done by CDC (CDC 2020); it was hypothesized that Vitamin E & Cherry will have the greatest effect on the cells in liquid and aerosol produced trials. During four trials, trial 1 showed 37% of cells exposed to Diacetyl at 70ul were dead, which was significantly higher than the other samples. Trial 2 showed that Vitamin E & Cherry at 140ul resulted in the most effected cells- 68% dead. Trial 3 showed Formaldehyde & Eucalyptus had the highest amount-47% dead. Finally, trial 4 showed that Vitamin E & Cherry had the highest amount of dead cells-73%, with Formaldehyde & Eucalyptus having a 1% difference when exposed with an aspiration system. (see appendix for image comparison). Results show that both chemicals and flavors do affect the cells. This conclusion could explain that a combination of the chemicals and flavors found in vape products could have a synergistic affect causing more damage than the chemicals alone.

Awards Won: