Treatment of Soil Bacteria with Sweeteners

Jiangyuan Yuan, Marcelo Garibaldi, Nicolle Hernandez, Dezja Ishmeal

In this project, we tested the effects on the growth of soil bacteria after treatment with commercially available sweeteners, including artificial sweeteners, juice drinks, and energy drinks. It was hypothesized that these treatments would increase growth as the treatments provide nutrients for bacteria growth, excluding artificial sweeteners, which we predicted would decrease growth. Bacteria was obtained from the soil around UNC Chapel Hill campus. These samples were homogenized and then treated with different sweeteners. First growth was evaluated using a serial dilution. It was found that treatment significantly increased CFU/mL for every treatment except artificial sweeteners. Furthermore, the ability of the soil bacteria to form biofilm was tested by examining for the presence of fluorescence in a coculture plate with *Bacillus subtilis*. Coculture plates were created with the different soil samples before and after treatment, and possible inducers were identified. These bacteria then underwent a secondary screen where they were grown in isolation with *B. subtilis*. It was found that only one sample, treated with juice mix, can induce fluorescence and, therefore, induce biofilm formation. DNA sequencing was also performed to create a phylogenetic tree of samples.