Toxicology Study Using Yeast

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The purpose of this investigation was to conduct a toxicology study on toluene-containing Pine-Sol; and to study the dangers it may pose to humans using yeast as a model organism. Rates of CO_2 production and pH change were the reactions studied, using the knowledge that yeast produce CO_2 when they ferment and that pH has a correlation with toxicity. A yeast mixture was prepared prior to data collection, as well as 6 concentrations of Pine-Sol. The concentrations were 0mL-50mL Pine-Sol per 500mL water, with the 0mL/500mL being the control. 1 mL of each concentration was then added to 30mL of yeast and data was collected every 60 seconds for 600 seconds using a pH/CO_2 sensor and a LabQuest. After data collection, average rates were calculated, as well as statistics in the form of SEM bars. Data analysis showed that there was a decrease in average rate of CO_2 production in every concentration until Concentration 4, which had the fastest rate of them all. The average rates of pH change were more varied and all rates were negative, so thus towards a more acidic pH. With SEM bar analysis, 95% confidence cannot be obtained when comparing the control and each concentration, leading to further questions. In conclusion, both hypotheses were incorrect; the CO_2 production rate does not steadily decline, nor does pH change rate steadily increase, and tolerance levels vary with each concentration of Pine-Sol solution. Thus, the results were inconclusive; however, as is common with toxicology being an important aspect of modern science and with it playing a huge role in the safety of our lives, further studying can still be done to advance our knowledge of toxins like toluene-containing Pine-Sol.

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