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This Is Your Bean, This Is Your Bean on Drugs

The purpose of this project was to distinguish whether soaking beans in different medications (ibuprofen, bismuth subsalicylate, guaifenesin, diphenhydramine) affected the germination time (days), height (cm), and health (leaf growth) of a bean plant. I hypothesized that adding the medications would negatively affect the germination time, height, and health of the plant, because I had researched and concluded that combining plants with possibly pernicious chemicals could inflict bad growth tendencies upon the bean plant.

The experiment involved making medicated solutions, and 10 paper towels were soaked in each solution. The paper towels were then individually placed in small clear plastic 50 milliliter cups and watered with $\frac{1}{2}$ of a milliliter of their designated solutions each day. There were 10 trials for each solution-four medicated groups, one distilled water control group-creating a 50 trial total.

The data collected did not support the original hypothesis. All of the averages for germination time were closely knit. The average germination time for bismuth subsalicylate was 2.7 days, for guaifenesin 2.7 days, for ibuprofen 2.4 days, for diphenhydramine 2.6 days, compared to the control, which on average germinated in 2.8 days. All of the trials had a lower average height than the control, other than the diphenhydramine trials. The average height for bismuth subsalicylate was 2.7 cm, for guaifenesin 3.8 cm, for ibuprofen 2.0 cm, for diphenhydramine 5.3 cm, compared to the control, which on average grew 4.2 cm. In terms of health of the bean plants, one week after germination 5 out of 10 of the control groups were healthy plants, compared to only 2 out of 10 in the bismuth subsalicylate group were healthy. Guaifenesin and diphenhydramine both had 4 out of 10 trials healthy, and ibuprofen had 3 out of 10 trials healthy. There was a substantial difference between the control and bismuth subsalicylate in terms of health, but not enough of an effect between the medications and the control overall to conclude a major difference.

These findings lead me to conclude that medications only slightly if at all affect the germination time, height, or health of bean plants.