Got Milk? Comparing the Acid Production of Bifidobacterium infantis When Grown in Different Milks

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The purpose of this study was to determine if different types of milk affected the growth and acid production of Bifidobacterium infantis, a powerful probiotic crucial for human development. There was a total of six groups that consisted of 100 mL of inoculated whole milk, lactose-free milk, formula, and uninoculated control groups of each type of milk. The experimental groups were inoculated by pouring hydrated B. infantis probiotic powder into the different milks. All groups were incubated aerobically for 24 hours at 37°C and diluted in 10% solutions. After incubation, the pH of each sample was tested with a pH probe over eight trials. The statistical significance of the experiment was calculated using two single-factor ANOVAs, the first with both control and experimental data and the latter with just experimental data. Their respective p-values of $1.01x10^{-20}$ and $1.05x10^{-3}$ (α=.05) indicated that the data were statistically significant for two out of three of the experimental groups and the remaining group, whole milk, was not. Using the significant results from the two ANOVAs, post-hoc Tukey tests were performed and significant differences were found between each experimental group except between the inoculated formula and whole milk groups. These results confirmed that my research hypothesis that whole milk would allow for the best growth of B. infantis was not supported. The results suggested that lactose-free milk and formula are well-suited media for B. infantis to thrive in and have great potential to become convenient methods of obtaining essential probiotics.