

# The Effects of Lactose and Incubation Temperature on Similac 1 and Similac LF Milk Samples

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## ABSTRACT

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Milk spoilage can be determined through chemical and physical analyses. The chemical analysis includes the analysis on the lactic acid content while the physical analysis uses the sensory tests to determine the spoiled milk. Most spoilage microbes such as *Bacillus*, *Proteus*, *Staphylococcus* and *Lactobacillus* grow easily in milk using the available nutrients such as lactose to produce lactic acid as the main end-product. Thus, the aim of this research was to study the effects of the lactose in the lactose-containing milk (Similac 1) and lactose-free milk (Similac LF) and the incubation temperature of 4°C, 25°C, 37°C and 60°C on the lactic acid content (g/100 mL) and the CFU/mL. The incubated milk was also analyzed by observing the curd formation, mold growth and the colour change of whey. The lactic acid content of the incubated milk was determined using the titration test with 0.1M NaOH. The CFU/mL was determined using the pour plate procedure and lastly, gram staining was done to identify the gram reaction of the spoilage microbes isolated from the pour plate method. The Analysis of Variance (ANOVA) indicated that the lactose in the milk and the incubation temperatures affected the lactic acid concentration as well as the CFU/mL of the incubated milk samples. In addition, the amount of the lactic acid also affected the CFU/mL of the incubated milk samples as the acidic condition probably inhibited the growth of acid-labile bacterial cells. Gram staining reactions revealed more gram-positive bacteria in the milk samples compared to gram-negative bacteria. The preliminary chi-square analysis of the physical observation indicated that only the incubation temperature affected some of the physical characteristics of the milk