Effect of the Application of Carbon Dioxide in the Microbiology of Fresh Raw Milk

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Currently, all commercial treatments to control bacterial populations in milk as well as liquid foods are based on extremely expensive thermal processes. The objective of this research was to analyze the effect of CO2 on the microbial populations in fresh raw milk. The control group consisted of raw milk samples and solid CO2. Solid CO2 was microbiologically analyzed to ensure that it was free of microorganisms. Fresh raw milk samples used as the control group were microbiologically analyzed to set the threshold of bacteria population in order to compare treated samples. Experimental samples of 50mL of milk were exposed to 10g, 25g, and 50g of CO2 for 1 to 3 minutes. All samples were analyzed to determine their microbiological content. Results indicated that all samples exposed to CO2 reduced their microbiological content. An direct relationship was observed; where the longer the exposure and the higher the content of CO2 the greater was the reduction in bacterial populations. The working hypothesis that stated “the application of carbon dioxide (CO2) will significantly reduce concentration and populations of bacterial colonies in fresh raw milk”, was tested and accepted. It can be inferred that this process is one that can reduce or even eliminate bacterial populations at cold temperatures resulting in a very practical and inexpensive application for raw milk and liquid foods also. This project could lead to develop a process for cold pasteurization of milk and liquid foods, saving huge amounts of money, preserving nutritional value of food.

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