



Effect of Microbial Interactions on Pathogen Growth and Survival during Fermentation of Raw Milk

This study provides an understanding of chemical changes in milk during the fermentation process and the effect of these changes on pathogen dynamics in raw and pasteurised milk. While the knowledge gained significantly contributes to a scientific background for cheese-making, this particular work examines the fermentation process in liquid milk and does not follow any specific cheese-making protocols.

This study confirmed the previously reported observation (Schvartzman et al, 2011) that achievement of the desired lactic acid concentration, and hence pH, is delayed during fermentation of raw milk compared to fermentation of matched pasteurised milk. Moreover, it was shown that the naturally-occurring flora in raw milk does not inhibit starter culture survival or growth, but rather appears to affect its biochemical activity.

The study also showed that the rates of pH decrease during fermentation vary between different milks even when the same starter cultures, and same inoculum level, are used. This observation highlights the critical importance of monitoring pH change during the cheese-making process.

In addition, the naturally-occurring flora in raw milk was not observed to inhibit pathogen survival.

Lastly, *Staphylococcus aureus* was observed to grow in milk both when added in challenge experiments and when present as a natural contaminant. When added, growth was similar in the presence and absence of starter culture, albeit after a long lag period. This highlights the need to ensure that the animals are free of mastitis and the milk is of the highest quality in terms of *S. aureus* when used for raw milk cheese production.