



Session 4: Non-Clinical Applications

P52 Raw milk – a reservoir for uncommon lactococcal bacteriophages

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Phages present in milk fermentation processes can lead to continuous infections of lactic acid bacteria used as starter cultures and can cause fermentation delays, or even total failures of fermentation batches. We have previously shown that phages of *Lactococcus lactis* starter strains may exhibit a remarkably high thermal stability. Therefore, pasteurization of raw milk will not severely affect the viability of these thermo-resistant phages. Dairy phages can even survive in high numbers in whey powders after spray-drying. Raw milk might be a critical source for new phages. However, data on the dissemination of dairy phages in raw milk are scarce. It was reported earlier that lactococcal phages were present in 10 % of raw milk samples, and phages were detected in maximal titers of up to 10^4 plaque-forming units pfu/mL in raw milk.

In our study, we monitored 52 raw milk samples from different farms in northern Germany. A representative set of *Lactococcus lactis* starter culture isolates was used for phage monitoring. Notably, phages were widespread in raw milk and detected in 35 % of the raw milk samples. Different phage titers were determined within a wide range of less than 10^1 to unexpectedly high numbers of 10^6 pfu/mL. Transmission electron microscopic and DNA sequence analyses revealed that the majority of the raw milk phage population did not belong to the common group of 936 phages that are usually present in dairy samples, but were related to rarely found phage types. Therefore, it could be concluded that raw milk phages may not be regarded as a major source of dairy phages which have adapted to industrial milk fermentations.