the agar medium increased from time of inoculation until the 9th h (beginning of the stationary phase) and then decreased until the 11th h. When C2 was grown in M17 broth and infected with c2 phage multiple periodic cycles of 36 min could be observed which appeared to match the phage lysis cycles. The average peak frequencies data showed a shift in frequencies as the bacteria moved from the lag into the log phase (from inoculation to 150 min). Some peak frequencies shifted by as much as 5 kHz during this growth period while most peaks had shifts in their relative intensities that increased or decreased with time. When average peak frequency data from C2 and *E. coli* 15q were compared (from the first 60 min of growth) only three of the peak frequencies were in alignment, while all other peak frequencies appeared to result from different acoustical emitting activities. These data suggest that average peak frequencies for C2 and *E. coli* 15q were sufficiently different in frequency and intensity during the initial lag phase that specific strain identification might be possible. Thus, acoustic emissions from bacteria may be specific enough to acoustically fingerprint bacteria and result in a rapid assay method.

Key Words: Acoustic, Lactococcus, Assays

W83 Survey of lactic acid bacteria in Hispanic-style cheeses for antimicrobial activity. J. A. Renye*, G. A. Somkuti, and D. L. Van Hekken, *Eastern Regional Research Center, USDA-ARS, Wyndmoor, PA.*

Lactic acid bacteria isolated from Hispanic-style cheeses were screened for antimicrobial activity against dairy starter bacteria (*Lactococcus lactis* and *Streptococcus thermophilus*) and potential foodborne pathogens or spoilage organisms (*Listeria, Escherichia, Staphylococcus, Shigella, Salmonella, Enterobacter* and *Pseudomonas*). The LAB species screened included *S. thermophilus* (8), *S. macedonicus* (7), *L. lactis* (4), *Leuconostoc mesenteroides* (13), *Lactobacillus plantarum* (8), *Enterococcus faecium* (14), and *Enterococcus faecalis* (11). The LAB isolates were grown overnight in M17 (streptococci) or MRS (lactobacilli and leuconostocs) medium and tested for antimicrobial activity by the agar-well diffusion method. One *S. thermophilus* isolate showed activity against both *S. thermophilus* and *L. lactis* target strains, while another inhibited *L. lactis* only. The *L. lactis* target strain was also inhibited by one *L. lactis* and one *E. faecium* isolate. All 8 *L. plantarum* isolates inhibited the growth of *P. fluorescens*. Four of the isolates were also inhibitory to *E. coli* and *S. epidermidis*, while 2 other isolates inhibited only *E. coli*. All 6 of *L. mesenteroides* strains showed activity against *P. fluorescens*. The 3 *E. faecium* isolates active against *Listeria monocytogenes* were further screened by PCR for genes encoding known bacteriocins. Two of the isolates were shown to have PCR products corresponding to enterocins A, P and L50B. The third *E. faecium* isolate did not test positive for any of the known enterocins (A, B, P, BC25, L50A, L50B and Q), suggesting the possibility of a novel antimicrobial peptide. None of the isolates screened showed activity against *S. sonnei, S. infantis* and *E. sakazakii*. Further biochemical characterization of the antimicrobial compounds produced by the LAB is in progress.

Key Words: Antimicrobial, Bacteriocin, Lactic Acid Bacteria

W84 Production of bacteriocins by staphylococcal strains isolated from Brazilian cheese. M. A. V. P. Brito[1] and G. A. Somkuti*[2], [1]*EMBPRAPA Dairy Cattle Research Center, Juiz de Fora, Brazil,* [2]*Eastern Regional Research Center, USDA-ARS, Wyndmoor, PA.*

A total of 285 staphylococcus isolates were recovered from *Minas frescal* cheese, a traditional Brazilian fresh cheese made with pasteurized milk, and screened for the production of antibacterial substances. The staphylococci were isolated from 50 lots of commercial cheese and cultured on mannitol salt agar. Isolates were evaluated for colony and cell characteristics, catalase production and further classified as coagulase-positive (169) or coagulase-negative (116) by the tube coagulase test. Bacteriocin activity of cell-free supernatants of overnight cultures was tested by the agar-well diffusion method with *Listeria monocytogenes* Scott, *L. ivanovii, Staphylococcus aureus* 305 and *Streptococcus agalactiae* 5778 as targets. Bacteriocin production was associated with 30 coagulase-positive staphylococci (10%), including activity against *L. monocytogenes* (24), *S. aureus* 305 (26), *L. ivanovii* (13) and *S. agalactiae* (3). Plasmid samples isolated from bacteriocin-producing isolates were checked with PCR techniques using primers specific to the staphylococcal bacteriocins aureocin A70 and A53, and staphylococcin BacR1. All 24 isolates with antilisterial activity yielded PCR products and positive Southern blots indicating the presence of the aureocin A70 structural gene but only 20 of the 24 isolates carried the 8-kb plasmid that is usually associated with aureocin production. The 5 additional isolates active against *S. aureus* 305 only and tested negative with BacR1 primers may be producers of novel bacteriocins. The results have shown that antilisterial cheese isolates of *S. aureus* produced plasmid borne aureocin A70 similar to strains often recovered from bovine milk. The presence of bacteriocin activity may increase the competitiveness of the producing strain and may also have a role in preventing contamination by *L. monocytogenes*.

Key Words: Bacteriocin, Staphylococcus, Cheese

W85 Inhibitory effect of *Lactobacillus* species on *Streptococcus mutans in vitro*. W. Y. Yang[1], A. R. Hostetler[1], C. S. Huh[2], and H. S. Kim*[1], [1]*Culture Systems, Inc., Mishawaka, IN,* [2]*Korea yakult Co., Yongin Si, Kyunggi Do, Korea.*

S. mutans has been recognized as an important etiological agent in human dental caries. It has been suggested that these cariogenic bacteria could be eliminated from dental plaque by application of *Lactobacillus* or bacteriocin-like inhibitory substances. Recent clinical and experimental observations showed that specific probiotic microorganisms may provide therapeutic benefits in human dental disease. However, few data exist on the ability of *Lactobacilli* to inhibit the growth of *S. mutans*. The purpose of this study was to isolate and characterize *Lactobacilli* that inhibit the growth of *S. mutans* and to test the possibility that probiotic *Lactobacillus* strains are able to reduce dental caries. Four *Lactobacillus* species, *Lactobacillus fermentum* CS6039, *Lactobacillus reuteri* CS6032, *Lactobacillus acidophilus* CS6051, *Lactobacillus fermentum* CS332, were isolated from volunteers classified as having good oral hygiene and breast feeding mothers. The inhibition of *S. mutans* treated with probiotics was monitored by agar plate assay, competition test, and a turbidity and inhibition method. Using the agar plate assay and competition test, the diameters of the clearance zones surrounding the inoculated bacteria (which indicated the presence of bacteriocin produced by probiotic cultures) were measured. All tested-lactic acid bacteria were able to