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Antibiotic Resistance of Enterococci Isolated from Raw Cow Milk

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Abstract : The aim of the study was to test the milk samples in terms of enterococci presence and their counts. Tested samples were as follows: raw cow milk, raw cow milk stored at 10°C for 16 hours and milk pasteurised at 72°C for 15 seconds. The typical colonies were isolated randomly and identified by classical biochemical test - EN-COCCUS test (Lachema, CR) and by PCR. Isolated strains were tested in terms of antibiotic resistance by well diffusion method. Examined antibiotics were: vancomycin (30 µg/disc), gentamicin (120 µg/disc), erythromycin (15 µg/disc), teicoplanine (30 µg/disc), ampicillin (10 µg/disc) and tetracycline (30 µg/disc). Average value of enterococci counts in raw milk cistern samples (n=30) was 8.25 ± 1.37 ×103 CFU/cm3. Storage tank milk samples (n=30) showed an increase ($P > 0.05$) and average value was 9.16 ± 1.49 × 103 CFU/cm3. Occurrence of enterococci in pasteurized milk (n=30) was sporadic and their counts were mostly below 10 CFU/cm3. Overall, 96 enterococci strains were isolated. In samples of raw cow milk and stored raw cow milk, Enterococcus faecalis was a dominant species (58.1% and 71.7%, respectively), followed by E. faecium (16.3% and 0%, respectively). Enterococcus mundtii, E. casseliflavus, E. durans and E. gallinarum were isolated, too. Resistances to ampicillin, erythromycin, gentamicin, tetracycline and vancomycin were found in 7.29%, 3.13%, 4.00%, 13.54% and 10.42% of isolated enterococci strains, respectively. Resistance to teicoplanine was not found in any isolated strain. All Vancomycin-Resistant Enterococci (VRE) belonged to E. faecalis. Obtained results confirmed that raw milk is a potential risk of enterococci resistant to antibiotics transmission into the food chain.

Keywords : antibiotic resistance, enterococci, milk, biosystems engineering
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