

Influence of milking frequencies of dairy cows on excretion characteristics of antibiotic residues in milk

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The implication of automatic milking systems (AMS) has many effects on management of dairy farms. One aspect that has to be addressed is the withholding period after treatment of cows with veterinary drugs.

The determination of withholding periods is based on the time necessary to keep residues of veterinary drugs below maximum residue limits (MRLs) and an additional safety period. In the EU MRLs are fixed according to Council Directive 2377/90 EEC for reasons of health protection of consumers. Residues of antimicrobials in milk may also disturb the fermentation process of milk products. Withholding periods for milk after treatment of cows with antibiotics are defined in healthy cows with regular milking times twice a day. The use of AMS aims for more frequent milkings. As not all animals visit the milking system voluntarily also extended milking intervals may occur. Information is needed on the possible influence of milking intervals on excretion characteristics of antibiotic residues in milk to prevent violation of MRLs.

To study these effects experiments were performed with cows milked under simulated AMS conditions with milking frequencies of 3 and 1.5 times per day respectively. The excretion of antibiotic residues in milk after treatment was compared to regular milking intervals twice a day. Veterinary drugs based on beta-lactam-antibiotics were selected as these substances are most frequently applied for lactational treatment of mastitis. 5 cows per group were treated in comparable intervals according to the application advices with commercially available intramammary products on all 4 quarters. Screening and HPLC methods were applied for qualitative and quantitative detection of antibiotic residues in milk sampled at every milking until concentrations of residues fell below MRL level.

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