The Prevalence of Antibacterial Resistance and Characterization of Microflora in Cow's Milk Samples Obtained from the Kandy District in Sri Lanka

Madhurekha U.K.P., Madhujith W.M.T.* and Wijesinghe P.[1]
Department of Food Science and Technology,
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Antibiotic resistance has become a global health hazard. Antibiotics are increasingly used in animal husbandry to treat clinical diseases, prevent infections as well as growth promoters. However, overuse and misuse of antimicrobials have led to generation of antibiotic resistant bacteria. Therefore, surveillance of antimicrobial resistance is important. Cow's milk contaminated with antimicrobial resistant bacteria is a serious health issue. In this study, cow's milk samples from bulk tanks were collected from a farm in Uda Peradeniya and 2 farmer managed societies including Orayanwatta and Growhill in the Kandy District. Samples were collected aseptically and screened for the antimicrobial resistant bacteria. Pure cultures of the antimicrobial resistant bacteria were obtained through the pour plate method. Streak plate method was followed for isolating single colonies on nutrient agar containing four antibiotics (amoxicillin, chloramphenicol, cephalexin and ciprofloxacin). Of the four antibiotics used, all samples showed antibiotic resistance to amoxicillin and cephalexin. Milk samples from Orayanwatta showed the resistance only to chloramphenicol. Ciprofloxacin resistance was observed in both Orayanwatta and Growhill samples. Morphological observation along with 3 biochemical tests including Gram stain, spore formation and catalase test were performed on the isolated colonies. A colony PCR was designed to amplify resistant genes. These data suggested that *Escherichia* sp. and *Pseudomonas* sp. showed amoxicillin and cephalexin resistance. Both *Bacillus* sp. and *Streptococci* sp. showed ciprofloxacin resistance while *Staphylococcus* sp. showed chloramphenicol resistance. Milk samples from Orayanwatta contained β-lactamase resistant bacteria. Results from the current study suggested the prevalence of antimicrobial resistant bacteria to 4 antibiotics in farms in the Kandy District. Further investigation is necessary to characterize antibacterial resistant bacteria.

Keywords: Amoxicillin, Antibiotic resistance**,** Cephalexin, Chloramphenicol, Cow's milk

[1]Department of Botany, Faculty of Science, University of Peradeniya, Sri Lanka
*tmadhujith@agri.pdn.ac.lk