

Antimicrobial Susceptibility and Molecular Characterization of Escherichia coli Recovered from Milk and Related Samples

ABSTRACT

There is a rising concern about illnesses resulting from milk consumption due to contamination by pathogenic microorganisms including Escherichia coli. This study examined the occurrence and antimicrobial susceptibility of E. coli isolated from cow milk and related samples. Furthermore, partial sequencing was done to ascertain the genetic relatedness and possible cross contamination among the samples. In all, 250 samples, that is, 50 each of raw milk, cow teat, milkers' hands, milking utensils, and fecal matter of cows, were cultured for the identification of E. coli. E. coli was detected in 101/250 samples (40.4%). Milk and fecal samples recorded the highest percentages of 68.0% and 66.0%, respectively. Forty-two (42) E. coli strains examined for antimicrobial resistance showed an overall 25.5% resistance, 15.0% intermediate resistance, and 59.5% susceptibility. The isolates had a high level of resistance to teicoplanin (100.0%), but were susceptible to chloramphenicol (95.2%) and azithromycin (92.9%). The Multiple Antibiotic Resistance (MAR) index pattern ranged from 0.1 to 0.5, and 40.5% exhibited multiple drug resistance. The E. coli strains formed 11 haplotypes, and a phylogenetic tree analysis showed relatedness among the isolates in other African countries. This observation is an indication of cross contamination among the milk and its related samples.