World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Fecal Prevalence, Serotype Distribution and Antimicrobial Resistance of Salmonella in Dairy Cattle in Central Ethiopia

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Abstract : Salmonella is one of the major zoonotic pathogens affecting wide range of vertebrates and humans worldwide. Consumption of contaminated dairy products and contact with dairy cattle represent the common sources of non-typhoidal Salmonella infection in humans. Fecal samples were collected from 132 dairy herds in central Ethiopia and cultured for Salmonella to determine the prevalence, serotype distribution and antimicrobial susceptibility. Salmonella was recovered from the feces of at least one cattle in 10(7.6%) of the dairy farms. Out of 1193 fecal samples 30(2.5%) were positive for Salmonella. Large farm size, detection of diarrhea in one or more animals during sampling and keeping animals completely indoor compared to occasional grazing outside were associated with Salmonella positivity of the farms. Farm level prevalence of Salmonella was significantly higher in young animals below 6 months of age compared to other age groups(X2=10.24; p=0.04). Nine different serotypes were isolated. The four most frequently recovered serotypes were S. Typhimurium (23.3%),S. Saintpaul (20%) and S. Kentucky and S. Virchow (16.7%) each. All isolates were resistant or intermediately resistant to at least one of the 18 drugs tested. Twenty-six (86.7%), 20(66.7%), 18(60%), 16(53.3%) of the isolates were resistant to streptomycin, nitrofurantoin, sulfisoxazole and tetracycline respectively. Resistance to 2 drugs was detected in 93.3% of the isolates. Resistance to 3 or more drugs were detected in 21(70%) of the total isolates while multi-drug resistance (MDR) to 7 or more drugs were detected in 12 (40%) of the isolates. The rate of occurrence of MDR in Salmonella strains isolated from dairy farms in Addis Ababa was significantly higher than those isolated from farms outside of Addis Ababa((p= 0.009). The detection of high MDR in Salmonella isolates originating from dairy farms warrants the need for strict pathogen reduction strategy in dairy cattle and spread of these MDR strains to human population.

Keywords : salmonella, antimicrobial resistance, fecal prevalence
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020