

COMPARISON OF ANTIBIOTIC RESISTANCE PREVALENCE BETWEEN CATTLE FARMS IN KANDY AND KURUNEGALA DISTRICTS

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Emergence of antibiotic resistance is one of the intractable challenges to public health. Overuse and misuse of antibiotics in animals can lead to antibiotic resistance development. For example, prolonged exposure to antibiotics can develop resistance in cattle gut bacteria which are released to the environment through excretion. The goal of this study was to compare the antibiotic-resistance of cattle farms in Kandy and Kurunegala Districts. During our previous study, it was found that amoxicillin resistant bacteria (ARB) and chloramphenicol resistant bacteria (CRB) were present in cow dung samples obtained in Kandy District. The same study was continued in Kurunegala District having the highest cattle population in the country. In this research, cow dung samples from 15 farms in Kurunegala District were screened for antibiotics resistance using a 96 well plate-based high throughput assay in the presence of amoxicillin, chloramphenicol, gentamicin, ciprofloxacin and nalidixic acids. *Escherichia coli* (ATCC 25922), *Pseudomonas aeruginosa* (ATCC 25619) and *Staphylococcus aureus* (ATCC 25923) strains were used as susceptibility testers to validate the assay. Out of 30 farms in both districts, 86% showed the presence of ARB. Further, CRB were found in all the selected farms in Kandy District although they were not present in any farm in Kurunegala District. For further characterization, antibiotic-resistant bacteria were isolated from cow dung samples from Kandy District using the pour plate method. Morphological and biochemical tests together with DNA sequencing revealed that ARB and CRB were *Pseudomonas aeruginosa* and *Acinetobacter burmannii*, respectively. Minimum inhibitory concentration (MIC) values of ARB for amoxicillin and CRB for chloramphenicol obtained were 6400 $\mu\text{g mL}^{-1}$ and 640 $\mu\text{g mL}^{-1}$, respectively, which were 200 and 20-fold higher compared to their standard MIC values. New MIC values of antibiotic resistant bacteria isolated from samples of Kurunegala District are expected to obtain. The preliminary results indicate a variation of the prevalence of antibiotic resistance between the two districts, and hence the study could be expanded to other districts in the country for better understanding. Since cow dung is used as organic manure, our findings are of great importance to understand the dispersal of antibiotic resistance in agricultural fields.

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