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Occurrence and distribution of tetracyclines, quinolones and sulfonamides in livestock manure in Morogoro municipality, Tanzania

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Antibiotics are deployed in large quantities in human and veterinary medicine. They have played a major role in improving human health and supporting livestock production. However, the relevance of non-therapeutic applications needs a time to time evaluation due to its significant relationship to increase emergence of resistant pathogen strains both in humans and animals. This is due to widespread discharge into the aquatic environment from both domestic and agricultural sources of antibiotics which are not completely metabolized (original compounds) or metabolites of which are recycled through drinking water. A study was conducted to analyze the presence of sulfonamides, ciprofloxacin and tetracyclines in swine, cattle and poultry manure in Morogoro municipality. A total of 60 grab manure samples from poultry, swine and cattle were analyzed. Twenty samples for each type of livestock manure were collected from Morogoro municipality for analysis. The respective antibiotics were analyzed by ELISA. The highest mean concentrations in manure sample were 1320.9967±710.06372 µg/kg, 2083.2640±820.64583 µg/kg and 1573.7528±222.95739 µg/kg, sulfonamides, ciprofloxacin and tetracyclines, respectively. In overall, higher concentrations of the antibiotics were detected in poultry and swine manure than in cattle. This indicates heavier usage of veterinary antibiotics in poultry and swine husbandry in the study area as compared to cattle. The findings of this study provide basic information on the risk of environmental antibiotic contamination from animal effluents.

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