

## Genetic Diversity and Molecular Basis of Carbapenem Resistance in *Acinetobacter Baumannii* Isolates from Cattle

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**Abstract :** *Acinetobacter baumannii* is a notorious bacterial pathogen that is an emerging nightmare in clinical settings and is mainly involved in severe nosocomial infections. However, the data related to carbapenem-resistant *A. baumannii* (CRAB) from veterinary settings is limited, especially in developing countries like Pakistan. To investigate the genetic diversity and molecular basis of carbapenem resistance in *Acinetobacter baumannii* isolates from Cattle, a total of 1960 samples were collected from cattle from Punjab, Pakistan. The isolates were analyzed by routine microbiological procedures and confirmed by polymerase chain reaction (PCR). The isolates were further screened for antimicrobial susceptibility and the presence of multiple antimicrobial-resistant determinants by PCR. Multilocus sequence typing (MLST) was performed. The results of the current study revealed that the overall prevalence of *A. baumannii* in cattle was 3.28% (65/1980). Among cattle 27.7% (18/65) were found CRAB strains. The CRAB isolates harbor class D  $\beta$ -lactamases genes, e-g, blaOXA-23 and blaOXA-51, 94.4% (17/18). CRAB isolates carry class B  $\beta$ -lactamases gene blaIMP, and only one isolate carries the blaNDM-1 gene. The MLST results of CRAB isolates from cattle demonstrated 5 STs and one new ST. The commonly found sequence types in CRAB isolates were ST2 (n=10, 55.5%), followed by ST642 (n=5, 27.8%) and ST600 & ST889 (n=1, 5.55%). The presence of CRAB isolates in cattle indicates an alarming situation in Punjab, Pakistan. Immediate control measures should be taken to stop the transmission of CRAB isolates within cattle, to the environment, and to clinical settings.

**Keywords :** *acinetobacter baumannii*, carbapenemases, veterinary, drug resistance

**Conference Title :** ICMBM 2024 : International Conference on Microbiology and Beneficial Microbes

**Conference Location :** Lisbon, Portugal

**Conference Dates :** April 11-12, 2024