

TITLE: CHALLENGES IN THE IMPLEMENTATION OF ROUTINE PROTOCOL FOR DIAGNOSIS OF *Acinetobacter calcoaceticus*- *Acinetobacter baumannii* (ACB) COMPLEX FROM CLINICAL VETERINARY SAMPLES

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ABSTRACT:

The World Health Organization (WHO) has considered the emergence and spread of antimicrobials resistance as one of the three major threats to public health in the 21st century. Among these, bacteria of the complex *Acinetobacter calcoaceticus* - *Acinetobacter baumannii* (Acb), especially *A. baumannii* carbapenem-resistant that was classified as a superbug of critical priority. Because of the difficulties in identifying these agents at routine laboratories, these strains are commonly underdiagnosed. The present study aimed to identify the species of Acb complex and to evaluate the occurrence of the resistance to carbapenems in strains from veterinary clinical samples. *Acinetobacter* spp. was investigated in 125 bacterial strains from infectious processes in domestic animals (cystitis, otitis, and dermatitis). For species identification, the strains were submitted to MALDI-TOF and genotypic techniques. The resistance to carbapenems was predicted by disk diffusion test using meropenem. Furthermore, all isolates were submitted to PCR assays to search carbapenemases genes (*bla_{OXA-23}*, *bla_{OXA-24}*, *bla_{OXA-58}*, and *bla_{OXA-51}*). Fifteen strains were identified as *Acinetobacter* at species level (9 *Acinetobacter pittii*; 5 *Acinetobacter baumannii*; 1 *Acinetobacter nosocomialis*). Phenotypic resistance assays detected five meropenem-resistant isolates (4 *A. pittii*; 1 *A. baumannii*), but none presented the genes *bla_{OXA-23}*, *bla_{OXA-24}*, *bla_{OXA-58}*, and *bla_{OXA-51}*. The identification of all three species of the Acb complex of clinical relevance in samples from animal infectious processes reinforces the needs for a proper investigation of these agents at the routine veterinary diagnostic laboratory. The prevalence of *A. pittii* strains as potential producers of carbapenemases points to this species as a potential reservoir of resistance. Since most studies consider *A. baumannii* as the unique main species, additional studies will be carried out to identify the resistance genes related to the other species of the complex, for a better understanding of the impact of these strains on the spread of this resistance at the veterinary environment.

Keywords: Acb complex; carbapenem resistance, superbug

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