

TITLE: *In vitro* antimicrobial susceptibility profile of *K. pneumoniae* isolated from animals

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ABSTRACT

Bacterial resistance to antimicrobials has increased in recent years. Among Gram-negative bacteria, responsible for most nosocomial infections, *Klebsiella pneumoniae* from the family Enterobacteriaceae stands out for the ability to develop enzymatic resistance mechanisms and are considered to be responsible for different infectious diseases. Its main defense mechanisms are related to the production of extended-spectrum β -lactamases (ESBLs), the expression of metallo-beta-lactamase (IMP-1) and extended-spectrum beta-lactamase (CTX-M) From bacteria to various antibiotics. In the face of treatment failures, which are more often empirical, knowledge of the resistance pattern of *K. pneumoniae* becomes important as it guides a new therapeutic approach. Thus, the objective of this study was to trace the antimicrobial susceptibility profile of *K. pneumoniae* isolated from domestic and wild animals from Cuiabá-MT between 2016 and 2017. Thirty one isolates from different clinical samples from the Laboratory Of Microbiology of the Veterinary Hospital of UFMT were used for the research. Samples were seeded in agar-blood, MacConkey and Sabouraud at 37°C in aerobiosis and identified using the Gram method and biochemical tests. The isolates morphologically compatible with *Klebsiella* sp, DNA extraction, PCR with primers based on 16S DNA DNA (27F and 1492R) and sequencing were performed for the confirmation of the species. Subsequently, the antimicrobial susceptibility test was performed through the disc diffusion technique (Kirby-Bauer) for 20 antibiotics. The most sensitive antibiotics to the isolates were imipenem (31/31), meropenem (30/31) and amikacin (26/31). The least effective were metronidazole (30/31), amoxicillin (29/31) and ampicillin (29/31). In agreement with several studies, in this study, a high prevalence of multiresistance was detected, with 96.8% of isolates resistant to three classes of antibiotics or more. In addition, resistance to more than one class of antibiotics (penicillin, nitroimidazole and sulfonamides) was observed, reflecting difficulties in the association of antimicrobials for treatments. It was concluded that the high frequency of resistance of *K. pneumoniae* was similar to that described in the literature. *In vitro* antimicrobial susceptibility analysis should be considered prior to decision making for treatment choice.

Keywords: *Klebsiella pneumoniae*, antibiotics, PCR, resistance, sensitivity