

TITLE: VIRULENCE IN COLISTIN RESISTANT *Klebsiella pneumoniae* CLINICAL ISOLATES

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ABSTRACT:

Resistance to colistin, associated to the virulence mechanisms, represents an increased risk for treatment, due to limitations in therapy and the high potential for serious infections associated to these bacterial pathogens. The present study aimed to evaluate the presence of virulence mechanisms among twenty colistin-resistant *Klebsiella pneumoniae* isolates. The bacterial identification and the susceptibility profile determination were carried out by Vitek® automated system. Capsular typing (K1, K2, K5, K20, K54 and K57) and detection of virulence genes: *kfu* (iron uptake), *wabG* (lipopolysaccharide biosynthesis), *wcaG* (fucose biosynthesis), *fimH* (type 1 fimbriae operon component), *mrkD* (type 3 fimbriae operon component), *rmpA* (hypermucoviscosity) and *uge* (urease operon component) were performed by PCR using specific primers and conditions. The amplification products were purified, sequenced and then compared to deposited sequences at Genbank®. The isolates showed multidrug resistance (MDR) phenotype, being resistant to the most of the antimicrobials tested. Among the capsular types analyzed, only the type K2 was identified in six isolates. The presence of the genes: *kfu*, *wcaG* and *rmpA* were not detected for any of the isolates. On the other hand, all isolates harboured the genes: *wabG*, *fimH*, *mrkD* and *uge*. The presence of the urease operon contributes to the colonization of the urinary tract of the host, while the concomitant presence of both fimbriae types allows high fixation rates to the tissue and the accumulation of these genes contributes to the hypervirulent phenotype (HP). Moreover, capsular type K2 is already associated with the HP, due to its polysaccharide content, and this is the most frequent type isolated in Brazil. The lack of definition of capsular types for the other isolates suggests the presence of less studied capsular types. The presence of MDR isolates associated with virulence mechanisms is rarely reported and represents a high infectious capacity, mainly the strains of type K2, commonly associated with invasive infections.

Keywords: capsule, hypervirulent, polymyxin, resistance

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