

**TITLE:** MCR-1, KPC-producing *Serratia marcescens* isolated from inpatients

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**ABSTRACT:** *Serratia marcescens* has been drawing attention for its ability to cause serious infections such as meningitis and bacteremia. Furthermore, antimicrobial resistance genes (ARG)-producing isolates strongly contribute to the current public health problem threatening the world. Four *S. marcescens* were recovered from different clinical samples. Three of them were isolated (LCR, tracheal secretion and urine) from the same hospital in 2018 while the left one was isolated from blood in 2017 from a different city. The isolates were sent to Adolfo Lutz Institute in which have a surveillance program to monitor ARG, including *bla*<sub>KPC</sub> and *mcr-1*. Twenty-one antimicrobial drugs were tested, including tigecycline. The four isolates were extensively-drug resistant, displaying high MIC's results for carbapenems (>64µg/mL) and tigecycline (from 2µg/mL to 96µg/mL). PCR results revealed the presence of both genes in all isolates. After PFGE analysis, the three isolates were closely related, confirming the clonal spread in 2018. The isolate from the other hospital was not correlated with the other ones. In order to determine the ARG localization, I-CEU-I and S1-PFGE experiments were performed. According to S1-PFGE results, the three-related isolates presented two plasmids, ranging from 216kb to 244kb, approximately. In addition, one isolate also presented a third plasmid, ~336kb in size. The non-related isolate did not present any plasmid. Further experiments such as Southern Blot is still under investigation. *S. marcescens* display several intrinsic resistances, including polymyxins. Although the presence of *mcr-1* gene will not impact in the therapy options, monitoring its spread and epidemiology plays a crucial role in this terrifying scenario.

**Keywords:** Antimicrobial resistance, LCR, polymyxin

**Development Agency:** This work was supported by INPRA - Instituto Nacional de Pesquisa em Resistência Antimicrobiana - Brazil (INCT/CNPq: 465718/2014-0). We also would like to thank FAPESP for the constant support.