ORT_10 - Antimicrobial resistance profile and aggregation capacity evaluation of Burkholderia cepacia complex strains isolated in a pharmaceutical facility

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Introduction: Identification of contaminants is crucial in the production of pharmaceutical products, which must follow Good Manufacturing Practices. A common contaminant found in pharmaceutical grade water is bacteria's from the *Burkholderia cepacia* complex (CBc), which can represent a risk to the production process, due to the presence of endotoxins.

Objectives: The aim of this study was to evaluate the antimicrobial resistance profile the aggregative capacity of CBc strains isolated in a pharmaceutical facility.

Methodology: Forty-one CBc strains isolated mostly from water sources between 2015 and 2023, were submitted to antimicrobial susceptibility test by disc diffusion method (Kirby-Bauer), using minocycline, trimethoprim-sulfamethoxazole and trimethoprim, and evaluated according to Clinical & Laboratory Standards Institute (CLSI 2022). In the aggregative capacity test, strains were grown in casein soy agar TSA at 37°C/24 h and a loopful were transferred to two 15 mL conical tubes and incubated at 37°C/48 h, one under constant agitation and the other without. After incubation, the tubes were kept 1 h at room temperature and the pellet were measured.

Results: Approximately 64.02% of the strains showed resistance to the antimicrobials recommended by CLSI 2022, which were minocycline, trimethoprim-sulfamethoxazole and trimethoprim. The resistant strains exhibited halos of <14 mm. All samples were classified as non-aggregative, with pellets <0.1 ml.

Conclusion: The CBc strains isolated in a pharmaceutical facility in this study showed resistance to the tetracyclines and folate antagonist classes of the antimicrobials tested. These results are worrying because these environmental strains could end up transferring resistance genes to other pathogenic bacteria or could pose a greater risk if they manage to persist in the process and contaminate any final product. Since a non-aggregation capacity was observed, further studies on their biofilm creation cycle are needed to assess the persistence of these strains in the pharmaceutical environment in order to contribute to the contamination control strategy.

Keywords: Burkholderia cepacia complex; Antimicrobial susceptibility profile; Contamination control strategy.