

## Health Microbiology and Biotechnology

### P-158 - PROFILING ANTIMICROBIAL TOLERANCE BY PLANKTONIC, BIOFILMS AND BIOFILM-RELEASED CELLS OF STAPHYLOCOCCUS EPIDERMIDIS

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#### Background

Worldwide, *Staphylococcus epidermidis* has been recognized as leading cause of several clinically relevant infections, especially in neonates and immunocompromised patients. Its ability to form biofilms, particularly in the surface of indwelling medical devices, is the primary cause of healthcare associated infections. On the last stage of biofilm lifecycle - disassembly, cells are released to the surrounding environment, being able to spread the infection and cause systemic diseases. These cells may be defined as biofilm-released cells (Brc). It is well known that planktonic cells (PLA) are more susceptible to antibiotics than biofilm cells (BF). So far, little is known regarding Brc tolerance to antibiotics.

The main goal of this work was to compare the susceptibility of Brc, PLA and BF of *S. epidermidis* clinical isolates, to 10 distinct antibiotics.

#### Method

Brc, PLA and BF cells were obtained using a previously developed method (França et al, 2016), with different *S. epidermidis* clinical isolates. The susceptibility of all populations of *S. epidermidis* 9142 to peak serum concentrations (PSC) of Dicloxacillin, Imipenem, Teicoplanin, Vancomycin, Ciprofloxacin, Rifampicin, Erythromycin, Gentamicin, Linezolid and Tetracycline was assessed after 2 hours of incubation, by CFU counting. Furthermore, 11 additional isolates were studied upon incubation with PSC of Vancomycin, to determine whether the results are transversal to distinct isolates among the same species.

#### Results & Conclusions

Our results demonstrated that Brc present a distinct tolerance profile when exposed to some antibiotics. While studying isolate 9142, Brc had a distinct tolerance phenotype with 6 out of 10 antibiotics. Regarding vancomycin assays, Brc presented an intermediate susceptibility to vancomycin when compared with other populations with 11 out of 12 isolates. Thus, this study outlines the impact of Brc on pathogenesis by demonstrating that the metabolic state and cell physiology of Brc present a distinct antibiotic tolerance profile, and might influence antimicrobial therapies against Staphylococcal infections.

#### References & Acknowledgments

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França, A., Carvalhais, V., Vilanova, M., Pier, G. B., & Cerca, N. (2016). Characterization of an in vitro fed-batch model to obtain cells released from *S. epidermidis* biofilms. *AMB Express*, 6(1), 23.

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