

Mixed biofilms of *Staphylococcus epidermidis* and *Candida parapsilosis* as an insight in polymicrobial endocarditis

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Infective endocarditis is a serious clinical issue, often related to the prolonged use of intravenous catheters that can eventually become infected. Although polymicrobial endocarditis (PE) involving *Staphylococcus epidermidis* and *Candida* species is uncommon, it is generally associated with patients' high mortality due to the presence of *Candida* spp.. Additionally, investigation on the phenomenon of microbial competition in PE is still scarce. Thus, the main goal of this work is to deepen the knowledge of PE related to *Staphylococcus* and *Candida* spp., by studying the competition and the influence of each species on biofilm formation on silicone.

Both strains of *S. epidermidis* and *C. parapsilosis* were clinical isolates. Biofilm assays were performed on silicone coupons in 24-well plates, for 24, 48, 72h and 8 days. Total biomass was measured by crystal violet staining while cell viability was evaluated through colony forming units (CFU) enumeration. Species differentiation in mixed biofilms was achieved using selective mediums and also by Scanning Electronic Microscopy (SEM) observation. According to the results, and comparing to single spp. biofilms, it was noticed that mixed biofilms are not cumulative. Despite this, in all biofilm conditions an increase in the number of cells was observed after 72h. Moreover, an inhibitory effect of *S. epidermidis* on *C. parapsilosis* biofilms was noticed, especially at 72h.

In conclusion, this study provided an important approach for a better understanding of *S. epidermidis* and *C. parapsilosis* biofilms composition, structure and interactions, which can give new insights on PE caused by these microorganisms.