

Miscellaneous

037 : Progesterone Modulates *Candida albicans* Biofilm Formation / Expression

Session B

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Vulvovaginal candidiasis (VVC) caused by *Candida albicans* is a common disease worldwide. The most important *C. albicans* virulence factor is its ability to form biofilms, which, in the vaginal environment, may be formed on the epithelium and on intrauterine devices. Despite it has been shown that VVC has a hormonal dependency, the effects of progesterone on biofilm formation by *C. albicans* are still poorly understood. Thus, this work aimed to deepen the knowledge in that field by studying the effect of progesterone on *C. albicans* biofilm formation. *C. albicans* biofilms were formed in the presence and absence of progesterone and evaluated in terms of cell cultivability, total biomass, metabolic activity, structure, matrix composition and also genomic expression using species-specific microarrays. The results showed that progesterone reduced the ability of *C. albicans* to form biofilms, decreasing their cell cultivability, biomass, structural cohesion, matrix production and matrix carbohydrate content. Accordingly, biofilms formed in the presence of progesterone presented lower expression of several genes involved in *C. albicans* adhesion and biofilm formation (e.g. *TEC1*, *BRG1*, *PBR1*, *AHR1* and *HSP104*) than biofilms formed in hormone-free medium. Genes involved in metabolism of carbohydrates were also found to have a reduced expression in biofilms formed with progesterone. On the other hand, progesterone presence led to an over-expression of genes involved in external stimulus response, such as those encoding drug-transporters (e.g. *CDR1* and *CDR2*), and also in lipid metabolism (*PXP2*, *POT1*, *FAT1*, *ANT1*, *MLS1*, *ICL1* and *CIT1*). Overall, the results of this study show that progesterone has a role in the modulation of *C. albicans* biofilm formation, which may have implications on *C. albicans* pathogenicity in the vaginal environment. The authors acknowledge funding and support from the Portuguese Foundation for Science and Technology (FCT), COMPETE 2020 and BioTecNort operation.