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INFLUENCE OF GLUCOSE ON *CANDIDA PARAPSILOSIS* VIRULENCE FACTORS

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Candida parapsilosis is a pathogenic fungus responsible for a high number of oral candidosis, predominantly due to the growth in a biofilm form on indwelling medical devices. One of the major contributions for *C. parapsiloisis* virulence is its versatility to adapt to a variety of different environmental factors. The development of *Candida* biofilms has important clinical repercussions because of their resistance to antifungal therapy and the protection against host immune defences. *Candida* biofilms are characterized by easily glucose adaptation. However, it remains unclear how glucose affect *C. parapsilosis* biofilms formation and virulence.

Thus, this work aimed to study the influence of glucose in biofilm formation ability and matrix composition of *C. parapsilosis* and in the expression of virulence genes such as *BCR1*, *FKS1* and *OLE1*. For that a full characterisation of *in vitro* biofilm formation with different concentrations of glucose (0.2, 2 and 10 %) was examined. Biofilms were analysed by CFUs determination and total biomass quantification. Biofilm matrix was examined in terms of total proteins and carbohydrates. Scanner electron microscopy (SEM) was used to observe the structure of *Candida* biofilms. Furthermore, RT-qPCR was performed to examine the expression levels of *BCR1*, *FKS1* and *OLE1* genes present in biofilm cells grown in the presence of the different glucose concentrations.

The results demonstrated that glucose influences biofilm formation ability, with an increase in total biomass and number of CFUs, with an increase in a glucose; however in a strain dependent manner. Moreover, the increment of glucose causes an increase on the content of proteins and polysaccharides on *C. parapsilosis* biofilm matrix. Moreover, *BCR1*, *FKS1* and *OLE1* gene expression increased with the glucose increment. In addition, SEM images revealed the presence of pseudohyphae for higher levels of glucose (2 and 10 %). So, the results suggested that glucose enhanced pseudohyphae formation by the induced expression of *OLE1*, which influences biofilm structure. The overexpression of *BCR1* and *FKS1* confirm the influence of glucose in biofilm formation ability and in the carbohydrate synthesis and secretion (present in the matrix), respectively.

Summarizing, *C. parapsilosis* biofilms presented a great capacity to tolerate and grow in the presence of high levels of glucose that seems to be directly implicated in *C. parapsilosis* virulence.