

Clinical Microbiology

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EFFECT OF AZOLES IN *CANDIDA GLABRATA* BIOFILMS AND ITS RELATION WITH ERG GENES EXPRESSIONCélia Fortuna Rodrigues¹; Sónia Silva¹; Bruna Gonçalves¹; Joana Azeredo¹; Mariana Henriques¹¹IBB–Institute for Biotechnology and Bioengineering, Centre of Biological Engineering, University of Minho

Fungal infections has significantly increased, enhancing morbidity and mortality. The use of broad-spectrum antibiotics, catheters or immunosuppression diseases, are predisposing factors for its development. Once believed as non-pathogenic, *Candida glabrata* rapidly was perceived to be responsible for infections. Despite lacking a number of virulence factors allied to the majority of *Candida* pathogenicity, *C. glabrata* possesses high ability to colonize medical devices and human epithelium, resulting generally in biofilms formation ability. Its intrinsically low susceptibility to azoles, such as triazoles (*e.g.* fluconazole (Flu), voriconazole (Vcz)) and its biofilms tolerance is another problem. This study evaluated the effects of Flu and Vcz in the control of a reference, vaginal and urine *C. glabrata* biofilms and its relation with the expression of genes encoding for Ergosterol: *ERG3*, *ERG6* and *ERG11*. Minimum Inhibitory Concentration was determined for planktonic cells and biofilms were formed during 24h and treated (for 24h) with different concentrations of both antifungal agents. The effects of Flu and Vcz were analyzed by Colony Forming Units determination and by total biomass quantification using Crystal Violet staining. Biofilms were also analyzed by scanning electron microscopy. Total proteins and carbohydrates were quantified from biofilms' matrices and ergosterol present in the matrices was also quantified by HPLC. qRT-PCR was used to study the gene expression of selected *ERG* genes. Our results show that, unlike Flu, Vcz had a very good *Candida* biofilm eradication capacity. No fluctuations between the two azoles were noticed in terms of proteins and carbohydrates, both presenting a blocked production in the first and an over-metabolism in the second. Ergosterol was detected in the matrices. Overexpression of *ERG* genes, in the presence of the both drug compounds was noticed. This work reveals the extraordinary capacity of *C. glabrata* to change with the purpose of overcome the adversities of the environment. The ergosterol present in matrices and the overexpression of *Erg* genes could be an explanation for higher *C. glabrata* biofilms tolerance, hampering the action of drugs against the cells, and when passing to the progeny, is, undoubtedly, a great advantage to the development of resistance to antifungals.

ACKNOWLEDGMENTS

The authors are grateful to:

- Strategic project PTDC/SAU-MIC/119069/2010 for financial support to the research center and for Célia F. Rodrigues' grant.
- Pfizer®, S.A. for the kindly donation of Flu and Vcz.