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The chemical structure of the biofilm matrices of *Candida glabrata* induce resistance to antifungal drugs

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Candida infections are often associated to biofilms and consequently to high resistance to the most common drugs. These resistance mechanisms are not only associated with the biofilm yeast physiology, but also with the presence of a barrier imposed by the biofilm matrix. However, the biochemical role of the biofilm components remains very unclear. Therefore, this work intends to further enlighten the effect of antifungal agents on *C. glabrata* biofilm resistance.As a good biofilm former, *Candida glabrata* ATCC 2001 was selected to this study. Several antifungal drugs, belonging to different groups, were used in this work, namely fluconazole, voriconazole, amphotericin B, caspofungin and micafungin and their effect on biofilm matrix was assessed. Biofilm matrix chemical composition and structure was evaluated by analytical methods, specifically by HPLC and mass spectroscopy.As expected, *C. glabrata* biofilms were resistant to the antifungals used in an agent-dependent manner. The results showed significant differences in polysaccharides and proteins contents, in the matrix of biofilms formed in the absence and in the presence of the drugs. Moreover, the diffusion through the matrix was evaluated demonstrating that different agents, even belonging to the same group, present very different diffusion profiles, explaining the different tolerance registered. So, with this study we confirmed that *C. glabrata* biofilm's resistance to antifungal drugs is a very complex mechanism, where the matrix plays a major role.