

Biofilm formation of *Candida dubliniensis* on dental acrylic

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Candida dubliniensis is an emerging pathogen that has been mismatched with *Candida albicans* until recently. This species is an opportunistic yeast that infects the human body, namely, the mouth and it is of major importance in denture wearers, once the prosthetic devices are easily colonized. Compared to planktonic cells, biofilms are the prevalent formation of microorganisms in nature, and are responsible for the development of clinical infections. There are only few studies concerning biofilms formed by *Candida dubliniensis*. So, the aim of the present work is the study of biofilm evolution of two different strains of *Candida dubliniensis* formed on dental acrylic coupons.

The biofilm was formed on coupons of self-polymerized acrylic, using *C. dubliniensis* 7987 and *C. dubliniensis* 7988 (both obtained from CBS). The biofilm was analysed after 7, 14, 24, 48 and 72h using two different approaches, one that involved the determination of the total biomass (using crystal violet) and the other that considered the cellular activity (using XTT formazan salts quantification). Biofilms were formed either in Sabouraud dextrose broth (SDB) or in artificial saliva.

The first result obtained is that *C. dubliniensis* has the capability of forming biofilms. SEM observations showed that *C. dubliniensis* biofilms on acrylic are heterogeneous, having simultaneously, blastopores and hyphae. The results also show that there are differences between both strains, for all the conditions assayed. In the case of SDB *C. dubliniensis* 7987 biofilm evolution reached a plateau after 48h, though *C. dubliniensis* 7988 biofilm was still growing after that time. Conversely in the presence of artificial saliva all biofilms increased until 72h. However the increase, after 48h, is higher in the case of *C. dubliniensis* 7987. Concerning the activity, it is interesting that for most cases, the active biofilm evolution follows the total biomass evolution. The exception is the case of *C. dubliniensis* 7988 when grown in SDB, which displayed a decrease in the activity and an increase in the total amount of biofilm. This can be explained by the fact that in a mature biofilm the cells in the bottom layer could be less active due to diffusional problems.

The main conclusion of the present work is that *Candida dubliniensis* is a biofilm producer on dental acrylic, and the biofilm formation and activity appear to be strain dependent in the case of mature biofilms.