

## THE CHARACTERISTICS OF *CANDIDA ALBICANS* BIOFILM FORMATION *IN VITRO*

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*Candida albicans* is a dimorphic fungus that exhibits a number of different morphological forms under different environmental conditions. During human candidiasis development this microorganism forms biofilms. *C. albicans* biofilms usually consist both yeast cells and hyphae covered with a thick exopolysaccharide layer. The *C. albicans* biofilm structure, in particular the component ratio, can be different depending on the substrate type: artificial medical devices, skin or mucous membranes.

The aim of this work was to characterize the *Candida albicans* biofilm formation process under different conditions *in vitro*.

The work was carried out at Biotechnological Research and Training Center using *Candida albicans* ATCC 18804. It was cultivated in two liquid medium variants: Sabouraud (standard nutrient medium for yeast like fungus cultivation) and Spider (rich medium for phenotype growth and colony wrinkling in *C. albicans* observation).

The earliest workers with *C. albicans* found that changes in the growth environment of it led to changes in cell shape. However, no one has ever been able to discover any environmental “morphogen” that acts alone and under all conditions to provoke the growth of cells from any *C. albicans* isolate in only one morphological form.

In our studying it was found that the formation of mature *C. albicans* biofilm accompanied by an increase of the cell as well as exopolysaccharide number. At low temperature biofilm maturation was less intensive compared with 37 °C. But in both cases, only yeast cells were observed as part of the biofilm. Such structure of *C. albicans* biofilms was noted at catheter surface of urological patients.

The intensity of *C. albicans* biofilm formation in Spider medium was slightly lower than in Sabouraud one but only during the last phase. However at the process beginning the significant number of hyphae that gradually associated into a continuous system was noted only in the first mentioned nutrient medium. Given the fact that hyphal production is considered of *C. albicans* pathogenicity increasing this biofilm structure was a model for the skin surface candidiasis biofilm. This type of disease is the most aggressive and common form in humans.

So, the nutrient medium composition and conditions, including temperature and cultivation duration, effect on the *Candida albicans* biofilm formation. These factors cause manifestation of the ability to switch between different forms of microorganism morphology and overall speed of group production.