

THE CULTURE CONDITION EFFECTS ON THE *CANDIDA ALBICANS* BIOFILM FORMATION PROCESS

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Candida albicans is a polymorphic microorganism existed as either true yeast fungi or as the hyphae and pseudohyphae forms. This microorganism is a part of the normal microbiota. But during human violations candidiasis arise and the biofilm development begins. The *C. albicans* biofilm structure can be different, depending on their formation surfaces (Zhu W., 2010).

There are several factors that significantly affect the switching of yeast forms to hyphae *in vivo* and *in vitro*. However, recently the microbial intercellular communication molecules, including farnesol, began to attract the most attention. (Lajeau Chaffin W., 2008). Farnesol is organic compound that belongs to acyclic terpene alcohols class. Natural farnesol is derived from essential oils and used as a fragrant substance and smell retainer. In 2013 it was first determined that natural farnesol also synthesized by *C. albicans* cells and affects its dimorphism, but for its synthetic analogues such action had not been set yet (Sato T., 2013).

The aim of the work was the study of the synthetic farnesol effect on the *C. albicans* biofilm structure. The work was carried out at Biotechnological Research and Training Center. The studied *C. albicans* ATCC 18804 strain was cultivated in the liquid Sabouraud and Spider media. The determined farnesol concentrations were 1, 10, 100 mM.

It was noted the gradual formation of *C. albicans* mature biofilm. Both cells amount and matrix exopolysaccharides increased. The largest number of biofilm cells was observed on the 3rd cultivation day. Then biofilm began to destroy due to the limited nutrients. Studying the biofilm morphology in the Sabouraud medium it was noted only the yeast cells form presence. The biofilm structure in Spider one was significantly different from the previous version. Thus, at the beginning of this structure formation it was found a considerable hyphae number gradually formed a solid system and hyphae were almost 90 % of the structural elements on the 3rd day.

It was compared farnesol influence on the biofilm structure in both variants. In Sabouraud medium the greatest impact farnesol had on the 3rd day of biofilm maturation, possibly due to the fact that the farnesol target is hyphae and their appearance in this environment is only possible in the final development stages. The most active farnesol concentration was 10 mM. In Spider medium the greatest farnesol impact had on the 2nd biofilm maturation day, at this period has adherent cells and hyphae that are target for farnesol actively formed. Studying the *C. albicans* biofilm morphological structure it was identified only the presence of yeast cells in both media. So farnesol modified the form of *C. albicans* existence.

So the farnesol is a compound that effectively affects dimorphism.