THE INFLUENCE OF SOME SYNTHETIC PORPHYRINS ON THE CULTURE OF *CANDIDA ALBICANS*

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Porphyrins are macroheterocyclic compounds, containing conjugated system, which is based on four pyrrole rings linked by four methine groups in α-positions. Two classes of porphyrins, natural and synthetic, can be distinguished on the basis of their origin and structure (Soman R., 2015).

The fungus *Candida albicans* commonly colonizes the epithelial surfaces of the human body. Impairment of innate and adaptive host defenses, perturbation of normal microbiota, or underlying disease can contribute to fungal overgrowth and candidiasis progress. In the course of this infection *C. albicans* forms a massive biofilm on the affected tissues and organs. *C. albicans* also grows as a biofilm on prosthetic devices (Felipe F. S., 2013).

The aim of this study was to determine antifungal activity of some synthetic porphyrin derivatives.

In the presented work the strain of yeast-like fungi *Candida albicans* ATCC 18804, obtained from the Culture collection of Microbiology, Virology and Biotechnology Department, was used as the test object. The studies were carried out for a synthetic asymmetrically alkyl-substituted free porphyrin bases. Cultivation of *C. albicans* ATCC 18804 in the presence of the studied porphyrins was carried out in sterile polystyrene plate in a liquid nutrient Sabouraud medium. The following parameters were detected for the quantitative determination of the porphyrin influence on *C. albicans* ATCC 18804 growth after 24-48 hours: plankton biomass (cells that have developed in the suspension) and the biofilm formation (cells that developed on "solid surface (the well bottoms) – liquid (culture medium)" phase edge). The obtained data were calculated with a spectrophotometer BioTek "μQuant" (at 540 nm and 592 nm, respectively).

The studied cultures of microorganisms were sensitive to the porphyrin action. After 24 hrs the most active compounds inhibited growth by 80 % in comparison with the control value. On the 2nd cultivation day the cell number in suspension did not exceed 60 % of the control. However, unlike the 1st day the dependence "structure – activity" was not noted.

Formation of *C. albicans* biofilm was subjected to influence of the studied porphyrins, as on the first and the second day. However, most of the results were above the reference values, in some cases up to 2 times higher than that.

The studied *C. albicans* culture is sensitive to the effects of synthetic porphyrins. Porphyrins demonstrate antifungal influence on suspension cells significantly stronger than on the biofilm cells.