Abstract

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Thesis title: The Effect of Quorum Sensing Molecules on The Minimum Inhibitory Concentration of Selected Antifungal Agents

This work examines the effect of quorum sensing molecule of farnesol on the minimum inhibitory concentration of selected antifungal agents – Amfotericin B and Fluconasol – on Candida Albicans yeast. Standard strain collections and clinical isolates were provided by the Clinical Microbiology and Immunology Institute of the Teaching Hospital in Hradec Králové. Broth methodology was used for the testing in accordance with the standard M27-A2 protocol. Combinations of various concentrations of antifungal agents and farnesol were tested. Visual evaluation was carried out after 24 and 48 hours. The results of the experiments indicate that farnesol has an effect on the minimum inhibitory concentration of antifungal agents in most strains. At least minimum change of inhibitory concentration was observed in 33 of 34 tested strains, representing 97% of strains. In 62 % of strains moderate or medium changes were observed in the minimum inhibitory concentration, in 35.5 % of tested samples major changes were observed in the minimum inhibitory concentration (by three degrees of binary series dilution). The different effect of farnesol on individual antifungal agents was very interesting. Farnesol decreased the minimum inhibitory concentration of amfotericin B, while the opposite effect was observed in case of fluconasol. Another finding was that high concentration of farnesol with absence of antifungal agents has a fungistatic, almost fungicidal, effect.

Key words: farnesol, Candida albicans, minimum inhibitory concentration, antifungal agents