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## Can *Vitis vinifera* Extracts affect the Production of Signal Molecule Involved in Lipid Biosynthesis and Biofilm Formation in *Candida* Genus?

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Currently available therapies for candidosis are based on anti-fungal drugs, including azoles, whose mechanism of action is the inhibition of lanosterol demethylase in the ergosterol biosynthetic pathway. However, new therapies are needed because of the thoughtless clinical use of azoles resulting in an emergence of multi-drug-resistant strains of the *Candida* genus. Nowadays, the disruption of cell signaling is considered to be a new target for preventing candidosis. *Candida albicans* yeasts use two major signal molecules; farnesol and tyrosol. Farnesol, a key metabolite in the biosynthesis of sterols, inhibits the attachment of the cells to the surface, the biofilm development and the yeast-to-hyphal switching while tyrosol accelerates the hyphae formation.

The aim of this work was to monitor the production of signal molecules in *C. albicans* during the biofilm formation and study the possible modulation of these processes by addition of anti-virulent agents. Among the compounds, which could be used as anti-virulent agents and whose mechanism of action involves promotion of farnesol biosynthesis and inhibition of the hyphal growth and biofilm formation belongs to some phenols contained in extracts from *Vitis vinifera*. We compared the effects of these biologically active substances (e.g. resveratrol, quercetin) with the effect of the crude extract. Quercetin is capable to induce extracellular farnesol production and in strain *C. albicans* ATCC 2091, we observed a suppression of hypha formation at a concentration 50 mg/l. However, a more complex anti-biofilm effect at lower concentrations was achieved by using a complex mixture of biologically active substances contained in extracts.

### Biography:

Martina Paldrychova is PhD candidate at the Department of Biotechnology at UCT Prague. Martina studying microbial biofilms of opportunistically pathogenic microorganisms, intercellular communication of gram-negative bacteria and yeasts and anti-virulent therapy. Martina Paldrychova dissertation is called Modulation of the quorum sensing system in relation to biofilm formation.