The effect of *PDR16* gene deletion on membrane potential in *Candida albicans*

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Yeast has an irreplaceable place in science and industry. Especially in the food industry to produce baked goods, alcoholic beverages and dairy products. In science, and pharmaceutical industry they are widely used as a model organism. On another hand, certain yeast strains can act as primary or opportunistic pathogens. All yeasts diseases are treated with antifungal drugs. The most widespread and effective class of antifungal agents are azole drugs. At present, however, their increasing rate of azole antifungals resistance presents complications in the treatment of yeast infections. This is particularly important in *Candida*, especially *Candida albicans*. *Candida* are the most common cause of human opportunistic yeast infections worldwide, accounting up to 96% of yeast infections, where 50% of all cases are caused by *Candida albicans* [2].

The plasma membrane is the most important cell membrane and it plays a key role in drug resistance mechanisms. Its properties depend on the lipid and protein composition. One of the most abundant lipids in cell membranes is phosphatidylinositol (PITP). The *PDR16* gene encodes the major phosphatidylinositol transfer protein and is implicated in drug sensitivity. Deletion of the *PDR16* gene leads to increased susceptibility to azole antifungals, affects the phospholipid and sterol composition of the plasma membrane, and alters the total lipid composition in yeast membranes [3]. It has been shown that altered plasma membrane phospholipid and sterol composition can change membrane barrier function [4]. The membrane serves as a diffusion barrier to the movement of ions, especially to ions which are involved in membrane potential generation. The aim of this work is to study the effect of the *PDR16* gene deletion on the biophysical properties of *Candida albicans* membrane, namely the membrane potential as this attribute is notable in membrane barrier function.

The effect of the *PRD16* gene deletion on yeast transmembrane potential values was studied by shift in the emission maximum position ($\Delta\lambda_{max}$) in the fluorescence spectrum of the DiS-C_3(3) probe, after its incorporation into the sample. In our experiments, deletion of the *PDR16* gene did not have a significant effect on the $\Delta\lambda_{max}$ value of the deleted mutants, although the plasma membrane of the mutants was slightly hyperpolarized compared to the wild-type strain. This change is most likely due to a change in the lipid and/or sterol composition of the mutant membrane, which may lead to increased susceptibility to azole antimycotics.

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