INVOLVEMENT OF FRE AND VDAC FAMILY PROTEINS IN EXTRACELLULAR SUBSTRATE REDUCTION IN *Saccharomyces cerevisiae* CELLS

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One of the main aims of studies of the transmembrane redox system is the identification of its components: enzymes, electron donors and physiological electron acceptors.

Literature data indicate the engagement of FRE family proteins in the transmembrane redox system of *Saccharomyces cerevisiae*. On the other hand, it has been reported that VDAC proteins (porins) which form channels within plasma membrane and show NADH:ferricyanide reductase activity in mammalian cells.

In order to identify membrane components involved in the reduction of nonphysiological substrates by yeast cells, we studied strains with disruption of *FRE1*, *FRE2* and *POR1* genes. We found that FRE1 protein is involved in the reduction of ferricyanide. Product of the reaction, ferrocyanide, was estimated with 1,10-phenanthroline as reported by Avron and Shavit. Plate test of Prussian Blue formation with two other substrates, nitroprusside and ferricyanide + $FeCl_3$, confirmed the main role of FRE1 protein in ferricyanide reduction. No impairment of ferricyanide reduction was found in *POR1* disruptants devoid of porin. Interestingly, the reduction of another non-permeating substrat, dichlorophenol was equally reduced by all yeast strains tested. This observation indicates that different protein components are involved in the reduction of the two substrates studied.