

Potassium transport across the cell membrane is supposed to contribute to the maintenance of membrane potential. In this work, the diS-C3(3) assay was used to determine the contribution of three main potassium transporters of *S. cerevisiae* cells (Trk1p, Trk2p and Tok1p) to the membrane potential changes in three different growth phases. It was shown that deletions of these transporters cause hyperpolarisation of the cell membrane in exponential and early diauxic growth phases; no difference was detected in post-diauxic cells. Another contribution of this work is in a deeper study of the activity of ABC pumps which are crucial in multidrug resistance. It was proved that apart from Pdr5p and Snq2p pumps, there are also other active extrusion pumps (most likely Pdr10p and Pdr15p). It was also showed that pdr1, pdr3 mutant strain is not an equivalent of strain lacking the multidrug pumps Pdr5p, Snq2p and Yor1p. The results in this work indicate that diS-C3(3) probe is probably a substrate of other pumps such as Pdr15p. Study of these transporters with our method is thus very suitable and could provide detailed information about their kinetics and help in finding their inhibitors.