Characterization of novel plasma membrane carboxylate transporters from non-conventional yeasts

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Carboxylic acids (CAs) are a group of organic compounds that play a central role in cellular metabolism of many organisms, using it as unique sources of carbon and energy [1]. In order to replace conventional petroleum-based methods for the obtainment of CAs, alternatives are required for more sustainable way of producing these compounds. The exploitation of yeast biodiversity has received great interest from food, pharmaceuticals and even fuels companies, due to the interesting properties of some microorganisms in producing these compounds in a "greener" trait [2]. Non-Saccharomyces yeasts, also called unconventional yeasts, have recently gained prominence in the biotech industry, and are increasingly being used for the heterologous production of valuable products [3]. New strategies for increasing the production of bio-based organic acids are based on the expression of carboxylate transporters in *Saccharomyces cerevisiae* strains. In this work, we focus on the identification of new carboxylate transporters present in several yeasts. The strategy involved the search of homologs to known carboxylate transporters characterized in several microorganisms from yeast, fungi and bacteria. The *S. cerevisiae* IMX1000 Δ25 strain, without carboxylate uptake capacity, was used as a host for the heterologous expression of putative genes encoding CAs transporters [4]. Transport activity was determined by growth phenotypes in different medias containing sole carbon and energy sources, namely mono, di and tricarboxylic acids. The full characterization of the newly identified putative CAs transporters is currently undergoing.

References

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