Heterologous expression of *Candida utilis* carboxylic acid transporter homologs in *Saccharomyces cerevisiae*

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Carboxylic acids are important platform chemicals used traditionally and industrially in food and pharmaceutical companies. In the yeast *Saccharomyces cerevisiae*, two permeases are responsible for the uptake of carboxylates at the plasma membrane. The *JEN1* gene encodes a monocarboxylate proton symporter, with specificity for lactate, pyruvate acetate and propionate, that belongs to the Major Facilitator Superfamily (TC 2.A.1.12.2) [1]. The *ADY2* gene is a member of the Acetate Uptake Transporter (AceTr) Family (TC 2.A.96.1.4) and encodes an acetate transporter [2]. In the yeast *Candida utilis*, different uptake systems for carboxylic acids were functionally characterized [3] however until now the genes encoding these transporters remain unidentified.

In this work, carboxylic acid transporter homolog genes from *C. utilis* were identified and expressed in *Saccharomyces cerevisiae*. The *C. utilis ScJEN1* and *ScADY2* homologs were identified through sequence alignment with BlastP and phylogenetic analysis of putative transporters.

In *Candida utilis*, 5 genes homolog to *ScJEN1* (Cjj23088, Cjj21966, Cjj22358, Cjj21989, Cjj21602) and 4 genes homolog to *ScADY2* (Cja24587, Cja20823, Cja20690, Cja20822) were identified. These genes were expressed under the control of a GPD constitutive promoter, in a *S. cerevisiae jen*1Δ*ady*2Δ strain, that presents no activity for plasma membrane carboxylate permeases. The functional characterization of these proteins is currently underway.

References:

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