Effect of Oleic and Alkane Compounds on POX2 Promoter Induction in Yarrowia lipolytica Yeast

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Background & Objectives: Several regulated promoters are now available for heterologous genes expression in Yarrowia lipolytica. POX2 codes for the long-chain acyl-coenzyme A oxidase, which is repressed by glucose and induced by fatty acids and oils. In this study, effect of oleic and alkane compounds is investigated on POX2 promoter induction in *Y. lipolytica*.

Methods: The recombinant *Y. lipolytica* JMY768 strain with a pPOX2-lacZ reporter gene cultured in the media containing different concentrations of olive oil, oleic acid and methyl oleate as oleic compounds, C10 - C18 alkanes and tributyrin. The β-galactosidase activity and growth rate were investigated.

Results: Theoleic acid 0.5%, C16 1% and olive oil 0.5% had good induction on POX2 promoter. Furthermore, the yeast recombinant strain has good growth on media containing oleic acid, C16 alkane and olive oil.

Conclusion: The XPR2, ICL1, POX2 and POT1 regulated promoters are available. The oleic acid, C16 alkane and olive oil could be use as cheap substrates for high-level production of valuable products and heterologous proteins by Y. lipolytica recombinant strains with POX2 promoter.

Keywords: *Yarrowia lipolytica*; POX2 Promoter; Oleic and Alkane Compounds; Induction