Expression System Induced by Estradiol in *Saccharomyces cerevisiae.*

Adriani, P.P; Borges, F.G.; Oliveira, G.S and Chambergo, F.S*.

Escola de Artes, Ciências e Humanidades, Universidade de São Paulo, São Paulo, Brazil. *fscha@usp.br

Introduction: Due to its functional characteristics, the proteins are being increasingly used in different areas and activities of human society: food, industry, textile, pulp and paper, chemical and medical. The industrial production of commercially valuable proteins for various applications is increasingly being conducted through the development of systems of expression in different hosts such as *Saccharomyces cerevisiae*. **Objectives:** This study aimed to design a metabolically independent expression system induced by estradiol hormone in *S. cerevisiae* is able to produce and secrete effectively homologous proteins and/or heterologous of industrial interest. **Material and Methods:** Thus, it was designed and built a regulatory plasmid (expressing the chimeric transcription factor c-myc-Gal4 (DBD) -hERα (LBD) -VP16 (AD) and an expression plasmid (which contains the chimeric promoter 5xUAS_{GAL}-UARcb1, which is induced by the chimeric transcription factor, regulating the expression of the reporter protein *cellobiohydrolase I* - cbh1 of *Trichoderma reesei*. Both plasmids were used to transform ScW303-1A / *pdr5Δ* strain (constructed in this work) and induced with different concentrations of estradiol. **Results and Discussion:** To analyze the ability of the promoter to direct the expression of the reporter protein cbh1, the DNS testing, with the selected transformants was done using 1% carboxymethylcellulose as a substrate. The highest enzymatic activity occurs in the induction system with 5 µM of 17-β-estradiol and DES (diethylstilbestrol). **Conclusions:** The results show that the expression system induced by 17-β-estradiol and DES operates efficiently in *S. cerevisiae* and that it can be used for the biotechnological production of other proteins of interest.

Keywords: *Saccharomyces cerevisiae.* Expression system. Promoter. Yeast. Estrogen. *Trichoderma ressei*. Protein.

Support: FAPESP nº 2012/50153-5