RESPONSE SURFACE ANALYSIS TO DETERMINE THE OPTIMAL ACTIVITY OF XYLOSE REDUCTASE FROM *DEBARYOMYCES HANSENII* UFV-170

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Xylose reductase (*XR*) is responsible for the first step in the xylose metabolism. Although *XR* are well characterized for various yeasts, little is known about *Debaryomyces hansenii* enzyme. In the present study, *Response Surface Analysis* was used to determine the optimal conditions for *D. hansenii* UFV-170 *XR* activity. The influence of pH and Temperature ranging from 4.0 to 8.0 and from 25 to 55^{o}C respectively was evaluated by a 2^3 full-factorial design. A xilose grown yeast biomass (74.0 g.L^{-1} dry weight) was suspended in phosphate buffer and lysed in a French Pressure (19,000 psi, 5^{o}C). Cell debris was removed by centrifugation and *XR* activity was determined by following oxidation of NADPH at 340 nm. Total protein was determined by Bradford's with BSA as standard. The software *SAS* as employed for the non-linear regression analysis. The *F*-test (*ANOVA*) and the Student's *t*-test were performed to evaluate the statistical significance of the models and the regression coefficient, respectively. *XR* activity varied from 0.502 to 2.529 U.mL^{-1} (0.07 to 0.352 U.mg^{-1}). The R^2=0.9405 suggested that the models could explain 94.05% of the total variation. The maximum *XR* activity value predicted by the model was 2.271 U.mL^{-1} (0.231 U.mg^{-1}), corresponding to the point defined by pH 5.3 at 39^{o}C. The model was validated experimentally. (CNPq).