عنوان مقاله:

Kinetic Study of Erythrose Reductase Extracted from Yarrowia lipolytica

محل انتشار:

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خلاصه مقاله:

Erythritol as a non-caloric and non-cariogenic sweetener is safe for diabetics. Both microbial fermentationand chemical methods can be used to produce erythritol, but chemical methods failed to be industrialized due totheir low efficiency. Moniliella tomentosa, Aureobasidium sp. and Yarrowia lipolytica are industrial producers oferythritol. Erythrose reductase (ER) is a key enzyme in the biosynthesis of erythritol and catalyzes the final step inthis pathway. Enzyme extract was obtained from Y. lipolytica by grinding cells with 0.5mm glass beads and ERactivity was performed using 10 µl enzyme extract, 7.5 mM NADPH and 12 mM D-erythrose in potassiumphosphate buffer (pH 7.5). Reaction was monitored with decreasing of NADPH absorbance in OD340 at 37 ˚C for 8min by a microplate analyzer. In order to determine the activation energy (Ea), activity of enzyme was measured in4-45 ˚C and results were analyzed with Kinetic software according to Arrhenius equation. The best enzyme activityof ER was 6.268 mU. One unit of ER activity was defined as the amount of enzyme that catalyzes the oxidation of1µmol of NADPH per minute. Specific activity of enzyme was equal to 3.24U/mg and finally the Ea wasdetermined to be 29.6208 KJ.ER specific activity in this study was lower than the only similar study that used Y.lipolytica. Purification, overexpression .and optimizing the reaction can help to increase enzyme performance

کلمات کلیدی:

Erythrose reductase, Yarrowia lipolytica, Enzyme kinetics