

Expression of DNA-Encoded Antidote to Organophosphorus Toxins in the Methylophilic Yeast *Pichia Pastoris*

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Abstract

© 2016, Pleiades Publishing, Inc. A platform for the cloning and expression of active human butyrylcholinesterase (BuChE) in the yeast *Pichia pastoris* is first presented. Genetic constructs for BuChE gene expression, separately and in conjunction with a proline-rich peptide called proline-rich attachment domain (PRAD), are based on the vector pPICZ α A. It is shown that the highest level of production is achieved in the expression of a BuChE gene without PRAD pPICZ α A. It is found that one can obtain up to 125 mg of active enzyme from 1 L of culture medium at an optimal pH environment (pH 7.6), an optical seed culture density of 3 o.u., and an optimum methanol addition mode of (0.5% methanol in the first day and 0.2% thereafter from the second day).

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Keywords

biological antidotes, butyrylcholinesterase, organophosphorus toxins, *Pichia pastoris*