

# Kinetics and Mechanism of Hydrolysis of Acetylthiocholine by Butyrylcholine Esterase

Karel Komers<sup>a\*</sup>, Alexandr Čegan<sup>b</sup> and Marek Link<sup>a</sup>

<sup>a</sup> Faculty of Chemical Technology, University of Pardubice, Department of Physical Chemistry, nám. Čs. legií 565, 53210 Pardubice, Czech Republic. Fax: (0042040) 603 70 68. E-mail: karel.komers @upce.cz

<sup>b</sup> Department of Biological and Biochemical Science

\* Author for correspondence and reprint request

Z. Naturforsch. **57c**, 1072–1077 (2002); received May 24/July 19, 2002

Acetylthiocholine, Butyrylcholine Esterase, Kinetics

Kinetics and mechanism of hydrolysis of acetylthiocholine by the enzyme butyrylcholine esterase was studied. The spectrophotometric Ellman's method and potentiometric pH-stat method were used for continuous determination of the actual concentration of the products thiocholine and acetic acid in the reaction mixture. The validity of the Michaelis-Menten (Briggs-Haldane) equation in the whole course of the reaction under used conditions was proved. The corresponding kinetics parameters ( $V_m$  and  $K_M$ ) were calculated from the obtained dependences of concentration of thiocholine or acetic acid vs. time and compared. From this comparison the deciding kinetic role of the step producing thiocholine was derived. The values of initial molar concentration of the enzyme and of the rate constants of the kinetic model were estimated.