Reprint from
Selected Topics in Clinical Enzymology, Vol. 2
Editors: David M. Goldberg, Mario Werner

DETERMINATION OF PSEUDOCHOLINESTERASE ACTIVITY BY AN ENZYME COUPLING METHOD IN THE SERUM OF PATIENTS WITH LIVER DISEASE

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Abstract

The serum pseudocholinesterase (EC 3.1.1.8, acylcholine acylhydrolase) activity was determined at 37°C and pH 8.2 by using a stable substrate *p*-hydroxybenzoylcholine as the initiator and *p*-hydroxybenzoate hydroxylase (EC 1.14.13.2) as the coupling enzyme. The reaction was measured by continuously monitoring the decrease of NADPH at 340nm. The within-run and between-run precisions of the test were 0.4-2.6% (CV) and 1.2-1.9%, respectively. The test was linear at least up to 600U/L and had the sensitivity of 0.001ΔA/min at 9.7U/L. The serum pseudocholinesterase reference range was estimated to be 156-418U/L (95% range; mean = 251U/L) in 200 healthy adults. There was no significant difference between male and female. The serum pseudocholinesterase activity of patients with liver diseases was significantly lower than that of normal controls, and in 90-95% of the cirrhosis and hepatoma patients was below the lower normal limit. This method for determination of serum pseudocholinesterase activity is suitable as a diagnostic aid for liver diseases.

Introduction

Pseudocholinesterase (EC 3.1.1.8, acylcholine acylhydrolase) is an enzyme which catalyzes the hydrolysis of various chol-