

Abstract

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Title of Thesis: Rating of blood cholinesterase activities in the population of Central Europe

This study is focused on the assessment of the average value of acetylcholinesterase (AChE, EC 3.1.1.7) and butyrylcholinesterase (BChE, EC 3.1.1.8) activity in blood and plasma samples of healthy donors (n = 387). Spectrophotometric determination of blood cholinesterase activities was based on the Ellman's reaction, the reaction course of which was adjusted according to the character of the biological material (Worek *et al.* 1999). The impact of sex, age and smoking on blood cholinesterase activities was observed in a representative sample of the target population. Data were related to factors affecting the result of the measurement such as haemoglobin (Hb) concentration in the case of AChE activity assessment and environment temperature during the measurement. Statistical data evaluation provided complex information about blood cholinesterase activities in the healthy population.

Results of this work contribute considerably to diagnostics of organophosphate poisoning. Comparison of AChE activity in a poisoned individual with the average value of AChE activity in a healthy population enables a quick health state assessment and early intervention. BChE seems to be an appropriate marker of the recovery rate after organophosphate intoxication thus BChE activity provides additional information about intoxication. Data gained in this study have a use also for medicine owing to the fact that a decrease in blood cholinesterase activities is a characteristic feature of some diseases.