OBIDOXIME CONTENT IN THE BRAIN TISSUE OF RATS INTOXICATED WITH ORGANOPHOSPHATE INSECTICIDE CHLORFENVINPHOS AFTER ADMINISTRATION OF TOXOGONIN

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ABSTRACT

Introduction: Like other oximes, obidoxime-reactivated phosphorylated acetylcholinesterase (AchE) limits the penetration of the blood-brain barrier, primarily in the peripheral compartment because of its quaternary structure. However, numerous studies have indicated that AChE oxime reactivators play an essential role as they are able to cross the blood-brain barrier in concentration high enough to repair a biochemical lesion. The aim of this study was to investigate a possible penetration of obidoxime dichloride into the brain of chlorfenvinphos (CVP)-intoxicated rats.

Material and Methods: The concentration of obidoxime in the brain of CVP-intoxicated rats was determined by the modified high-performance liquid chromatographic (HPLC) method. Oxime was quantified by ion-pair HPLC method with UV detection at 285 nm (responsive maximum absorbance for selected mobile phase of pH = 5).

Results: Obidoxime content in the brain tissue from non-poisoned and CVP-intoxicated rats was estimated at about 10 nmol/g tissue, 5 min after i.p. administration of the oxime.

Conclusions: The results of the study demonstrated that obidoxime penetrated the blood-brain barrier, which could be pharmacologically relevant.

Key words: organophosphate poisoning, obidoxime, blood-brain barrier, chlorfenvinphos, pharmacological effects

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