

## *In Vitro* Inhibition Of Creatine Kinase Activity By Methylmercury In Mice Cerebral Cortex

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Methylmercury (MeHg) is an environmental pollutant that causes severe neurologic disorders in animals and humans; however, the neurotoxic mechanisms are not completely defined. Therefore, the objective of this study was to investigate the *in vitro* effect of MeHg on creatine kinase (CK) activity in cortical homogenates from Swiss male mice. Homogenates were treated during 15 min or 1 h with crescent MeHg concentrations (0 – 1500 µM). Controls did not contain MeHg in the incubation medium. Immediately after incubation, aliquots were taken to measure CK activity by spectrophotometry. It was observed that MeHg treatment elicited a marked inhibition on CK activity in mouse cortical homogenates. MeHg exposition during 15 min provoked a strong inhibition on this enzyme activity at concentrations as low as 93.5 µM ( $F_{(6,39)} = 13.17$ ,  $P < 0.0001$ ) and the effect showed an exponential decay curve with increasing MeHg concentrations ( $\beta = -0.65$ ;  $P < 0.0001$ ). Similar results were obtained after 1 h of treatment ( $F_{(6,44)} = 17.92$ ,  $P < 0.0001$ ;  $\beta = -0.75$ ;  $P < 0.0001$ ). These data strongly indicate that CK might be a molecular target in MeHg poisoning, probably due to the critical sulfhydryl group of the protein. Thus, considering the importance of CK for brain metabolism homeostasis, our results suggest that inhibition of this enzyme might contribute to the neurologic alterations characteristic of individuals exposed to MeHg.

**Keywords:** brain, methylmercury, creatine kinase activity.

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