

SELENIUM AS A CONFOUNDER OF METHYLMERCURY TOXICITY: EXPERIMENTAL STUDIES AND FIELD SITUATIONS

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Selenium-methylmercury interactions will be addressed in the context of both experimental studies including our own and of human studies, and a new way to look at this issue will be proposed.

While many experimental studies showed protective effects of nutritional selenium (Se) against methylmercury (MeHg) toxicity, there have been some conflicting results. Much less has been established for the potential role of selenium (Se) in developmental neurotoxicity in fish eating human populations. Earlier studies suggest only a minor role of Se in kinetic modification of MeHg, however the effect of MeHg on nutritional Se might be potentially important. We have conducted a series of experimental studies in 1980-1990s and found some complicated changes of Se-associated enzymatic activities in MeHg-dosed mice, but the significance of such observations in humans remains unknown. In fish-eating human populations, low and chronic exposure level, within-population variation of exposure, intrinsic positive correlation of Se-MeHg exposure, and presence of other potentially confounding factors would obscure the role, if any, of Se in modifying the developmental neurotoxicity of MeHg. It might be suggested that 1) in the human situation, a set of multiple factors specific to each population would determine the final consequence of neurodevelopment, and that 2) regarding Se-MeHg interaction, chemical forms of Se as well as specific biomarkers for Se nutrition should be examined in greater detail.