Manganese

Manganese (Mn) is an essential nutrient for cellular function, but in high concentrations, it is neurotoxic. Environmental exposure to Mn has been associated with cognitive effects in children. This study aimed to assess the effect of environmental exposure to Mn on verbal memory and learning in schoolchildren residents from two municipalities in the state of Hidalgo, Mexico. Cross-sectional studies were conducted in 2006 and 2013 with a total of 265 schoolchildren of 7 to 11 years old. Children's Auditory Verbal Learning Test-2 (CAVLT-2) was used to assess verbal memory and learning. Mn exposure tertiles were defined according to hair manganese (MnH) levels determined by atomic absorption spectrophotometry. Linear regression models were used to estimate the association between MnH levels and CAVLT-2 scores. The models were adjusted by potential confounders. The lowest and highest exposure tertiles were defined below and above MnH levels of ≤ 0.72 and ≥ 3.96 µg/g, respectively. Mn exposure was significantly associated with an average of 5- to 9-point decrease in learning curves and summary CAVLT-2 scores in the highest tertile. This study adds to the evidence of decreased verbal memory and learning in schoolchildren environmentally exposed to manganese [1].

1)
García-Chimalpopoca Z, Hernández-Bonilla D, Cortez-Lugo M, Escamilla-Núñez C, Schilmann A, Riojas-Rodríguez H, Rodríguez-Dozal S, Montes S, Tristán-López LA, Catalán-Vázquez M, Rios C. Verbal Memory and Learning in Schoolchildren Exposed to Manganese in Mexico. Neurotox Res. 2019 May 30. doi: 10.1007/s12640-019-00037-7. [Epub ahead of print] PubMed PMID: 31148117.