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Tight junction proteins and oxidative stress in heavy metals-induced nephrotoxicity

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Abstract

Kidney is a target organ for heavy metals. They accumulate in the kidney and induce alterations in morphology and function. Acute intoxication frequently causes acute renal failure. The effects of chronic exposure have not been fully disclosed. This review is focused on the alterations induced by heavy metals on the intercellular junctions of the kidney. It is described that in addition to the proximal tubule, which has been recognized as the main site of accumulation and injury, other segments of the nephron, such as glomeruli, vessels and distal nephron show also deleterious effects. We also emphasize the participation of oxidative stress as a relevant component of the renal damage induced by heavy metals and the beneficial effect that some antioxidant drugs, such as vitamin A (all-trans-retinoic acid) and vitamin E (α-tocopherol) depict on the morphological and functional alterations induced by heavy metals.

Biography

Jose L. Reyes obtained his training as Pediatrician and Pediatric Nephrologist at the Hospital Infantil Federico Gomez, in Mexico, sponsored by Dr. Gustavo Gordillo. His Ph.D. degree was obtained at the Center for Research and Advanced Studies, National Polytechnic Institute, Mexico, sponsored by Jorge Aceves. He has published 80 articles and authored 20 chapters in books. He is the former President of the Mexican Board of Nephrology and former Head of the Department of Pharmacology and Toxicology and of the Department of Physiology, Biophysics and Neurosciences, at the Center for Research and Advanced Studies, National Polytechnic Institute, Mexico. Currently he is a Professor at this institution.