Abstract

Changhai (Kevin) Ji, 2003. *Deleterious effect of a soluble mercuric compound on human epithelial cells.* A thesis presented to Ryerson University in partial fulfillment of the requirements for the degree of Master of Applied Science in the Program of Environmental Applied Science and Management

This thesis studied the cytotoxicity of mercuric chloride on human epithelial cells, Hep2. Results of crystal violet viability assay showed that treatment with $HgCl_2$ at concentrations < 5 $x10^{-6}$ M, had no effect on cell viability, while concentrations > 5 $x10^{-6}$ M, resulted in a significant decrease in cell viability. Using a comet assay to assess DNA damage showed maximum comet formation and length at concentrations < 5 $x10^{-6}$ M $HgCl_2$, DNA damage also increased as exposure time increased. Results of an acridine orange/ethidium bromide assay indicated that at low $HgCl_2$ concentrations, cell death occurred by a mix of apoptosis and necrosis while at high concentrations of $HgCl_2$, cell death occurred primarily by necrosis. Mercury speciation study indicated that predominate form of mercury in MEM was labile to resin Ionac SR4. This is the first study to demonstrate a deleterious effect of soluble mercuric chloride on human epithelial cells.