A012 LPSC

Effects of Hexabromocyclododecane (HBCD) Exposures on Interleukin 6 (IL-6) Production in Human Monocyte-depleted Peripheral Blood Mononuclear Cells (MD-PBMCs)

Abstract:
Hexabromocyclododecane (HBCD) is a brominated flame retardant that is used in a variety of applications including insulation and upholstery. This environmental contaminant accumulates in living organisms and is found in human blood samples. Interleukin 6 (IL-6) is a pro-inflammatory cytokine produced by T-lymphocytes, monocytes, and other cells. It regulates cell growth, tissue repair, and immune functions. HBCD has been shown to increase the secretion of another pro-inflammatory cytokine, IL-1β. The current study addresses whether HBCD is able to alter the secretion and/or intracellular levels of IL-6, thus potentially causing unwanted inflammation. Monocyte-depleted peripheral blood mononuclear cells (MD-PBMCs) were exposed to HBCD ranging from 5 – 0.05 μM, for 10 min and 24h. IL-6 production was evaluated by measuring both the secreted (via enzyme linked immunosorbent assay (ELISA)) and the intracellular levels (via western blot) of IL-6 from the same cells. Results indicate that exposures to HBCD for 24h increases both the secretion and intracellular levels and thus the cellular production of IL-6 from these cells. Thus, HBCD-induced increases in secretion of IL-6 are not simply due to release of pre-existing IL-6 stores. This suggests that HBCD may have the capacity to cause inflammation in the absence of any injury or infection.

Supported NIH grant 5T34GM007663