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## The Role of p38 MAP-Kinases in HBCD-induced Increases in IL-6 Production in Human Immune Cells

Hexabromocyclododecane (HBCD) is a brominated flame retardant widely used in plastics, thermal insulation, and electronics. Due to its hydrophobic properties, it has been found to leach from products and accumulate within the environment, contaminating our food and body systems. HBCD has been found in human blood samples. IL-6 is a pro-inflammatory cytokine produced by T lymphocytes and monocytes. When dysregulated, IL-6 can stimulate inflammatory diseases and tumor progression. Previous studies have found that HBCD increases the production of IL-6 by immune cells. This is similar to the effects of other environmental contaminants like tributyltin, which also induce IL-6 increases using p38 MAP-Kinase (MAPK). This poses the question of whether p38 MAPK may be involved in HBCD-induced increases in IL-6. Based on this, we hypothesize that HBCD may use p38 MAPK as part of its mechanism for increasing IL-6 production and potentially causing unwanted inflammation. Peripheral blood mononuclear cells (PBMCs) were treated with p38 inhibitor (SB202190) for 1 hour prior to exposing to HBCD at 5, 2.5, and 1 μM for 24 H. 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. When p38 MAPK was inhibited HBCD stimulation of IL-6 production was diminished. These results indicate that HBCD-induced increases in IL-6 production are dependent on HBCD-induced activation of the p38 MAPK pathway.