THE STUDY AND CHARACTERIZATION OF HEXACHLOROBENZENE EFFECTS ON T LYMPHOCYTES

Lamar Reed¹, Kenneth Ndebele¹ and Paul B. Tchnounwou²

¹Cancer Immunology Research Laboratory, ²Environmental Toxicology Laboratory, NIH-RCMI Center for Environmental Health, Environmental Science Ph.D. Program, College of Science, Engineering and Technology, Jackson State University, Jackson, Mississippi 39217, USA

Abstract: Hexachlorobenzene (HCB) is a persistent environmental organic pollutant with toxic effects in man, rat and aquatic organisms. HCB has been classified by the International Agency for Research on Cancer and the U. S. Environmental Protection Agency as a Group 2B and Group B2 carcinogen, respectively. HBC is a widespread contaminant in major environmental compartments, highly lipophilic, it accumulates in biological systems. Exposure to HCB is a public health concern and is associated with a wide range of adverse systemic health effects. The principal route of HCB exposure may occur via inhalation, dermal absorption and ingestion of contaminated food. There are several studies examining the effects of HCB on human lymphocytes and potential mechanisms by which HCB directly modulates T lymphocytes. The purpose of this study is to identify and further characterize the effect of HCB on T lymphocytes cell cycle progression, cytokine expression and apoptosis. Our recent work using CD4⁺ Jurkat T cells as a model, we have demonstrated HCB has a profound effect on Jurkat T cell proliferation. HCB-induced suppression of Jurkat cell cycle, cytokine expression and apoptosis may have many ramifications for our understanding of immune and autoimmune responses and for the development of potential therapeutic intervention.

Keywords: Hexachlorobenzene, Jurkat cells, cell cycle progression, cytokine expression, apoptosis

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