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EHT

Judging Dept.

Alexey Goncharov

Student

EHT

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Dr. David O. Carpenter

Dept or Program Years in program

Mentor

Possible Relationship Between Lipid Adjusted Pcb's And Various Congener Patterns With Total Serum Lipids In The Serum Of Adult Mohawks

Author (s)

Alexey Goncharov

Background: In the study, we have investigated whether there is a relationship between the sum of lipid-adjusted polychlorinated biphenyls (PCBs) and various PCB congener patterns with total serum lipids in humans.

Methods: Blood samples were obtained from 336 adult Mohawks from Akwesasne (in New York and in Ontario and Quebec, Canada), and they were analyzed for 91 PCB congeners, 3 pesticides and serum triglycerides and cholesterol. Total lipids were calculated using cholesterol and triglyceride concentrations and the formula obtained from (Philips et al., 1989). The odds ratios of serum total lipids (as a dependent variable) in relation to different PCB exposures were estimated using logistic regression.

Results: The results support our primary hypothesis that, an increased serum total PCB concentration is directly related to an increased serum total lipid levels. The sum of serum levels for the following groups: total PCBs, PB-type inducers, dioxin-like, dioxin-like toxic equivalents, 138+153 congeners, tri – and tetra-ortho and pesticide DDE showed positive and significant associations with total lipid values. The other groups: mono-ortho, di-ortho, estrogenic, Mirex and Hexachlorobenzene were not significantly related.

Conclusions: The finding that lipid-adjusted serum PCB levels are positively correlated with total serum lipids is consistent with the hypothesis that exposure to PCBs and some pesticides may increase risk of serious diseases such as ischemic heart disease and stroke for which elevated serum lipids is a major risk factor.