Identification of Polychlorinated Biphenyl (PCB) Sulfates in Human Serum

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Background and Significance

• Polychlorinated biphenyls (PCBs) are a class of toxic industrial chemicals
• Variety of adverse health effects
• Our research target is PCB sulfates as metabolites
• PCB sulfates toxicities include thyroid disruption, neuron toxicity, potential endocrine disruption
• Data on PCB sulfate concentrations in human serum is rare
• PCB 11 sulfate was first detected in human serum using HPLC → the overall exposure to PCBs in humans might be underestimated
• Limitation: lack of a generally applicable method and the limited numbers of experimental standards available for PCB sulfates
• We developed a method which can extract and analyze up to 74 PCB sulfate congeners in human serum
• Overall concept: analyze PCB sulfates by indirectly analyze their related OH-PCBs – parallel incubation
Identified PCB Sulfates in Pooled Human Serum

N=8

- PCB 26 sulfate could be generated from both PCB 26 and PCB 31 (NIH-shift)
- PCB 25 sulfate could be generated from PCB 25 or PCB 28 (NIH-shift)
- PCB 11, 31, 28 are all commonly observed indoor and outdoor air PCBs (Marek R.F et al, Hu D. et al)
Acknowledgment

We are grateful to Dr. Xueshu Li and Dr. Xianran He of the University of Iowa Superfund Synthesis Core for the synthesis and authentication of PCB derivatives, and the preparation of the diazomethane used in this research.

The studies described were supported by the National Institutes of Health, National Institute of Environmental Health Sciences, through NIH P42 ES013661 and P30 ES005605.