Ottawa-Carleton Chemical and Environmental Toxicology Seminar Series

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Environmental pollutants and muscle-adipose tissue crosstalk

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Over the past decade, there is growing interest in the role of environmental pollutants in the development of type 2 diabetes. Although skeletal muscle is a major tissue involved in insulin resistance development, the effects of pollutants on muscle metabolism have little been studied. One aim of the laboratory of Dr. Aguer is to better understand the role of environmental pollutants in causing defects in muscle metabolism, as well as in altering the cross-talk between adipose tissue and skeletal muscle. We have demonstrated that exposure to polychlorinated biphenyl 126 (PCB126), dielectric and coolant fluids in electrical apparatus, alters muscle mitochondrial function in rats and adipokine secretion from adipocytes resulting in altered glucose uptake in muscle cells. Furthermore, bisphenol A (BPA) and bisphenol S (BPS), synthetic compounds found in plastic products, do not acutely alter muscle mitochondrial function or insulin sensitivity at environmentally relevant concentrations, but may alter adipokine/cytokine secretion and insulin sensitivity in adipose tissue. Finally, dichlorodiphenyltrichloroethane (DDT), an insecticide, alters muscle mitochondrial function. These results have implications for further elucidating the role of environmental pollutants in the development of metabolic diseases and demonstrate that there should be more stringent regulations regarding these chemicals.

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Zoom- https://us02web.zoom.us/j/85222347704

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