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Metabolomics approaches for bio-marker discovery for toxicant exposure of di-isononyl phthalates (DINPs) using liquid chromatography-high resolution mass spectrometry (LC-HRMS)

Pao-Chi Liao
National Cheng Kung University, Taiwan

Di-Isononyl Phthalate (DINPs) is widely used as plasticizers and has effects on reproductive system. Three metabolomics approaches were used to explore DINP exposure markers in an LTQ/Orbitrap HRMS dataset obtained from liver enzyme incubation. The data processing techniques included Signal Mining Algorithm with Isotope Tracing (SMAIT), Mass Defect Filtering (MDF), and web-based XCMS. Fourteen metabolites were validated as DINP exposure markers using a rat model. Among the 14 exposure-related DINP metabolite signals, 8 have not been reported in the literature. The metabolomics platform can efficiently and systematically filter probable metabolite signals from a complex LC-HRMS dataset for toxic exposure marker discovery.

Biography

Pao-Chi Liao completed his PhD in Analytical Chemistry from Michigan State University (MSU) in 1995 before doing Postdoctoral research in the Department of Biochemistry at MSU. He joined as the Faculty at Department of Environmental and Occupational Health, National Cheng-Kung University, Taiwan in 1997, where he was promoted to full Professor in 2006, and named Distinguished Professor in 2011. His research interests and fields of specialty include analytical chemistry, mass spectrometry, proteomics, biomarker discovery, cancer biomarkers, lung cancer metastasis, and environmental and occupational health.

liaopc@mail.ncku.edu.tw

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