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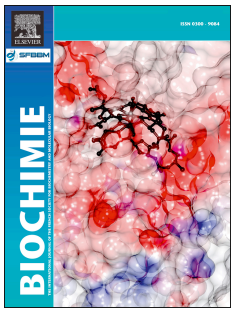

Lipidome-wide disturbances of human placental JEG-3☐cells by the presence of MEHP

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Abstract

During pregnancy, exposure to environmental contaminants can lead to adverse effects on fetal growth and development, especially by targeting the placenta. Di(2-ethylhexyl)phthalate (DEHP), the most abundant chemical used in plastic materials, is known to induce toxicity on animals reproductive system and is suspected to give rise to similar effects in humans. Toxicity of DEHP is due to its main metabolite, mono(2-ethylhexyl)phthalate (MEHP), which is also known to disturb lipid synthesis in several organs. Moreover, MEHP is a high affinity ligand of the peroxisome proliferator-activated receptor PPARγ which is essential for placental development and lipid metabolism. In order to investigate possible lipid disruptions induced by MEHP, in the JEG-3 human trophoblast cell line, a differential lipidomic analysis was carried out by UPLC-MS on both exposed and control cells. Our results showed that MEHP induced an important change of JEG-3 cells lipidome, especially in glycerolipids and glycerophospholipids, with a marked accumulation of triacylglycerols. For the first time, our results highlighted adverse effects of MEHP on human placental cells lipidome and thus, its potential effect on placental physiology.

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