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201 - MATERNAL EXPOSURE TO 11 ENDOCRINE DISRUPTORS AND MECONIUM MICROBIAL DIVERSITY

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FISABIO-UJI-UV; FISABIO; CIBERESP; UiT; UV.

Resumen

Background/Objectives: Meconium, the first bowel movement of the newborn, represents an early microbial environment. Identifying environmental determinants capable of altering the meconium microbiota is of public health relevance, as development of the infant's gut microbiota has been associated with health outcomes later in life. Therefore, we have investigated the association between endocrine disruptors (EDs), measured in mothers during pregnancy, and meconium microbiota diversity and composition.

Methods: Our longitudinal study included 129 mother-newborn pairs from the INMA-Valencia cohort (Spain), with mothers recruited at first trimester of pregnancy (2003-2005). The concentrations of 11 EDs were measured in maternal plasma: 4 polyfluoroalkyl substances (PFASs; PFHxS, PFOS, PFOA and PFNA) and 7 organochlorine compounds (OCs; HCB, b-HCH, 4'4'-DDE, 4'4'-DDT, PCB138, PCB153 and PCB180). Meconium samples were gathered after birth and analyzed using 16S rRNA gene amplicon sequencing. Two indices of alpha-diversity (within sample diversity; Chao1 and Shannon) and one beta-diversity index (between sample diversity; Aitchison distance) were calculated. All indices were calculated at genus level. The association between alpha- and beta-diversity and EDs was studied using linear models and the multivariate asymptotic non-parametric test of association, respectively. Models were adjusted for possible confounders, such as physical activity and maternal diet during pregnancy.

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Results: For the alpha-diversity analysis, the Chao1 index had a median [IR] value of 9 [6;13], while for Shannon index it was 0.7 [0.3;1.3]. The Chao1 index was inversely associated with all PFASs. The Shannon index was inversely associated to the concentration of different contaminants: PFHxS, PFOS, b-HCH, 4’4’DDE, PCB153 and PCB180. Therefore, the higher the concentration of PFASs and different OCs in maternal blood, the lower the alpha-diversity of the meconium microbiota. For the beta-diversity analysis, the Aitchison index was associated to the concentration of PFHxS, b-HCH and 4’4’-DDT.

Conclusions/Recommendations: The maternal concentration of different EDs appeared to have a significant association with the meconium microbiota, lowering its diversity and shifting its composition, with potential implications for early colonization and neonatal health.

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