

Poster #2

Detection of Several Endocrine Disruptors in Human Umbilical Cords and Cord Serum in Japan.

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Disturbances of hormonal regulation during fetal or postnatal development in humans have been thought to induce adverse effects on the reproductive system. But adverse effects of endocrine disruptors on humans are subtle, and characteristically slow to develop, and difficult to detect. Therefore, we have investigated fetal exposure to endocrine disruptors in Japan by analysing umbilical cords and cord serum. Human umbilical cords, a part of the fetal tissue, were collected from normal newborns. We detected dioxins (PCDDs+PCDFs+co-PCBs), PCBs, DDTs, DDEs, aldrin, hexachlorocyclohexane (BHC), chlordanes, HCB, heavy metals (Cd & Pb), Bisphenol A, nonylphenols and phytoestrogens in human umbilical cords or cord blood. By studying umbilical cord tissue and blood, we discovered that fetuses in Japan were exposed to endocrine disruptors. We also investigated the relationship between maternal age and concentration of PCBs, DDEs, bisphenol A and nonylphenols in umbilical cords. Our study indicates that exposure of PCBs to the fetus is correlated with the maternal age, but the exposure of bisphenol A and nonylphenols to the fetus is not. Bisphenol A and nonylphenols do not accumulate in the human body. However, PCBs and DDEs do accumulate in the body. Even if avoided during pregnancy, previously stored PCBs and DDEs will be transferred from the mother to the fetus.

From our present data, we can not say anything concerning the possible effects of the endocrine disruptors at the present concentration levels on fetuses or children in Japan, but our data clearly shows that fetal exposure to many chemicals has already occurred.