

## Poster #42

### **Fetal Exposure Assessment of Multiple Persistent Chemicals by Measuring PCBs Concentration in Human Umbilical Cords or Maternal Serum**

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Our previous studies revealed that Japanese fetuses were exposed to multiple persistent chemicals (MPCs) and there were fetuses highly exposed to MPCs. It's important to develop a simple method to chemical measurement in order to find highly exposed fetuses. Therefore, we measured the concentration of polychlorinated biphenyls (PCBs), organochlorine pesticides in umbilical cord (UC), cord serum (CS) and maternal serum (MS). In addition, we compared the concentration of PCBs and dioxins in blood serum.

We found the positive correlation between the concentration of total PCBs and sum of MPCs' concentration in UC, CS or MS. Moreover, strong correlation between the concentration of total PCBs and the concentration of dioxins were found in blood serum. Therefore, the concentration of total PCBs is a good marker to find fetuses or mothers who are highly exposed to MPCs.

In analysis of the relationship of the chemicals between mothers and their fetuses using the data of comparable sets of UC, CS and MS, chemical concentrations in MS and in UC on lipid basis were nearly equal. There were positive correlation between maternal age and the concentration of the chemicals that showed high correlation between in MS and UC. However, the concentrations of some chemicals in UC were different from in MS.

In conclusion, for fetal exposure assessment of MPCs, it is important to measure total PCB concentration in maternal serum during pregnancy or blood serum before pregnancy. At birth, our present results indicate that UC is the best sample to assess fetus contamination status.

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