

## Intake and fecal excretion of PCDDs and PCDFs in a breast-fed and a formula-fed infant.

**Abraham, K.<sup>A</sup>, Hille, A.<sup>B</sup>, Ende, M.<sup>B</sup>, Helge, H.<sup>A</sup>**

<sup>A</sup> Kinderklinik der FU Berlin (Kaiserin Auguste Victoria Haus), Heubnerweg 6, 14059 Berlin, Germany

<sup>B</sup> Staatliches Lebensmitteluntersuchungsamt Oldenburg, Postfach 2462, 26014 Oldenburg, Germany

First analyses of PCDDs and PCDFs in tissues did not show the relatively high values in breast-fed infants expected from theoretical calculations. In order to study the kinetics of these compounds we measured intake and fecal excretion of PCDDs and PCDFs in a breast-fed and a formula-fed infant for 5 days at the age of 4 weeks and for 6 days at the age of 5 months. The entire stool was collected using cotton diapers which were pre-extracted with hexane/acetone (2:1) in order to avoid contamination of the stool with PCDDs and PCDFs from diapers (in first studies, new cotton diapers were found to contain measurable amounts of PCDDs and PCDFs : Jödicke et al., 1992, Fecal excretion of PCDDs/PCDFs in a 3-month-old breast-fed infant. *Chemosphere* 25: 1061-1065).

As expected, intake of PCDDs and PCDFs was clearly higher in the breast-fed infant (82.1 pg I-TE/kg/d, including 7.9 pg 2378-TCDD/kg/d) when compared with the formula-fed infant (2.1 pg I-TE/kg/d, including less than 0.32 pg 2378-TCDD/kg/d).

At the age of 4 weeks all 2378-substituted PCDDs and PCDFs measurable in milk fat were also detectable in extracted stool fat of the *breast-fed infant*. We calculated a daily excretion of 2.3 pg I-TE/kg/d, corresponding to 2.8 % of ingested I-TEs. Fecal excretion of hepta- and octachlorinated PCDDs and PCDFs was considerably higher when compared with lower chlorinated congeners as it was already observed in our first studies. In the breast-fed infant 4.9 % of ingested 2378-TCDD was detected in stool whereas it was 51 % for OCDD.

Unexpectedly, diapers with stool of the *formula-fed infant* at the age of 4 weeks proved difficult to analyse. Most likely these problems were caused by washing the tissue: For investigations in the formula-fed infant at this age we used diapers which were cleaned additionally to the pre-extraction by laundering twice at 95°C. For washing and rinsing tap water was used containing a small amount of detergent only in the first run. This procedure (probably the detergent) led to matrix-associated problems and interferences during GC-MS analysis.

Data of intake and fecal excretion of PCDDs and PCDFs in the same infants at the age of 5 months are now (July 93) still in process of analysis and will be presented at the congress.