

## P21

### Maternal diet quality and health status of newborns

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Persistent organic substances (POPs) are compounds of mainly anthropogenic origin that persist in the environment for a long time, become part of food chains, and then accumulate in living organisms. Because of that, POPs levels are monitored and some of them has already been banned or at least significantly restricted.

In our study, we analyzed the diet of 53 pregnant women from the Czech Republic. The women simultaneously recorded in detail all the food they ate for one week during the last month of pregnancy and collected a quarter of all portions in food boxes. From the dietary records, we obtained information about the quantity and quality of the diet and determined the concentrations of 67 different persistent organic pollutants in the collected samples. These pollutants belong to five different groups – polychlorinated biphenyls, organochlorine pesticides, brominated flame retardants, perfluorinated compounds and polyaromatic hydrocarbons. Furthermore, we determined the levels of 8-isoprostane in cord blood plasma samples in order to determine the degree of oxidative damage in newborns. Subsequently, we evaluated possible associations between maternal diet quality and POPs intake with birth weight and neonatal oxidative damage.

Dichlorodiphenyldichloroethylene (DDE) was the only substance present in all 352 daily food samples. DDE is a metabolite of the pesticide DDT. The use of DDT has been prohibited in the Czech Republic since 1974.

The concentrations of most POPs in the diet did not reach any established limits. The exception was perfluorinated compounds, whose permissible cumulative weekly intake was exceeded in four women. Concentrations of polychlorinated biphenyls and organochlorine pesticides were higher in samples with higher amounts of fat, concentrations of DDT were higher in samples with higher amounts of dairy products, and concentrations of polyaromatic hydrocarbons were higher in samples with higher amounts of cereals.

We did not find an association between birth weight and dietary intake of persistent organic substances. Birth weight was within the normal range for all monitored newborns. 22 % of the birth weight variability was explained by a positive association between maternal protein intake and the mother's weight before pregnancy. 48 % of the neonatal oxidative damage variability was explained by positive association with DDT intake and a negative association with protein intake.

#### Keywords:

8-isoprostane; birth weight; DDT; maternal diet quality; maternal protein intake; oxidative stress; persistent organic pollutants.