The Pro002 data product

Original number of samples	1,250
Number of samples (per 06.10.2023)	1,237
Number of unique participants	1,137
Biological sample type	Plasma
Participant type(s)	MoBa mothers
Collection timepoint	Gestational week ~17
Selection criteria	Preeclampsia
Metabolite type(s)	Dietary, renal and inflammatory biomarkers
Original reference article	Starling *et al*. 2014
Analytical method(s)	Olympus AU400e Chemistry Immuno-Analyzer
Related MoBaBIO product(s)	Mab005
FHI Project number(s)	PDB1169

The project that generated these data

Perfluorinated alkyl levels in plasma in relation to preeclampsia, and validation of physiologically-based pharmacokinetic model of perfluorinated compounds in pregnancy

Project lead: Merethe Eggesbø

The purpose of this study was to study the association between perfluorinated compounds (PFC) in mid-pregnancy, and the risk of preeclampsia, using a nested case-control study design within the Norwegian Mother and Child Cohort (MoBa) study. A secondary aim was to use data on perfluorinated compounds to validate a physiologically-based pharmacokinetic model of PFC levels during pregnancy.

Study population

The original Pro002 proteomics data source is based on plasma samples from **1,150 mothers** and comprises a case-control study design. Cases consist of 500 MoBa mothers with validated preeclampsia, while controls were comprised of 550 randomly-selected controls. MoBa mothers were eligible for inclusion based on a single pregnancy, no previous live or stillborn children, the absence of any hypertension prior to the pregnancy, the availability of plasma samples collected in the second trimester (ca. 17-18 weeks gestation), and who enrolled in MoBa between 2003-2007. Eligibility was restricted to mothers who enrolled during 2003 or after, because PFAS analyses requires ethylenediaminetetraacetic acid anticoagulation, which wasn't implemented in MoBa until 2003.

In addition to the primary case-control study sample, an additional 100 mothers were included who have participated with several pregnancies in MoBa (with plasma samples from two separate pregnancies, meaning these comprise 200 samples of the total sample set for this data product).

Available metabolic measures (variable names in bold)

Creatinine (**Creatinine**)
High density lipoprotein cholesterol (**HDL**)
Albumin (**Albumin**)
C-reactive protein (**CRP**)
Cystatin C (**Cystatin C**)

Definition of cases and controls in the dataset

The variable *CaseControlGrp* that is provided with the Pro002 dataset defines cases by "**Case**" and controls by "**Control**". In addition to the core case-control group, an additional randomly-selected 100 mothers were included with duplicate samples from two separate pregnancies, and characterized based on self-reported breastfeeding. These mothers are

defined as as "**Serial_Pregnancy_Exclsv_Breastfed**" (serial pregnancy, child exclusively breastfed) or "**Serial_Pregnancy_Never_Breastfed**" (serial pregnancy, child never breastfed).

Biological sampling and processing

Non-fasting blood samples were collected from mothers at 17-18 weeks' gestation into ethylenediaminetetraacetic acid (EDTA) tubes, centrifuged within 30 minutes, and temporarily placed in a refrigerator at 4 °C. They were shipped from the collecting hospital overnight to MoBa's biobank at the Norwegian Institute of Public Health (NIPH). The samples most often arrived at the biobank within 1–2 days of blood donation, where EDTA plasma were aliquoted onto polypropylene microtiter plates (96-well format, 300 µL per well), sealed with the use of heat-sealing foil sheets, and placed in long-term storage at −80 °C.

For more information on biological sampling, processing and storage, please refer to the original reference articles for NIPH's biobank by Rønningen *et al*. 2006 and Paltiel *et al*. 2014.

Analytical methodology

The proteomics measures included in this study were measured from plasma using an **Olympus AU400e Chemistry Immuno-Analyzer** (Olympus America, Center Valley, Pennsylvania).

Measurement units:

Creatinine: **mg/dl**
High density lipoprotein cholesterol: **mg/dl**
Albumin: **g/dl**
C-reactive protein: **mg/L**
Cystatin C: **mg/L**

Limit of quantification (LOQ):

Creatinine: **0.2 mg/dl**
High density lipoprotein cholesterol: **2.5 mg/dl**
C-reactive protein: **0.05 mg/L**
Cystatin C: **0.19 mg/L**

*LOQ for Albumin is not currently available

Published articles using Pro002

This section also includes articles related to study design, sampling, and data collection.

- Verner MA, Loccisano AE, Morken NH, et al. Associations of Perfluoroalkyl Substances (PFAS) with Lower Birth Weight: An Evaluation of Potential Confounding by Glomerular Filtration Rate Using a Physiologically Based Pharmacokinetic Model (PBPK). Environ Health Perspect. 2015 Dec;123(12):1317-24.
- Papadopoulou E, Haug LS, Sabaredzovic A, Eggesbø M, Longnecker MP. Reliability of perfluoroalkyl substances in plasma of 100 women in two consecutive pregnancies. Environ Res. 2015 Jul;140:421-9.
- Morken NH, Travlos GS, Wilson RE, Eggesbø M, Longnecker MP. Maternal glomerular filtration rate in pregnancy and fetal size. PLoS One. 2014 Jul 8;9(7):e101897.
- Starling AP, Engel SM, Richardson DB, et al. Perfluoroalkyl substances during pregnancy and validated preeclampsia among nulliparous women in the Norwegian Mother and Child Cohort Study. Am J Epidemiol. 2014 Apr 1;179(7):824-33.

Restrictions for use

None currently known.

Acknowledgements recommended for use

We recommend that any use of these data in analyses that are presented in peer-review publications acknowledges the original article describing sampling and data collection:

Starling AP, Engel SM, Richardson DB, et al. Perfluoroalkyl substances during pregnancy and validated preeclampsia among nulliparous women in the Norwegian Mother and Child Cohort Study. Am J Epidemiol. 2014 Apr 1;179(7):824-33.

Disclaimer

The data in Pro002 that are available for use are provided by MoBa on an *as is* basis as they were received from the generating laboratory and have not been curated or quality controlled prior to release. FHI does not provide any guarantees related to data quality and assurance of the original dataset. We reserve the right to periodically remove samples from the dataset belonging to participants who have retracted their consent to participate in this cohort study, and may alter the contents of the associated documentation accordingly.