PFOS IN MATCHED MILK AND SERUM FROM PRIMIPARA WOMEN RESULTS OF CORRELATION STUDY (CHAPTER 4.2 GMP GUIDANCE DOCUMENT)

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INPUT TO THE GMP GUIDANCE

- **GEF MSP "Developing and implementing standardized methodologies for the new POPs under the global monitoring plan for POPs":**

- **Focus on development of validated methods for new POPs**
  - **correlation study PFOS levels in milk and blood**

- **Key inputs to the GMP guidance**
- **Elements for capacity building**

Analytical part conducted by the MTM Research Centre, School of Science and Technology, Örebro University, Sweden

PFOS – SPECIAL CONSIDERATIONS

PFOS and its salts bind preferentially to proteins in the plasma and in the liver => This makes blood and liver the prioritised medium for PFOS.

Due to higher albumin content, **blood is considered the preferable and recommended medium** to determine fluorinated compounds.

The levels in human milk are generally much lower indicating that human milk is not a primary target for PFOS.

This makes the analysis challenging.

Question: **Are milk samples an equally viable option for PFOS**?

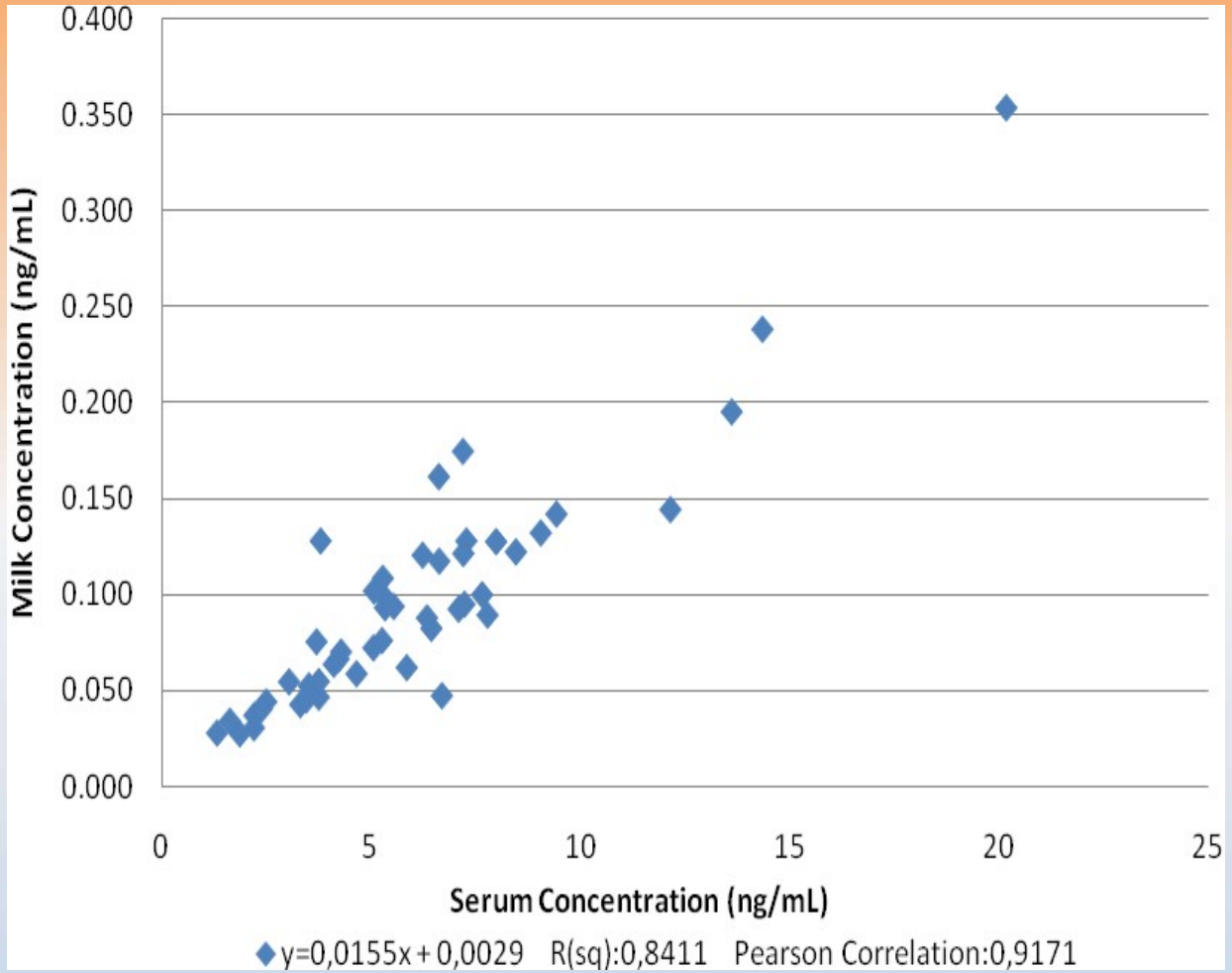
MATERIALS AND METHODS

- Samples (48 serum and 48 milk) were collected in Uppsala, Sweden in 2004, 2007, 2009, and 2011.
- All samples from *primipara* women.
- Standards from Wellington laboratories (Guelph, Ontario, Canada).
- Analysis on a MS/MS system run in electrospray ionization mode.
- Levels of PFOS (linear isomer) were determined using in-house validated methods and quality control protocols.
  - excellent recoveries, reproducibility and accuracy were demonstrated: quality control samples were included in each batch to assess reproducibility and accuracy
  - further quality control was the successful participation in the 2009/2010 interlaboratory studies on milk and serum

RESULTS

- PFOS (linear isomer) was quantified in all samples
- Concentrations from 1.3 to 20 ng/mL in serum and 0.028 to 0.354 ng/mL in milk
- LoD was 0.05 ng/mL for serum and 0.012 ng/mL for milk
- Milk levels in this study are on average 1.55% of the corresponding serum levels

COMPARISON OF SERUM LEVELS WITH LEVELS OF PFOS IN HUMAN MILK



Conclusion: Milk is a suitable medium for measurement of PFOS