

Abstract

Perfluorooctane sulfonate (PFOS) was analysed in human blood with SPE-LC/MS. Up to eight peaks, presumably isomers, were detected and formed a pattern in the retention time window around PFOS. The pattern in human serum from two different countries was similar but the levels of some isomers differs. A difference in isomer pattern could be seen between plasma and whole blood from the same persons.

Conclusion & Discussion

The different PFOS isomer levels in plasma from two different countries (Sweden and Australia) can be caused by specific exposure like diet or contact with products. PFOS isomers behave differently and the different pattern observed between whole blood and plasma can be caused by different interaction abilities and/or pharmacokinetic behaviour.

Denomination	#1	#2	#3 #4	#5#6	#L	#7
Relative retention time	0.87	0.90	0.93/0.94	0.96/0.97	1	1.03

Figure 1. LC/MS chromatogram (m/z 499) of a human plasma sample. Given are denomination of the peaks found and their relative retention time to the main peak (#L).

Introduction

- > PFOS has been found worldwide in human blood
- > Behaviour and distribution pathways still under investigation
- > Large scale production of PFOS is mainly carried out by electrochemical fluorination which results in byproducts like branched and cyclic structures (typical 70% linear)
- > This work aims to study PFOS isomer patterns in blood from exposed humans

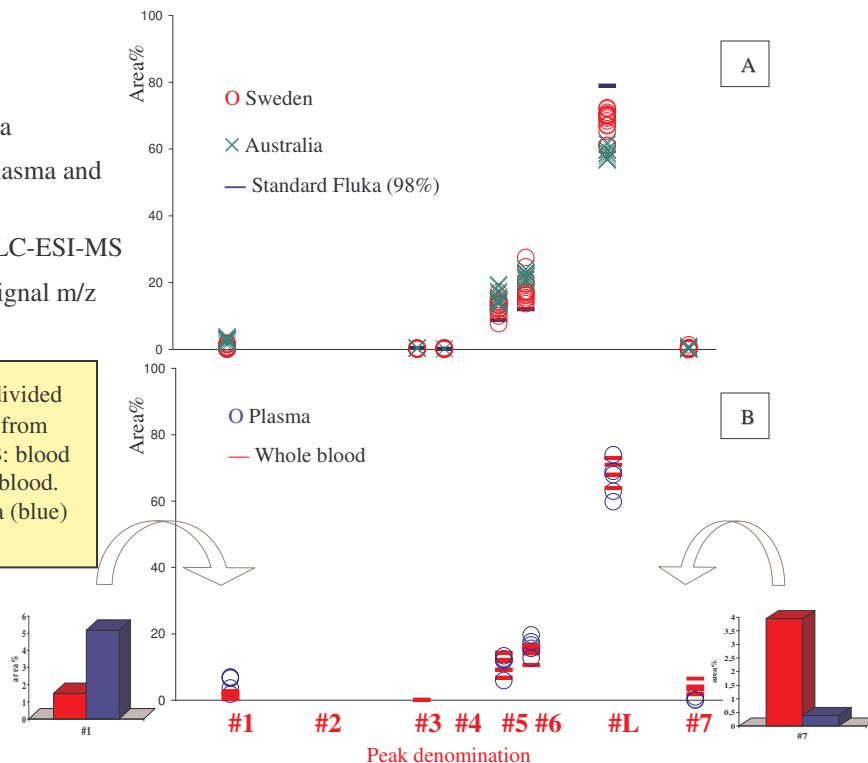
Materials & Methods

- > 40 serum samples from Sweden and Australia
- > 5 Swedish blood samples analysed as both plasma and whole blood
- > Analysis performed using C18 SPE and HPLC-ESI-MS
- > Each isomer percentage of the total area of signal m/z 499 between 14-17.5 min was calculated

Figure 2. The total area of signals for m/z 499 divided into respective peak (#1-#7) in **A**: serum samples from Sweden and Australia compared to a standard and **B**: blood samples (n=5) analysed as both plasma and whole blood. The bar charts show the difference between plasma (blue) and whole blood (red) for isomer #1 and #7.

Results

- > Similar pattern but significant different levels in serum from Sweden and Australia
 - 66-70% #L in Swedish sera (95% CI)
 - 58-59% #L in Australian sera (95% CI)
- > Different pattern in whole blood compared to plasma, #1 higher in plasma, #7 higher in whole blood



Acknowledgment to Jochen Mueller, University of Queensland for providing the Australian samples and the Swedish EPA and Cancer- and Allergy foundation (Stockholm, Sweden) for financial support