

## **Quantitation of Panel of Per- and Polyfluoroalkyl Substances (PFAS) in Biological Matrix**

**Authors:** Van Natta, K; Faoro, K; Grim, C; McHale, K, Hassell, K

**Affiliates:** Thermo Fisher Scientific, San Jose, CA, United States, 95134

**Background:** Per- and polyfluoroalkyl substances have been monitored in environmental and industrial samples for some time. Wellness panels are becoming more frequent and quantitating PFAS in biological samples are a part of these panels. Due to the evolving environmental regulations and discovery of potential health effects with these compounds it important to measure a wide range of PFAS compounds.

**Methods:** Sample preparation of serum was performed by protein precipitation and by using  $\mu$ SOLA WAX plates. This method quantitated over forty PFAS compounds on a Thermo Scientific™ Vanquish™ UHPLC and a Thermo Scientific™ TSQ Altis™ Plus mass spectrometer equipped with a PFAS kit. The PFAS kit allows the LC system to be as free of PFAS contaminants as possible as well as have a delay column to differentiate the PFAS in LC system compared to that from sample injected onto the analytical column. Each compound has SRM transitions for a quantitating and confirming ion. The data were analyzed in Thermo Scientific™ TraceFinder™ software. Precautions were taken from cleaning of the HPLC vials to the LC-MS system, and blanks were evaluated before sample analysis to see if contamination was present in the system.

**Results:** Calibration range in serum was 0.025-50 ng/mL with a 25  $\mu$ L injection. The inter- and intra-day precision measurements showed that for all analyte quantitation, the %RSD was below 25%, and the bias of the calibrators was within 25%, which indicated that the developed method was robust and reproducible.

**Conclusion:** A 10-minute method for forty PFAS compounds on the Vanquish UHPLC and TSQ Altis Plus was developed. The method showed good accuracy and precision measurements down to 0.025 ng/mL in serum samples.

**Key Words:** PFAS, mass spectrometry, biological matrix