

## ABSTRACT

Perfluoroalkyl substances (PFAS) are a group of organic compounds, i.e., aliphatic hydrocarbons in which all attached hydrogen atoms have been replaced by fluorine atoms. Due to the strength of the carbon-fluorine bond in perfluoroalkyl molecule, they are resistant to chemical and thermal degradation processes. They are not metabolized as part of the normal biochemical pathways typical for xenobiotics, thus, PFAS are accumulated in human tissues and body fluids. The main source of exposure to PFAS is the bioaccumulation phenomenon in food products.

The aim of this dissertation was to investigate the presence of ten PFAS in common consumed food products that are part of the pyramid of healthy eating. Seven perfluorocarboxylic acids (PFCA) such as perfluorobutanoic acid (PFBA), perfluoropentanoic acid (PFPeA), perfluorohexanoic acid (PFHxA), perfluoroheptanoic acid (PFHpA), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA) and perfluorodecanoic acid (PFDA) and three perfluoroalkane sulfonates (PFSA) namely perfluorobutane sulfonate (PFBS), perfluorohexane sulfonate (PFHxS) and perfluorooctane sulfonate (PFOS) were investigated. For extraction of target analytes, the modified QuEChERS method, based on the dispersive solid phase extraction (d-SPE), was applied.

The research material were carefully selected food products from pyramid of healthy eating, in accordance with following list: 1/fats and oils, 2/ milk and milk products, 3/ fruits and vegetables, 4/ cereal products. Food products commonly available on the Polish market were examined. In line with EU recommendations, LC-MS/MS system was used for the determination of PFAS.

The studies showed the differentiation in the concentrations of individual perfluoroalkyl compounds identified in food products, and PFBA was the predominant PFAS. PFOA was the most frequently detected compound in each tested group. The least contaminated group of the pyramid of healthy eating were fruits and vegetables, while dairy products was found to be the most contaminated group.

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