Do our food habits influence the exposure to food contaminants like perfluoroalkyl substances?

Rachel Montse

We are all exposed to many environmental contaminants in our daily life. Many of these substances may adversely affect environment, wild life and health of humans. Perfluoroalkyl substances (PFAS) are one such group of contaminants that has been found in high levels in our environment. They are used widely in consumer products like water or grease repellents in textiles and carpets, in fire-fighting foams and as coatings in non-stick cookware. They tend to accumulate in the body and do not degrade easily due to their high chemical and heat stability. Though it is proposed that humans are exposed to PFAS through drinking water, ingestion of house dust and other air borne sources, diet was found to be the major source of exposure in Sweden. High levels of these compounds were found in food groups like fish, meat, egg and dairy products. Still, comparative studies on how our food habits influence exposure to these PFAS are lacking.

In this study, dietary pattern analysis was used to find associations between measures of overall diet and blood levels of eight abundant PFAS in an elderly Swedish population of 70 years, residing in Uppsala, Sweden. Dietary scores were used to find how closely the individuals followed each of the following three dietary patterns: a Mediterranean-like diet, a WHO-recommended diet and Low Carbohydrate High Protein diet. Statistical analysis using multivariate regression was used to determine associations between degree of adherence to the dietary patterns and the levels of the eight PFAS.

From the results, it was found that all the dietary patterns were associated with increased blood levels of perfluoroalkyl substances. However, individuals who more closely followed the WHO-recommended diet were less exposed to PFAS, whilst those with high adherence to the Mediterranean-like diet displayed higher blood levels of most PFAS. Still, a Mediterranean–like diet should be regarded as health promoting, considering the vast amount of previous studies describing positive health effects from such a dietary pattern. Finally, health implications of PFAS in humans have to be investigated in more detail as many are yet undetermined and not fully established.

Degree project in biology, Master of science (2 years), 2015
Examensarbete i biologi 30 hp till masterexamen, 2015
Biology Education Centre and Public Health and Caring Sciences, Uppsala University
Supervisor: Per Sjögren
External opponent: Arshi Mustafa