

ENDOCRINE DISRUPTORS

PFASs, sex hormones and asthma

A new study indicates that levels of oestradiol and testosterone influence the association between exposure to perfluoroalkyl and polyfluoroalkyl substances (PFASs) and asthma.

Previous work has shown that PFASs and levels of sex hormones are independently associated with asthma; however, whether these factors interact has been unclear. To address this question, researchers analysed data from the Genetics and Biomarkers study for Childhood Asthma cohort in Taiwan. Participants were selected during 2009–2010; the cases included 231 children aged 10–15 years who had been diagnosed with asthma in the previous year, and the control participants comprised 225 children without a personal or family history of asthma who had

been matched for age and sex. The participants and their parents completed a survey on demographics, environmental exposures and asthma outcomes. A physical examination collected information on height, weight and pulmonary function, and fasting serum samples were taken. The serum samples were analysed for levels of PFASs, oestradiol and testosterone.

The analysis showed that levels of all PFASs were higher in children with asthma than in those without asthma. In children without asthma, a linear regression analysis showed that only levels of the PFAS perfluorononanoic acid were associated with levels of testosterone. By contrast, in children with asthma, levels of four of the five PFASs tested were positively

associated with levels of oestradiol, and levels of two of the PFASs were negatively associated with levels of testosterone. The authors of the paper suggest that the association between PFAS exposure and asthma is stronger in children who have increased levels of oestradiol.

Although more work needs to be done to determine the exact nature of these associations, the researchers note that their findings are the first step to understanding how hormones and exposure to PFASs interact to affect the risk of asthma.

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ORIGINAL ARTICLE Zhou, Y. *et al.* Interaction effects of polyfluoroalkyl substances and sex steroid hormones on asthma among children. *Sci. Rep.* <http://dx.doi.org/10.1038/s41598-017-01140-5> (2017)