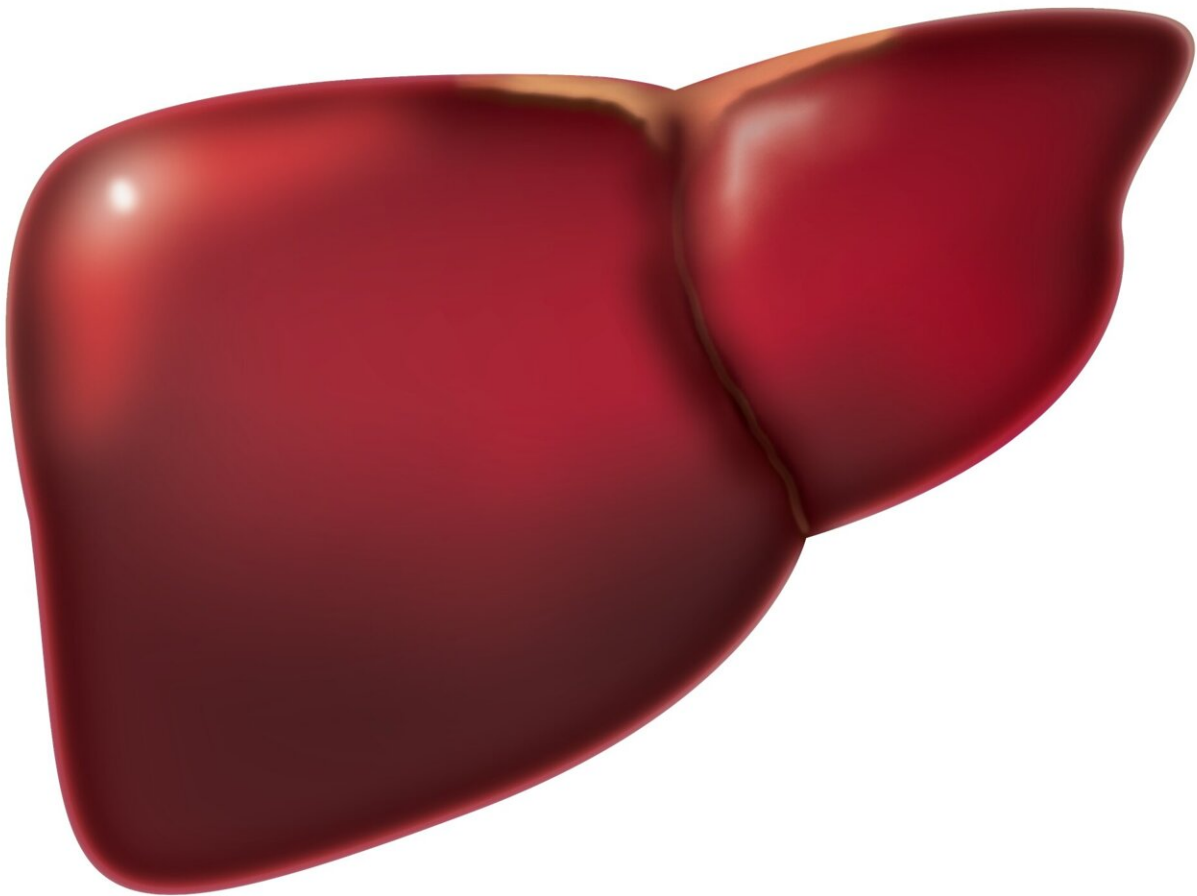


Study on PFAs and fatty liver disease: Women more affected than men

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Women are affected to a greater degree than men when exposed to PFAs, a group of highly fluorinated chemicals. A study from Örebro University shows how PFAs affect metabolism and lead to liver damage, so-called fatty liver disease.

"Exposure to environmental chemicals such as PFAs can exacerbate certain diseases and increase the risk of diabetes," says Matej Orešič, professor of medical sciences, who together with Professor Tuulia Hyötyläinen has led the study.

An increasing amount of research findings show that certain chemicals in the environment, especially PFAs, are among the causes of non-alcoholic [fatty liver disease](#) (NAFLD) in humans. As the name suggests, NAFLD is a form of fatty [liver disease](#) that is not caused by alcohol. In fatty [liver](#) disease, there is a build-up of fat in the liver, which can lead to diabetes and inflammation with subsequent damage. There is currently no medical remedy for fatty liver disease.

PFAs have consequently been identified as a cause of fatty liver disease. However, there is a [knowledge gap](#) as to the way in which these chemicals impact liver metabolism, which in turn is linked to the disease.

"We are able show that PFAs cause changes in bile acids and we can demonstrate the link between bile acids and lipid and glucose metabolism. Our findings therefore provide an explanation for the underlying mechanism of already identified factors for development of non-alcoholic fatty liver disease," says Tuulia Hyötyläinen.

The researchers have had liver biopsies and [blood samples](#) taken from a group of 105 people with NAFLD, and then measured the prevalence of hundreds of metabolites and chemicals, including PFAs. The link between PFAs and fatty liver disease in humans have then been confirmed in studies in mice.

"The analysis showed a clearer link in women. Women with high levels of PFAs also had more [bile acid](#) and more build-up of fat in their liver. Their [glucose metabolism](#) was also more affected than in men," says Matej Orešič.

This study provides new data at a more detailed level.

"This knowledge is significant for further research into PFAs, as well as into the assessment and management of risks linked to this group of substances. There is also a possibility that we in the future will be able to use these results to design ways of treating the disease," says Tuulia Hyötyläinen.

PFAs, highly fluorinated substances, include over 4,700 chemicals that are not natural to the environment but accumulate there as a result of production, use and disposal. They take long to degrade and are harmful to both humans and organisms.

More information: Partho Sen et al, Exposure to environmental contaminants is associated with altered hepatic lipid metabolism in non-alcoholic fatty liver disease, *Journal of Hepatology* (2021). [DOI: 10.1016/j.jhep.2021.09.039](#)

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