



'PFAS accumulate in the environment, and in the human body. We still don't know enough about the effect such chemicals have on our bodies.' • Photo Shutterstock

Chemicals in the environment can benefit metabolism

PFAS chemicals reduce cholesterol and other fats in the blood plasma, show studies in mice by Brecht Attema (Human Nutrition and Health). She obtained her PhD earlier this month.

Complications in the metabolism, which can lead to diseases such as type 2 diabetes and obesity, are caused partly by the excess intake of calories and not enough exercise. But chemicals in the environment can also affect our metabolic health, as is confirmed by studies on mice performed by PhD candidate Brecht Attema (Human Nutrition and Health). She

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obtained her PhD at the start of April. 'I researched the role of chemicals in our environment and how they affect the liver in the light of metabolic complications such as type 2 diabetes and fatty liver disease,' says Attema. 'We know the group of chemicals known as PFAS accumulate in the environment and in the human body too. Only last month, high levels were found in the eggs of hobby chickens. But we don't yet know enough about the effect such substances have on the human body.' Attema examined the metabolism of

mice that had been exposed to the PFAS variant PFOA and to GenX, the recently developed alternative to PFOA. She also exposed the mice to the fungicide propiconazole, which is found in pesticides used on rye, wheat and stone fruit such as cherries and peaches.

More fat

'It is easier to measure the effects of the chemicals when the metabolism is already under some pressure,' explains Attema. 'So first we fed the mice a high-fat diet, which caused them to develop obesity and fatty liver disease. Then we exposed the mice to the chemicals to see what additional effect these substances had on their metabolism.'

Contrary to expectations, the chemicals had some positive effects. 'PFOA reduced levels of cholesterol and triglycerides (fats found in the blood, ed.) in the blood plasma. That is interesting because some people take medication precisely to achieve that same effect. The mechanism

whereby the chemicals have that effect is the same as in certain medicines known as fibrates. But exposure to both PFOA and GenX also had negative effects such as an accumulation of triglycerides, i.e. fat, in the liver.'

'Higher doses of the fungicide propiconazole reduced the bodyweight and levels of cholesterol and triglycerides in obese mice,' adds Attema. While this might sound positive, Attema also saw a big increase in liver fat and signs of an inflammatory response and scar tissue in the liver.

Caution needed

Just because we found the chemicals had some positive effects on the metabolic health of mice does not mean we no longer need to be so cautious about their use,' says Attema. 'The chemicals still have negative effects as well on the metabolism in the liver. And while some substances have the same effect or use the same mechanism as certain medicines, there is still a big difference between deliberately taking a medicine and unintentionally ingesting uncontrolled dosages of particular chemicals.' DV