

Paracetamol during pregnancy can inhibit masculinity

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Tylenol 500 mg capsules. Credit: Wikipedia

Paracetamol is popular for relieving pain. But if you are pregnant, you should think twice before popping these pills according to the researchers in a new study. In an animal model, Paracetamol, which is the pain-relieving substance found in the pills, actually damages the development of male behaviours.

Previous studies have shown the paracetamol can inhibit the development of the [male sex hormone](#) testosterone in male foetuses, thus increasing the risk of malformation of the testicles in infants. But a reduced level of testosterone at the foetal stage is also significant for the behaviours of adult males, says Ph.D. David Møbjerg Kristensen, a researcher employed during the studies at the Department of Biomedical Sciences and the Novo Nordisk Foundation Center for Protein Research at the Faculty of Health and Medical Sciences.

"We have demonstrated that a reduced level of testosterone means that male characteristics do not develop as they should. This also affects [sex drive](#). In a trial, mice exposed to paracetamol at the foetal stage were simply unable to copulate in the same way as our control animals. Male programming had not been properly established during their foetal development and this could be seen long afterwards in their adult life. It is very worrying," says David Møbjerg Kristensen.

The dosage administered to the mice was very close to the recommended dosage for [pregnant women](#). Because the trials are restricted to mice, the results cannot be transferred directly to humans. However, the researchers' certainty about the harmful effects of paracetamol means it would be improper to undertake the same trials on humans, explains David Møbjerg Kristensen.

Markedly reduced male behaviour

Testosterone is the primary male sex hormone that helps develop the male body and male programming of the brain. The masculine behaviours in mice observed by the researchers involved aggressiveness to other male mice, ability to copulate and the need for territorial marking. The mice reacted significantly more passively than normal for all three parameters. They did not attack other males, they were unable to copulate and behaved more like female mice when it come to urinary

territorial marking.

After observing the changed behavioural patterns, Prof. Anders Hay-Schmidt, who was employed at the then Department of Neuroscience and Pharmacology during his studies at the University of Copenhagen, investigated the specific effects of a lack of testosterone on the brain. The results showed up clearly here, too.

"The area of the brain that controls sex drive - the sexual dimorphic nucleus - had half as many neurons in the mice that had received paracetamol as the control mice. The inhibition of testosterone also led to a halving of the activity in an area of the brain that is significant for male characteristics," he explains.

Also affects female fertility

This study focused on the effect of paracetamol on masculine characteristics but paracetamol during pregnancy also has the potential to influence the subsequent lives of female mice. In 2016, the researchers published a study showing that [female mice](#) had fewer eggs in their ovaries if their mothers had had paracetamol during pregnancy. This led to the [mice](#) becoming infertile more quickly. But even if paracetamol is harmful, that does not mean it should never be taken, even when pregnant.

"I personally think that people should think carefully before taking medicine. These days it has become so common to take paracetamol that we forget it is a medicine And all medicine has side effects. If you are ill, you should naturally take the medicine you need. After all, having a sick mother is more harmful for the foetus," says David Møbjerg Kristensen.

He emphasizes that pregnant women should continue to follow the

guidelines given by their country's health authorities and recommends people to contact their GP if in doubt about the use of paracetamol.

The study, "Prenatal exposures to [paracetamol](#)/acetaminophen and precursor aniline impair masculinisation of male brain and behaviour," has just been published in the scientific journal *Reproduction*.

Provided by University of Copenhagen

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