

Foetus suffers when mother lacks vitamin C

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Vitamin C supplements are important during pregnancy. Credit: Wikimedia Commons

Maternal vitamin C deficiency during pregnancy can have serious consequences for the foetal brain. And once brain damage has occurred, it cannot be reversed by vitamin C supplements after birth. This is shown through new research at the University of Copenhagen just published in the scientific journal *PLOS ONE*.

Population studies show that between 10-20 per cent of all adults in the developed world suffer from vitamin C deficiency. Therefore, pregnant women should think twice about omitting the daily vitamin pill.

"Even marginal vitamin C deficiency in the mother stunts the foetal hippocampus, the important memory centre, by 10-15 per cent,

preventing the brain from optimal development," says Professor Jens Lykkesfeldt. He heads the group of scientists that reached this conclusion by studying pregnant guinea pigs and their pups. Just like humans, guinea pigs cannot produce vitamin C themselves, which is why they were chosen as the model.

"We used to think that the mother could protect the baby. Ordinarily there is a selective transport from mother to foetus of the substances the baby needs during [pregnancy](#). However, it now appears that the transport is not sufficient in the case of vitamin C deficiency. Therefore it is extremely important to draw attention to this problem, which potentially can have serious [consequences](#) for the children affected," says Jens Lykkesfeldt.

Too late when damage is done

The new results sharpen the focus on the mother's [lifestyle](#) and [nutritional status](#) during pregnancy. The new study has also shown that the damage done to the foetal brain cannot be repaired, even if the baby is given vitamin C after birth.

When the vitamin C deficient guinea pig pups were born, scientists divided them into two groups and gave one group vitamin C supplements. However, when the pups were two months old, which corresponds to teenage in humans, there was still no improvement in the group that had been given supplements.

The scientists are now working to find out how early in the pregnancy vitamin C deficiency influences the development of foetal [guinea pigs](#). Preliminary results show that the impact is already made early in the pregnancy, as the foetuses were examined in the second and third trimesters. Scientists hope in the long term to be able to use population studies to illuminate the problem in humans.

Vulnerable groups

There are some groups that may be particularly vulnerable of vitamin C deficiency:

"People with low economic status who eat poorly - and perhaps also smoke - often suffer from vitamin C deficiency. Comparatively speaking, their children risk being born with a poorly developed memory potential. These children may encounter learning problems, and seen in a societal context, history repeats itself because these children find it more difficult to escape the environment into which they are born," says Jens Lykkesfeldt.

He emphasises that if [pregnant women](#) eat a varied diet, do not smoke, and for instance take a multi-vitamin tablet daily during pregnancy, there is no reason to fear [vitamin C](#) deficiency.

"Because it takes so little to avoid [vitamin C deficiency](#), it is my hope that both politicians and the authorities will become aware that this can be a potential problem," concludes Jens Lykkesfeldt.

More information: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0048488

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