

Folic acid given to mother rats protects offspring from colon cancer

26 May 2011

Folic acid supplements given to pregnant and breast-feeding rats reduced the rate of colon cancer in their offspring by 64 per cent, a new study has found.

The research, led by Dr. Young-in Kim, a [gastroenterologist](#) at St. Michael's Hospital, adds to the growing but sometimes contradictory evidence that folic acid supplementation during pregnancy and lactation can increase or decrease the development or progression of some pediatric malignancies and common cancers in their offspring in adulthood.

For example, a separate study by Kim published in February found the daughters of rats who were given folic acid supplements before conception, during pregnancy and while [breast-feeding](#) have [breast cancer](#) rates twice as high as other rats who were not given the supplements. They also had more tumours and developed them at a faster rate.

Kim said these studies collectively suggest that folic acid may have drastically different effects on [cancer development](#) in different organs, that specific organs may have different needs for folate, its natural form, or metabolize it differently. He said more studies, including human studies, were needed.

Kim's new study, published in *Gut*, a leading international journal in gastroenterology, is the first to find that folic acid supplements at the level ingested by North American women of childbearing age "significantly protects against the development of colorectal cancer in the offspring."

Folate is known to help make DNA and help it replicate.

"It appears that giving folic acid during pregnancy and lactation reduces [DNA damage](#) and suppresses the proliferation of cells in the colon," Kim said. "It actually increases the stability of the

DNA and this might be one of the mechanisms of how folic acid in utero may protect against [colon cancer](#)."

The amount of folic acid to which fetuses are exposed has increased dramatically in North America in the past decade. Natural folate is found in grains and dark, leafy vegetables. Women are routinely advised to take folic acid supplements before becoming pregnant and while pregnant to prevent neural tube birth defects such as spina bifida.

Since 1998, the Canadian and U.S. governments have required food manufacturers to add folic acid to white flour, enriched pasta and cornmeal products as a way of ensuring women receive enough of the B vitamin. In addition, up to 40 per cent of North Americans take [folic acid supplements](#) for possible but as yet unproven health benefits.

Provided by St. Michael's Hospital

APA citation: Folic acid given to mother rats protects offspring from colon cancer (2011, May 26) retrieved 2 December 2022 from <https://medicalxpress.com/news/2011-05-folic-acid-mother-rats-offspring.html>

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