

## EWG in the News

<http://www.ewg.org/news/story.php?id=5683>

### **A benchmark investigation of industrial chemicals, pollutants and pesticides in umbilical cord blood**

From EWG's report [\*\*\*BodyBurden2: The Pollution in Newborns\*\*\*](#)

<http://www.ewg.org/reports/bodyburden2/part3.php>

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### **Cancer prevention begins during pregnancy**

By: Ben Wasserman

Food Consumer

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Children born to mothers who eat large amounts of cruciferous vegetables like broccoli and cabbage during pregnancy may have a substantially lower risk of leukemia and lymphoma in their childhood and lung cancer late in their adulthood, results of a new study suggest.

In the study, researchers from the Linus Pauling Institute at Oregon State University discovered that when administered in pregnant mice, a phytochemical found in certain vegetables help protect baby mice from developing leukemia and lymphoma in their infancy and lung cancer during the animal's equivalent of middle age.

The study, published in the latest issue of the journal *Carcinogenesis*, demonstrated that prenatal and maternal diet may play a significant role in cancer prevention and or cancer development. The dietary effect, either protecting or causing cancer, may begin as early as in the womb and last far into adulthood.

"There's strong epidemiologic evidence that infant cancers can be caused by exposure of the fetus to carcinogens, either during pregnancy or by nursing," said David Williams, an LPI researcher and director of the Marine and Freshwater Biomedical Sciences Center at OSU.

The findings are significant because the pollution of the mother's body is real and action may be needed during pregnancy to protect against cancer in children, said a scientist affiliated with [foodconsumer.org](http://www.foodconsumer.org), who did not participate in the current study.

A 2005 study spearheaded by the Environmental Working Group found 287 chemicals in umbilical cord blood samples from 10 babies born in U.S. hospitals. Among the detected chemicals, 180 are known to cause cancer in humans or animals, according to the EWG.

It has been shown in early studies that pollutants in mothers' blood such as PAHs, PCBs and dioxins, can be transmitted to the fetus across the placental barrier and during nursing, according to the researchers of the current study.

Although evidence is rare to indicate that such body pollution would elevate the cancer risk in children, the widespread contamination of the blood may be linked to increasing incidence of pediatric cancer in the West. "The fetus and neonate are sensitive targets for toxic carcinogens," Williams said.

The current study demonstrated how a particular group of carcinogens known as polycyclic

aromatic hydrocarbons or PAHS affect the risk of pediatric cancer and how a phytochemical may counteract the cancer-causing agent. PAHs are commonly present in the human blood, according to the EWG.

PAHs, produced by cigarette smoking or the incomplete combustion of organic materials such as wood, coal, cooking oil or diesel fuel, can cause DNA damage in newborns and associated with increased risk of childhood leukemia, the researchers said.

In the present study, the researchers exposed two groups of pregnant mice to a single high dose of dibenzoyrene, a cancer-causing PAH. One group of mice was also given a high dose of a chemoprotective supplement Indole-3-carbinol or I3C.

In the pregnant mice that did not receive the supplement, 80 percent of their 100 offspring died early in life from an aggressive T-cell lymphoma. Among those that survived to their middle age, 100 percent acquired lung tumors, the study found.

In contrast, among the mice born to those pregnant mice that also received indole-3-carbinol, the risk of dying from lymphoma was reduced by 50 percent and the number of lung tumors developed late in life was significantly lower.

"It's clear that in mice this supplement provided significant protection against lymphoma and, later on, lung cancer," Williams said.

"It's also worth noting that none of the infant mice received the protective supplement later in their life, at any stage beyond breast feeding. The protective effect of the compound came solely from maternal intake during pregnancy and nursing, but lasted into the animal's middle age. This is somewhat remarkable," he added.

According to the researchers, dietary and other factors may predispose people to get lung cancer although smoking is widely believed to be a cause, which the researchers said is responsible for only one tenth of lung cancer cases. Transmission of pollutants through placental cord may be one of the risks, but further study is needed.

The researchers said the doses of the cancer-causing agent and indole-3-carbinol used in the study were higher than those encountered in the environment or a normal diet, suggesting that it is not clear how much risk the environmental pollution would impose.

Although the chemoprotective effect of indole-3-carbinol may be real in humans, the researchers cautioned that pregnant women should restrain themselves from taking high doses of indole-3-carbinol as fear has been raised that taking a high dose of the chemoprotective agent in the first trimester could lead to birth defects.

Regardless, any normal diet high in indole-3-carbinol should be safe and helpful, the researchers said. Indole-3-carbinol is found in vegetables including broccoli, cabbage, cauliflower, kale, radishes, turnips and other types of greens and cabbages.

Indole-3-carbinol has been extensively studied for its chemoprotective effects against a number of cancers including breast cancer.