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Fetal exposure to BPA changes development of uterus in primates

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Exposure in the womb to bisphenol A (BPA), a chemical widely used in the food and medical industries, causes changes in female primates' uterus development, new research suggests. The results will be presented Tuesday at The Endocrine Society's 93rd Annual Meeting in Boston.

"Previous studies have shown that BPA can affect the reproductive tract. However, because the studies were done in rodents, it was uncertain if this would also be true in humans," said Carmen Williams, MD, PhD, a clinical investigator with the National Institute of Environmental Sciences (NIEHS), Research Triangle Park, N.C.

The new study used the rhesus monkey, a species that is very similar to humans in regard to pregnancy and fetal development, said Williams, a study co-author.

She and her colleagues conducted the research at NIEHS and the California National Primate Research Center in Davis, which co-funded the study with the NIEHS. During a period that represented the third trimester of human pregnancy, the investigators gave BPA to 12 pregnant monkeys, each carrying a single female fetus.

In the first year of the experiment, six monkeys received BPA orally in a fruit treat, at a dose of 400 micrograms per kilogram of body weight daily, the researchers reported. During the second year, six additional pregnant monkeys received BPA through capsules implanted subcutaneously (below the skin), for a daily dose of 100 micrograms per

kilogram. Both forms of BPA resulted in a BPA level in the blood that is close to levels normally found in adult women, according to the authors' abstract.

The investigators analyzed the uterus of each offspring for gene expression. Oral BPA altered expression of HOX and WNT genes that are critical for uterine development, they found. They are still analyzing the data for the animals that received subcutaneous BPA, Williams said.

Differences also appeared in the extent of development of the cells lining the uterine cavity in BPA-exposed animals but not in a control group of unexposed monkeys.

"The long-term effects of BPA exposure on reproductive tract development are unknown," Williams said. "However, this research supports the recommendation that pregnant women should limit their exposure to BPA."

Experts recommend minimizing BPA exposure by using BPA-free products when possible and reducing consumption of canned foods, many of which are lined with BPA-containing epoxy resin.

The study findings were presented by Kathryn Calhoun, MD, an NIEHS research fellow based at the University of North Carolina, Chapel Hill.

Provided by The Endocrine Society