

BPA exposure in utero may increase predisposition to breast cancer

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A recent study accepted for publication in *Molecular Endocrinology*, a journal of The Endocrine Society, found that perinatal exposure to environmentally relevant doses of bisphenol A (BPA) alters long-term hormone response and breast development in mice that may increase the propensity to develop cancer.

BPA, a man-made chemical produced and marketed largely for specific industrial purposes, is detected in body fluids of more than 90 percent of the human population. It was originally synthesized as an estrogenic compound and there has been concern that exposure to BPA could have developmental effects on various hormone-responsive organs including the [mammary gland](#).

"I want it to be clear that we do not provide evidence that BPA exposure causes breast cancer per se," said Cathrin Brisken, MD, of the Swiss Institute for Experimental Cancer Research and co-author of the study. "We do provide evidence that BPA exposure alters mammary gland development and that this may increase the predisposition of the breast to breast cancer."

In this study, researchers mimicked human exposure to BPA as it occurs with beverages and food from BPA containing vessels (such as plastics and the lining of tin cans) by adding the compound to the drinking water of breeding mice. Female pups born from BPA-consuming parents were transferred to a BPA-free environment at weaning and followed over time.

Researchers analyzed changes in the mammary gland of female offspring that were exposed to BPA through their mothers in utero and while being breast fed. The mammary glands of BPA exposed females showed an increased response to the [hormone progesterone](#). [Lifetime exposure](#) to progesterone has been linked to increase [breast cancer risk](#).

Furthermore, researchers found that [adult females](#) who had been exposed to BPA in utero and while breast fed, showed a 1.5 fold increase in cell numbers in their milk ducts. This is comparable to what is seen upon similar exposure to another estrogenic compound, diethylbestrol (DES). Uterine exposure to DES in the human population has been shown to increase the relative risk of getting breast cancer two-fold as women reach their fifties.

"While we cannot extrapolate these results directly from mice to humans, the possibility that some of the increase in breast cancer incidence observed over the past decades may be attributed to exposure to BPA cannot be dismissed," said Brisken. "Our study suggests that pregnant and breastfeeding mothers should avoid exposure to BPA as it may affect their daughters' breast tissue."

More information: The article, "Perinatal exposure to bisphenol A increases adult mammary gland progesterone response and cell number," appears in the November 2011 issue of *Molecular Endocrinology*.

Provided by The Endocrine Society

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