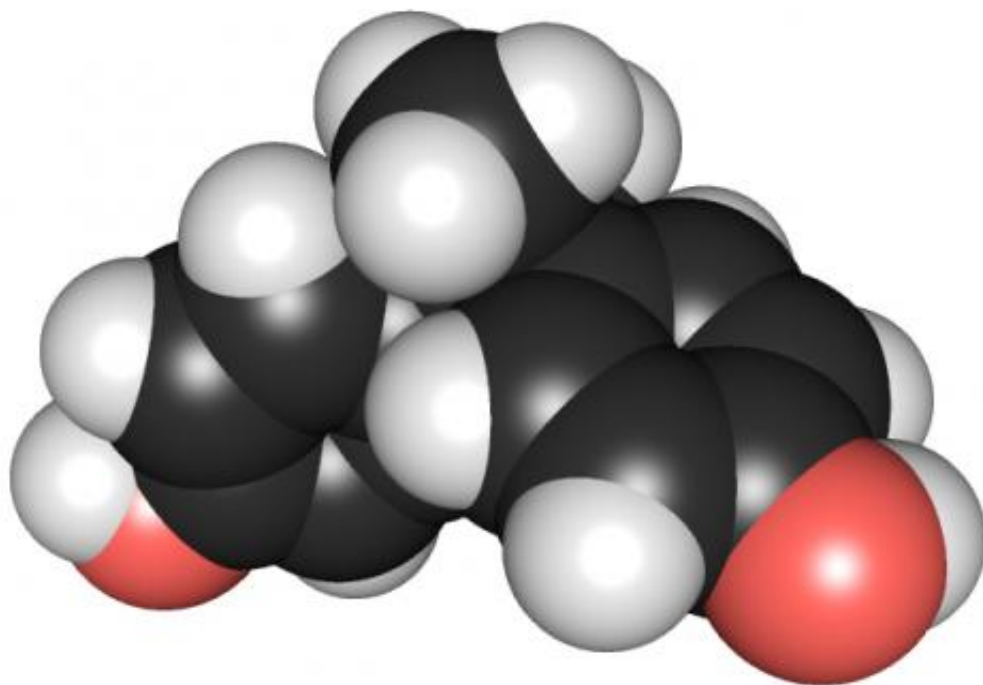


BPA exposure during pregnancy linked to mothers' future diabetes risk

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3D chemical structure of bisphenol A. Credit: Edgar181 via Wikimedia Commons

Exposure to the endocrine-disrupting chemical bisphenol A during pregnancy may raise a mother's susceptibility to weight gain and diabetes later in life, according to a new animal study published in the Endocrine Society's journal *Endocrinology*.

A chemical used to manufacture plastics and epoxy resins, bisphenol A (BPA) is found in a variety of consumer products, including plastic bottles, food cans and cash register receipts. The U.S. Centers for Disease Control and Prevention have estimated that more than 96 percent of Americans have BPA in their bodies.

BPA is a known endocrine disruptor - a chemical that mimics, blocks or interferes with the body's hormones. As of last year, nearly 100 epidemiological studies had been published that found an association between BPA and human health effects, including reproductive and metabolic disorders, according to [the introductory guide to endocrine-disrupting chemicals](#) published by the Endocrine Society and IPEN.

"Our results suggest that pregnancy represents a new window of susceptibility for mothers exposed to BPA," said one of the study's authors, Angel Nadal, PhD, of Miguel Hernández University in Elche, Spain. "Low-dose BPA exposure during this period can raise the risks of developing diabetes later in life."

To examine the long-term effects of BPA exposure during pregnancy, the researchers studied pregnant mice. The mice were divided into three groups - one exposed to a 10 µg/kg daily dose of BPA during days 9-16 of gestation, one exposed to a higher dose of 100 µg/kg daily during the same period, and a control group that was not exposed to BPA. After the mice gave birth, the researchers conducted regular [glucose tolerance](#) tests to measure their ability to metabolize sugar.

At four months postpartum, the mice that were exposed to BPA began to show signs of impaired glucose tolerance. The mice had higher glucose levels than the control group for 30 minutes after exposure to glucose. When the mice were tested again six months after delivery, the [high glucose levels](#) in the group exposed to BPA persisted for two hours after exposure.

Seven months after delivery, the researchers examined the animals' pancreatic beta cells - the cells responsible for manufacturing insulin - under a microscope to determine how BPA affected the cells. The analysis found the mice that were exposed to BPA had a significant decrease in beta cell mass and lower levels of insulin secretion than the control animals.

The mice exposed to BPA also tended to have higher body weights than the control animals. Researchers found [mice](#) in the experimental groups tended to be about 3 percent heavier than controls.

BPA mimics the actions of the hormone estradiol - a natural hormone that can regulate beta cell function and provoke insulin resistance. The researchers theorize BPA exposure during pregnancy may result in the overworking of [pancreatic beta cells](#) and lead to an increased susceptibility to the development of diabetes and other metabolic disorders.

"A number of studies have found that BPA can harm glucose metabolism in offspring exposed in utero, but this is among the first studies to focus on how the [endocrine disruptor](#) affects mothers," said one of the study's authors, Paloma Alonso-Magdalena, PhD. "Our data suggest exposure can have long-term effects for the mother, including a predisposition to being overweight, or developing metabolic syndrome or diabetes."

More information: The study, "Bisphenol-A Treatment during Pregnancy in Mice: A New Window of Susceptibility for the Development of Diabetes in Mothers Later in Life," was published online, ahead of print.

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