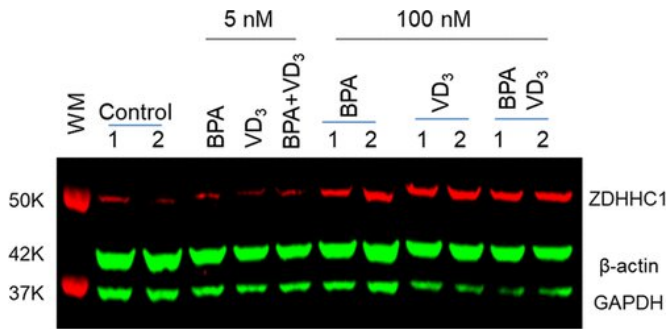


Bisphenol A activates immune response in mice that passes down through generations

15 January 2020



Credit: American Chemical Society

Some plastic food and beverage containers still contain bisphenol A (BPA), which can mimic the hormone estrogen. Although experts say that small amounts of BPA detected in foods are unlikely to cause problems, some people worry that constant low-level exposures could have health effects, especially for developing fetuses, infants and children. Now, researchers report in ACS' *Journal of Proteome Research* that in mice, BPA activates an immune response that persists for at least three generations.

Epidemiological studies have linked in utero BPA exposure with the onset of childhood asthma. Other studies have shown that treating [pregnant mice](#) with the substance induces asthma-like symptoms in the mothers and their pups. To better understand how BPA could trigger allergic asthma, Terumi Midoro-Horiuti, Kangling Zhang and colleagues analyzed the proteins produced by immune cells of BPA-treated pregnant mice, their pups and two generations of mice afterward that had not themselves been exposed to BPA.

Using [mass spectrometry](#), the researchers compared the proteins produced by certain immune cells from BPA-exposed mice and their descendants with those from control mice. In the

BPA-exposed mice and subsequent generations, some proteins related to an activated [innate immune system](#)—which plays a key role in antiviral defense and is also related to allergic diseases—were produced at higher amounts than in control mice. In particular, the BPA-exposed mice and their offspring produced about twice as much of a protein called ZDHHC1, which is also produced at higher levels in response to estrogen. In addition, BPA exposure caused changes in enzymes that modify DNA-binding proteins called histones. That kind of modification can cause heritable changes in gene expression. Therefore, descendants of the original BPA-exposed mice could have inherited changes in DNA expression that cause aberrant immune system activation, even in the absence of BPA, the researchers say.

More information: Mark L. Sowers et al. Bisphenol A Activates an Innate Viral Immune Response Pathway, *Journal of Proteome Research* (2019). [DOI: 10.1021/acs.jproteome.9b00548](https://doi.org/10.1021/acs.jproteome.9b00548)

Provided by American Chemical Society

APA citation: Bisphenol A activates immune response in mice that passes down through generations (2020, January 15) retrieved 7 September 2022 from <https://medicalxpress.com/news/2020-01-bisphenol-immune-response-mice.html>

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