

# 'Environmental level' BPA exposure hinders embryo development and metabolism

14 July 2016, by Crys Ja

## Endocrine disruptor effects on reproduction and obesity



Credit: University of Melbourne

New research suggests Bisphenol A (BPA) exposure impedes both the development and metabolism of an embryo, drawing a link between BPA and later-life obesity.

The University of Melbourne study, headed by Dr Mark Green from the Faculty of Science, looked at the impact of environmentally relevant levels of BPA on bovine [embryos](#) during early days post-fertilisation.

It found BPA [exposure](#) over just four days significantly decreased the percentage of embryos developing further in vitro.

Exposure within the first week of pregnancy also notably led to a substantial rise in the consumption of glucose - the embryo's main food source.

This suggests BPA could lead to a pre-disposition to metabolic syndrome or [obesity](#) in adulthood, given that changes to the early embryo environment are known to alter later-life health and

growth.

BPA is an endocrine disruptor, or a chemical that impacts the hormonal system by interfering with the oestrogen pathway. It is one of the highest quantity man-made chemicals in the world.

It is commonly found in a wide range of every-day items, including cash register receipts, plastic bottles, tin cans and take-away containers.

Several studies have raised concerns with BPA and its potential to cause health problems, such as breast and prostate cancers, obesity and certain behavioral disorders.

Dr Green, a reproductive biologist, said the study suggests even short exposure to BPA at the embryo stage can have an impact.

"Our work shows even in the first week of pregnancy the development and importantly, metabolism of an embryo can be perturbed," he said.

"To date, studies on BPA have mainly investigated the effects of BPA at toxic levels or exposure during adulthood, not on the embryo or at environmental levels."

"There have been a number of epidemiological studies that have identified an association between BPA and obesity in humans, but the mechanism and the timing of when during development and how this occurs was unclear."

"Now we can see that exposure to BPA levels found in the [human population](#) can increase glucose consumption in the embryo which might suggest obesity later on."

BPA is present in more than 95 per cent of the human population, according to one study.

"Our work highlights, for women trying to conceive, the importance of understanding how maternal exposure to environmental contaminants can have long-term impacts on a baby," Dr Green said.

He hopes the research will lead to a greater examination of the health impacts of BPA and other endocrine disruptors, especially around conception and the first few weeks of pregnancy.

The study has been published in the latest edition of *Scientific Reports*.

Provided by University of Melbourne

APA citation: 'Environmental level' BPA exposure hinders embryo development and metabolism (2016, July 14) retrieved 17 September 2021 from <https://medicalxpress.com/news/2016-07-environmental-bpa-exposure-hinders-embryo.html>

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