

Eating emulsifiers during pregnancy and lactation linked to health risks in mouse offspring

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Most of the ultraprocessed food items consumed nowadays contain emulsifiers in their composition. Credit: Júlia Fos-Domènech & Maria Milà-Guasch (CC-BY 4.0, creativecommons.org/licenses/by/4.0/)

A new study in mice shows that consuming emulsifiers—a common ingredient in ultra-processed human foods—during pregnancy or breast-feeding is associated with mild health risks for offspring. Maria Milà-Guasch of the Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS) in Barcelona, Spain, and colleagues present these findings August 24 in the open access journal *PLOS Biology*.

Emulsifiers help to preserve the texture of many ultra-processed foods, including some ice creams, breads, cake mixes, soups, salad dressings, and more. Prior research has linked consumption of emulsifiers to increased risk of gut inflammation, obesity, and other [health conditions](#). In addition, unbalanced nutritional habits by pregnant or nursing mothers has been linked to long-term health risks in offspring. However, the specific effects of maternal consumption of emulsifiers on offspring have been unclear.

To help clarify these effects, Milà-Guasch and colleagues provided [laboratory mice](#) with water containing two kinds of emulsifiers commonly found combined together in human food—carboxymethylcellulose and polysorbate-80.

From before pregnancy until the nursing offspring, female mice received the maximum concentration of each emulsifier allowed in human food products by the Food and Agriculture Organization and the World Health Organization. For comparison, other mice received water without any emulsifiers.

The researchers found that the offspring of mice that consumed emulsifiers had a greater risk of certain health issues, including mild metabolic, cognitive, and psychological impairments. These effects were strongest in [male offspring](#), but [female offspring](#) also showed impairments.

A combination of gene-expression testing and other lab tests suggested that maternal consumption of emulsifiers led to perturbation of the development of neural circuits in offspring's hypothalamus—a part of the brain that plays a central role in regulating metabolism.

Additional research will be needed to further clarify the effects on offspring of emulsifier consumption by pregnant and nursing people.

Still, on the basis of their new findings, the researchers call for increased awareness of potential risks of consumption of ultra-processed foods by mothers. They express particular concern about products perceived to be healthy, including certain vegetarian and vegan products, which nonetheless contain emulsifiers that could potentially lead to health risks for offspring.

Co-author Marc Claret adds, "Maternal consumption of [emulsifiers](#) may affect [offspring](#) health, promoting mild metabolic disarrangements, anxiety-like states and cognitive impairments."

More information: Milà-Guasch M, Ramírez S, Llana SR, Fos-Domènech J, Dropmann LM, Pozo M, et al. Maternal emulsifier consumption programs offspring metabolic and neuropsychological health in mice. *PLoS Biology* (2023). [DOI: 10.1371/journal.pbio.3002171](#)

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