UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY

AllerGen
Allergy, Genes and Environment Network

PRESS RELEASE

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Household cleaners may cause obesity in young children

Strong causal link between frequent disinfectant use and childhood gut microbiome change and weight gain, according to U of A research.

(Edmonton, AB) Killing germs around the house may have a negative impact on young childrens' waistlines.

Breakthrough research by the University of Alberta (U of A) shows that frequent use of household disinfectants—primarily cleaners—likely increases the risk of obesity in young children.

"We found that infants living in households where disinfectants were used at least weekly were twice as likely to have higher levels of the bacteria called *Lachnospiraceae* at three to four months of age," said Anita Kozyrskyj, a U of A pediatrics professor and principal investigator on the SyMBIOTA project—an investigation into how alteration of the infant gut microbiome impacts health. "At three years of age, those same children had a higher body mass index (BMI) than children who were not exposed to frequent home use of disinfectants as infants."

"This finding is more than an association. Our 'mediation' statistical analysis suggests that a gut microbiome enriched with *Lachnospiraceae* early in infancy was likely directly responsible for children becoming overweight or obese," she added.

The study, published in the *Canadian Medical Association Journal* (*CMAJ*), used data from 757 children participating in AllerGen's Canadian Healthy Infant Longitudinal Development (CHILD) birth cohort, and examined exposure to three categories of household cleaners—disinfectants, detergents and eco-friendly products—on the infant gut microbiome.

"We did not find a relationship between detergents and gut microbiome change or obesity risk that was independent of disinfectant usage," said Kozyrskyj, adding that it was important to distinguish detergents from disinfectants since the usage of both is highly correlated.

More than 80 percent of households use multi-surface cleaners with disinfectants weekly or more often, noted Kozyrskyj, adding that infant exposure likely occurs through contact with aerosols or cleansed surfaces.

"Based on our study's finding, we recommend against frequent use of disinfectant cleaners in households with infants and suggest that parents consider alternative cleaning products."

Eco-friendly products the answer?

On the other hand, the study showed that infants in households with high use of eco cleaners had decreased odds of becoming overweight or obese—but this was not related to their gut microbiome as an infant.

“Infants growing up in households with heavy use of eco cleaners had much lower levels of different types of gut microbes, such as *Enterobacteriaceae*. However, we found no evidence that these specific gut microbiome differences were associated with the reduced obesity risk,” said AllerGen trainee Mon Tun, a PhD student at U of A and first author of the study.

Instead, Tun speculated that mothers in households using a lot of eco products may eat healthier food and, thus, have healthier microbiomes during pregnancy, which may in turn have a positive impact on the newborn microbiome and later weight gain.

Bottom line, said Kozyrskyj: you can help protect your infant’s gut microbiome and reduce risk of weight gain and obesity by eliminating disinfectant agents in your household cleaning regime.

The study was funded by CIHR.

About the U of A Faculty of Medicine & Dentistry

The Faculty of Medicine & Dentistry at the University of Alberta is a leader in educating and training exceptional practitioners and researchers of the highest international standards. The faculty’s mission is to advance health through excellence in teaching, research and patient care. It is home to one of the top 100 ranked medical schools in the world.

About the CHILD Study and AllerGen NCE

Funded by CIHR and the Allergy, Genes and Environment (AllerGen) Network, the CHILD Study is collecting a vast range of health, lifestyle and environmental exposure information from nearly 3,500 mothers and children from pregnancy to age five. The study spans four provinces (BC, AB, MB and ON), involving over 140 multidisciplinary researchers, students and research staff. St. Joseph’s Healthcare Hamilton hosts the CHILD Study’s National Coordinating Centre.

AllerGen NCE Inc. is a national research network dedicated to improving the quality of life of people suffering from allergic and related immune diseases. Funded by Innovation, Science and Economic Development Canada through the federal Networks of Centres of Excellence (NCE) Program, the Network is hosted at McMaster University in Hamilton, ON.

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