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FOR IMMEDIATE RELEASE

AllerGen researchers find infant gut bacteria is influenced by delivery and feeding methods and may have long-term health effects

In an article published February 11, 2013 by the Canadian Medical Association Journal (CMAJ), AllerGen trainee and postdoctoral fellow Dr. Meghan Azad, and AllerGen researcher Dr. Anita Kozyrskyj, University of Alberta, found that infant gut microbiota was influenced by method of delivery (vaginal vs. cesarean) and feeding method (breastfeeding vs. formula) (<http://www.cmaj.ca/lookup/doi/10.1503/cmaj.121189>). Gut microbiota play a crucial role in the maturation of the immune system, as well as bodily functions such as digestion, excretion, and protection from infections. Alteration of microbiota during early life has been linked to chronic diseases such as asthma, allergies, cancer and type II diabetes.

Researchers found that infants born by cesarean were deficient in a certain type of gut bacteria when compared to those born vaginally, despite being exclusively breastfed. Further, babies who were formula-fed also had differences in their gut bacteria compared to those who were strictly or partially breastfed.

"Our findings are particularly timely given the recent affirmation of the gut microbiota as a "super organ" with diverse roles in health and disease, and the increasing concern over rising cesarean delivery and insufficient exclusive breastfeeding in Canada," the authors wrote. "The potential long-term consequences of decisions regarding mode of delivery and infant diet are not to be underestimated."

The study included 24 healthy infants at age 3-4 months. Twenty-five percent of the infants were delivered by cesarean, and 42% were breastfed exclusively, which is representative of the Canadian average at 27% and 43% respectively.

Drs. Azad and Kozyrskyj used new technology for gene sequencing and data from the Canadian Healthy Infant Longitudinal Development (CHILD) Study, an AllerGen-funded, national birth cohort study, which is led by co-author Dr. Malcolm Sears, McMaster University. The CHILD Study is the largest multidisciplinary, longitudinal, population-based birth cohort study in Canada and is designed to be one of the most informative studies of its kind in the world. More than 3,500 children are enrolled in the study and followed from pre-birth until age five. A series of measurements are regularly collected regarding the child's home environment, biological samples, and psychosocial, diet and clinical measures.

"With its population-based sample and detailed exposure assessments, the cohort is an ideal platform from which to study the early-life development of the gut microbiota," Dr. Kozyrskyj and authors wrote. "Our study addresses an important knowledge gap, since the infant gut microbiota has rarely been characterized with sequencing methods that provide sufficient coverage of the entire bacterial community." The team is one of only a few groups worldwide studying infant microbiota, putting Canadian researchers in a unique position to gather microbiome data unavailable to other teams.

The findings of this study will help researchers to further understand the gut microbiome of infants, and potential long-term effects of parent and physician decisions regarding delivery and diet. Results will also be used to investigate potential associations with the environment, use of antibiotics and maternal diet.

ABOUT ALLERGEN NCE

AllerGen NCE Inc., the Allergy, Genes and Environment Network, is a national research network dedicated to improving the quality of life for people living with allergic and related immune diseases. AllerGen is funded by Industry Canada through the federal Networks of Centres of Excellence (NCE) Program. The Network is hosted at McMaster University in Hamilton, Ontario. Since inception in 2004, AllerGen has been supporting excellence in research and fostering commercialization, social innovation and knowledge mobilization that will enable Canadians to better prevent, treat and manage allergy, asthma, anaphylaxis and related immune diseases. Leading Canadian experts are working in trans-disciplinary teams, with national and international collaborators, and stakeholder and research partner organizations, to address knowledge gaps and create new opportunities in diagnostics, therapeutics, healthcare, public health, ethics, policy and patient education. Network participants are also training the next generation of researchers, innovators and clinician-scientists, while collaboratively working to reduce the morbidity, mortality and socio-economic impacts of allergic diseases. For more information, visit www.allergen-nce.ca.

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