PRESS RELEASE

Infant gut bacteria and food sensitization: associations in the first year of life

Canadian research sheds new light on the factors that cause children to develop food allergies

(Edmonton, 4 March 2015) A new study from Canadian researchers at the University of Alberta and University of Manitoba is shedding new light on changes in intestinal bacteria of infants that can predict future development of food allergies or asthma.

The research, published in the February edition of the journal *Clinical & Experimental Allergy* and highlighted as the publication's "Editor's Choice," reveals that infants with a fewer number of different bacteria in their gut at three months of age are more likely to become sensitized to foods such as milk, egg or peanut by the time they are one year old. Infants who developed food sensitization also had altered levels of two specific types of bacteria, Enterobacteriaceae and Bacteroidaceae, compared to infants who didn't.

"Using DNA techniques to classify bacteria in the Scott and Guttman laboratories at the University of Toronto, we obtained information on the different types of 'good' bacteria present in infant stool collected at three months of age and then at one year of age," says Anita Kozyrskyj, professor in the Department of Pediatrics at the University of Alberta and senior author of the study. "We were able to then see which bacteria present at three months predicted the development of food sensitization at one year, as measured by a skin reaction test to the food."

"We are continuing to study this process," says Meghan Azad, assistant professor in the Department of Pediatrics & Child Health at the University of Manitoba and lead author of the study. "Ultimately, we hope to develop new ways of preventing or treating allergies, possibly by modifying the gut microbiota."

The study, funded by the Canadian Institutes of Health Research and AllerGen NCE, looked at data from 166 infants enrolled in the Canadian Healthy Infant Longitudinal Development (CHILD) Study. This landmark study involves more than 3,500 families and their newborn infants across Canada, including 1,000 in Manitoba and 750 in Edmonton, who are being closely monitored to determine the genetic and home environment factors that contribute to future allergies and asthma.

Researchers say the data on gut bacterial patterns during infancy can serve as a biomarker for future disease.

“It is something that one can measure that indicates increased risk of food sensitization by one year of age,” says Kozyrskyj.

Both Kozyrskyj and Azad, who is also a research scientist at the Children’s Hospital Research Institute of Manitoba, caution that the results don’t necessarily mean the children will progress to full-blown food allergies in later life. The researchers will soon be expanding their sample size as data comes in from other children at CHILD Study sites in Edmonton, Winnipeg, Vancouver and Toronto. The hope is to eventually have data from as many as 2,500 children from across Canada. The researchers plan to follow them as they grow, examining results again at the ages of three and five.

“At the end of the day, we want to know if infants who show changes to normal gut bacteria composition will go on to develop food or other allergies, or even asthma,” says Kozyrskyj.

About AllerGen NCE

AllerGen NCE Inc., the Allergy, Genes and Environment Network (est. 2004), is a national research network dedicated to improving the quality of life of people suffering from allergic and related immune diseases. Funded by Industry Canada through the federal Networks of Centres of Excellence (NCE) Program, the Network is hosted at McMaster University in Hamilton. Visit www.allergen-nce.ca for more information.

About the University of Alberta

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. For more information, please visit www.med.ualberta.ca.

About the University of Manitoba

The University of Manitoba, founded in 1877 as Western Canada’s first university, is the province's only research-intensive university, educating the majority of professionals in Manitoba. The University of Manitoba is a trailblazer in many areas of learning, research, discovery and community engagement. The newly established Faculty of Health Sciences comprises the Colleges of Medicine, Nursing, Dentistry, Pharmacy and Rehabilitation Sciences. The colleges offer a broad range of undergraduate, graduate and post-graduate educational programs in the health professions and basic medical sciences to over 3,100 students. The Faculty of Health Sciences, College of Medicine is a research leader in the areas of immunity, inflammation and infectious disease; population and global health; and patient oriented research. The Faculty of Health Sciences receives external research funding of more than $100 million annually.

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