

Breastmilk hormones may help prevent obesity in infants

WINNIPEG, MB (20 September 2017) For years, scientists have attempted to understand the complexities of human milk—what it's made of, how it's produced, and how its unique composition affects an infant's growth and development.

In a [new study](#) published in the *International Journal of Obesity*, CHILD Study researchers have helped to solve this puzzle. Led by Dr. Meghan Azad, the paper examines the potential effect of three breastmilk hormones (adiponectin, leptin and insulin) on infant body composition and explores the association of maternal characteristics with variations in these hormones.

Beyond the essential nutrients of proteins, fats, sugars, vitamins and minerals, breastmilk also contains important non-nutritional components, such as antibodies that support a baby's developing immune system; growth factors for tissue development and maturation; and an abundance of hormones that influence metabolism and energy balance.

"We found that breastmilk hormone concentrations were significantly associated with infant body composition during the first year of life," says Dr. Azad, an assistant professor in the Rady Faculty of Health Sciences at the University of Manitoba and a research scientist at the Children's Hospital Research Institute of Manitoba. "Human milk is an incredibly complex biological substance and our research has helped us to understand the roles that breastmilk adiponectin, leptin and insulin may play in the development and prevention of obesity in early childhood."

Analyzing breastmilk from 430 women in the CHILD Study, researchers found that higher concentrations of breastmilk leptin and intermediate concentrations of breastmilk insulin were associated with lower infant weight-for-length (WFL) and body mass index (BMI) scores at four months and 12 months of age. Breastmilk adiponectin concentrations were not significantly associated with infant body composition.

The hormone adiponectin affects how the body uses sugar and fat for energy, while leptin acts as the body's thermostat to control appetite, weight, and how much energy the body uses. Insulin helps to regulate the biological process which converts glucose (sugar) into energy.

"Our study also identified maternal factors that appear to influence the concentrations of these hormones in breastmilk," adds AllerGen trainee and study first-author Deborah Chan, also at the University of Manitoba. "We found that the mother's BMI, ethnicity, age, and breastfeeding exclusivity, among other factors, were associated with hormone levels and this may partially explain why some infants become overweight or obese, despite being breastfed."

Data collected from the CHILD Study will enable continued research in this area, according to Dr. Azad. "We hope to better understand the origins and determinants of breastmilk hormones, and to characterize their impact on infant growth and childhood obesity," she says. "We are incredibly fortunate to have this large birth cohort study right here in Canada to help us do that."

About the CHILD Study: Launched in 2008 by CIHR and AllerGen NCE, the [CHILD Study](#) is tracking thousands of Canadian families and their infants over early childhood to help determine the root causes of chronic diseases, such as asthma, allergies and obesity, among other conditions. With its National Coordinating Centre based at St. Joseph's Healthcare Hamilton, the CHILD Study relies upon the world-recognized expertise in birth cohorts, and in allergy and asthma treatment, care and training, of McMaster University and its Faculty of Health Sciences, together with their affiliated teaching hospitals, Hamilton Health Sciences and St. Joseph's Healthcare. The CHILD Study spans four provinces, involving over 140 multidisciplinary researchers, students and research staff. [Watch the CHILD Study videos.](#)

About the Children's Hospital Research Institute of Manitoba: The Children's Hospital Research Institute of Manitoba was established in 2001. [CHRIM](#) is the research division of the Children's Hospital Foundation of Manitoba. At the Institute, more than 270 world-class pediatric medical researchers, technical staff, students and support staff are involved in over \$10 million of research and clinical trial activity each year.

- 30 -

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