

## **Breastfeeding, human milk composition and the developmental origins of asthma in the CHILD cohort**

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Asthma is the most common chronic disease affecting children in developed countries. Pediatric asthma is a major cause of hospitalisation, and is the most common reason for children to miss school. While treatments are available, there is no cure for asthma. Some research shows that breastfeeding may reduce the risk of developing asthma, but not all studies have confirmed this association.

In collaboration with the Canadian Healthy Infant Longitudinal Development (CHILD) study ([www.childstudy.ca](http://www.childstudy.ca)), my team is studying how breastfeeding influences respiratory health during infancy and childhood. In this cohort of 3500 children, we have observed an inverse association between breastfeeding and wheezing in the first year of life <sup>1</sup>. The association is dose-dependent (stronger with longer or more exclusive breastfeeding) and is especially evident among infants born to mothers with asthma (i.e. those at highest risk for developing asthma themselves). We observe a similar inverse and dose-dependent association for possible or probable asthma diagnosis by 3 years of age.

To understand the mechanisms underlying these associations, we are analyzing breast milk samples collected in the CHILD Study to measure multiple bioactive components and determine their role in asthma development and prevention. Components of interest include fatty acids <sup>2</sup>, cytokines, hormones, prebiotic oligosaccharides <sup>3</sup> and probiotic bacteria.

Finally, we are evaluating additional health outcomes (e.g. allergies, growth, and early childhood obesity) and investigating the fixed and modifiable maternal and environmental factors that influence milk composition and feeding practices. Ultimately, this research aims to inform nutrition-based strategies for optimizing infant health and development.

### **References**

- 1 Azad MB et al. Breastfeeding, maternal asthma and wheezing in the first year of life: a prospective longitudinal birth cohort study. *European Respiratory Journal*. 2017;49(5).
- 2 Sinnock H et al. Determinants and Variability of Docosahexaenoic Acid (DHA) Content in Human Milk in the CHILD Study: Implications for Allergic Disease. *Allergy, Asthma & Clinical Immunology*. 2016;12(Suppl 2):A27.
- 3 Robertson B et al. Maternal Factors and Human Milk Oligosaccharide Composition in the CHILD Cohort. *The FASEB Journal*. 31;650.36.