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**Human milk hormones and infant body composition to 3 years: findings from the Canadian Healthy Infant Longitudinal Development Study**

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**Background:**

Breastfeeding may confer a 10-22% reduction in obesity risk but the underlying mechanism is unclear. Varying levels of hormones that influence weight gain are found in breastmilk.

**Objective:**

Previously, we found that human milk leptin and insulin concentrations (but not adiponectin) were associated with infant body mass index (BMI) at 3 months and 1 year of age in the CHILD cohort. We hypothesize that this association persists to 3 years.

**Methods:**

We studied a representative subset of 430 breastfed infants from the CHILD birth cohort. Milk was collected at 3-4 months postpartum. Milk leptin, insulin and adiponectin were measured using the MesoScale Discovery System and classified into quintiles. Child anthropometrics were measured at 3 years. BMI z-scores were calculated according to the WHO reference and those >85<sup>th</sup> percentile were considered at risk for overweight. Subscapular skinfolds were measured using calipers and z-scores generated from the WHO reference. Analyses controlled for maternal pre-pregnancy BMI, diabetes, ethnicity, smoking, lactation stage, and child diet and inactivity at 3 years.

**Results:**

The mean (SD) BMI z-score at 3 years was 0.54 (0.93), and 28.1% were at risk of overweight. Milk hormone concentrations were not consistently associated with BMI z-scores or subscapular skin folds. However, high milk leptin concentrations were associated with a lower risk of overweight (adjusted OR 0.29; 95%CI 0.08-0.95 for top vs. bottom quintile). There was no strong evidence of association for high milk adiponectin (0.62; 0.27-1.42) or insulin (1.45; 0.58-3.72). Associations did not differ by infant sex, maternal overweight status, or breastfeeding duration.

**Conclusion:**

Associations between human milk hormones and infant body composition appear to diminish after infancy, although high leptin concentrations may have a persistent protective effect against early childhood overweight.

