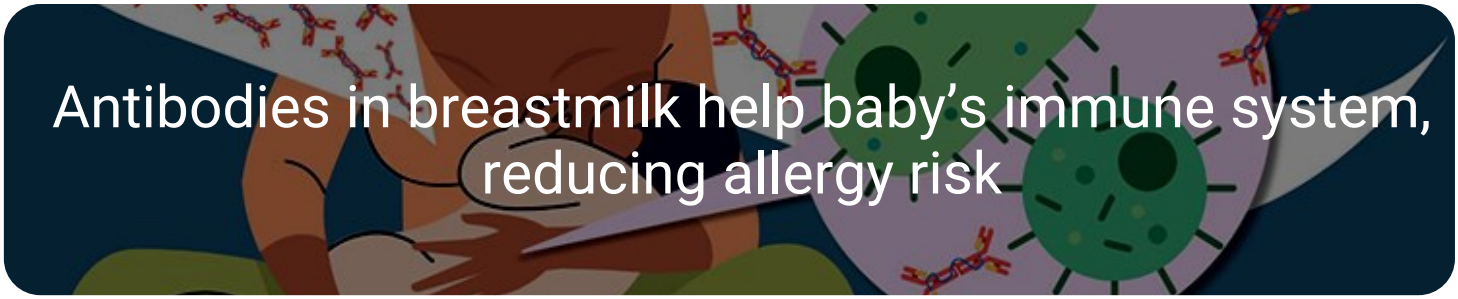


Antibodies in breastmilk help baby's immune system, reducing allergy risk

CHILD researchers found that a common breastmilk antibody effectively targets an allergy-related bacterium in the infant gut, preventing its colonization and associated negative immunological effects.

MORE ANTIBODY, LESS BACTERIA

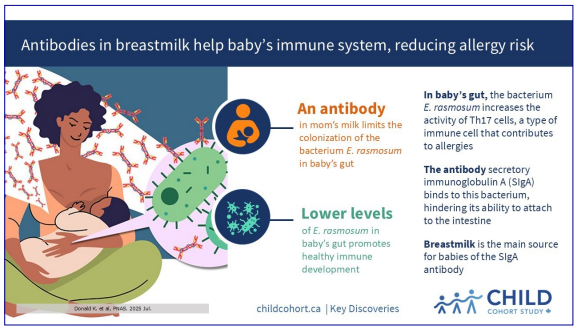
The study, published in *PNAS*, looked at 300 mother-child pairs participating in CHILD. Researchers analyzed the mothers' milk, and compared this to the bacterial composition of the infants' stool.

These analyses revealed that when mom's milk had more secretory immunoglobulin A (SIgA), a common antibody in human milk, the infants had less of the bacterium *Erysipelatoclostridium ramosum* (*E. ramosum*) in their gut.

Experiments in the lab shed light on this relationship by showing that when SIgA binds to *E. rasmosum*, it reduces the ability of the bacterium to attach to the intestine—effectively taking the bacterium out of action in baby's gut.

MICE AND MEN

The researchers also showed that when *E. ramosum* does attach to the intestinal wall, it triggers a response in specific immune cells known as T helper 17 (Th17) cells.



"These cells are known to be implicated in asthma, allergies, and other inflammatory diseases," says senior author Dr. Brett Finlay.

"Our team has shown this before in mouse studies, where SIgA from maternal milk was found to bind to another bacterium, preventing it from triggering a Th17 response in baby mice and making those mice less susceptible in a mouse model of asthma."

By limiting the intestinal colonization of E. ramosum, this breastmilk antibody may reduce the risk of a baby's developing an unwanted immune response. In other words, the SIgA in moms' milk helps ensure the healthy development of a baby's immune system—in both mice and humans.

NATURALLY OCCURING TOOL

"Now that we have identified SIgA as a naturally occurring tool that modulates the infant gut microbiome, we could potentially use that in the development of allergy-preventative clinical measures," adds Dr. Finlay.

Lead author Dr. **Katherine Donald** agrees: "This finding suggests potential new strategies for preventing allergies—by boosting the antibody content of mothers' milk through oral vaccines when needed, for example, or by producing synthetic antibodies for adding to baby formula in cases where breastfeeding is not an option."

CHILD COHORT STUDY

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