

Yeast in babies' gut increases asthma risk

An overgrowth of yeast in a baby's gut may contribute to asthma later in life, according to findings from CHILD published in *eLife*. The new research furthers our understanding of the role the gut microbiome plays in overall health.

The research team from The University of British Columbia (UBC) studied 123 Canadian infants and found that overgrowth of a type of gut yeast called *Pichia kudriavzevii* was associated with a higher risk of asthma at five years of age.

"Our previous work studying newborns in rural Ecuador found that children with this type of yeast had a higher risk of asthma," says senior author Dr. **B. Brett Finlay**, Peter Wall Distinguished Professor in the Michael Smith Laboratories and professor in the departments of biochemistry and molecular biology, and microbiology and immunology at UBC.

"While gut bacteria play a role in preventing asthma, it was the presence of this microscopic fungus or yeast known as *Pichia* that actually put the children at risk."

FROM ECUADOR TO CANADA

In this study, the researchers replicated the Ecuador findings in children from an industrialised setting. They measured the amount of *Pichia* found in stool samples from CHILD participants at three-to-four months of

age and assessed the children for symptoms of asthma at age five years.

"Among Canadian children, we also found that an imbalance of *Pichia* in the stools of newborns during the first three months of life was associated with a higher risk of asthma later on," comments first author **Rozlyn Boutin**, an MD/PhD student in the Department of Microbiology and Immunology at UBC.

"This led us to wonder how this fungus was affecting the immune system."

To investigate, the team applied *Pichia kudriavzevii* to newborn mice and found that newborns exposed to the yeast experienced more lung inflammation than those who were unexposed.

They also showed that short-chain fatty acids produced by beneficial gut bacteria in the newborn mice had anti-inflammatory properties and inhibited the growth of *Pichia kudriavzevii*.

THE ROLE OF GUT FUNGI IN HEALTH

"Most research on the microbiota – the microbes that live in the gut – has focused on bacteria rather than fungi, like yeast. It's important for us to better understand how fungi are involved in asthma development; it's possible that inhibiting yeast overgrowth with short-chain fatty acids could be helpful to prevent the condition in early life," adds Boutin.

Yeast in babies' gut increases asthma risk

Higher risk of childhood asthma when a particular type of gut yeast is overly plentiful

Inflammation of the lung increased among newborn mice exposed to the yeast

The presence in the gut of a microscopic fungus or yeast known as *Pichia* puts children at risk of asthma.

Inhibiting yeast overgrowth with short-chain fatty acids may help prevent asthma.

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