

Summary for families and stakeholders

“Women with type 1 diabetes exhibit a progressive increase in gut *Saccharomyces cerevisiae* in pregnancy associated with evidence of gut inflammation”

Why did we look at this in ENDIA?

Studies of the human microbiome have focused almost entirely on bacteria. Fungi, the “mycobiome”, has not been well studied. This limits our ability to understand the role of fungi, and their potential interactions with bacteria, in health and disease.

When compared to people who do not have the condition, studies of people with type 1 diabetes (T1D) have shown that there are fewer different types of gut bacteria and a decrease in potentially beneficial bacteria. Evidence has shown that fungal infections are more prevalent in people with T1D.

What did ENDIA find?

We examined the gut mycobiome of 70 pregnant women (45 with and 25 without T1D) across all trimesters of pregnancy. We used a technique called “amplicon-based sequencing” to identify the fungal communities from participant stool samples. We found that pregnant women with T1D exhibited an increase of the Ascomycota phyla and an increase abundance of the genus *Saccharomyces*. We also found that a higher abundance of *Saccharomyces cerevisiae* was associated with a lower abundance of potentially beneficial bacterium called *Faecalibacterium prausnitzii*. Women with T1D had higher concentrations of inflammation markers, and higher levels of antibodies to *Saccharomyces cerevisiae*.

When compared to pregnant women that do not have the condition, we conclude that pregnant women with T1D have an altered gut mycobiome. This is associated with low-grade intestinal inflammation.

What does this mean for ENDIA families and the wider type 1 diabetes community?

Our results demonstrate that the gut mycobiome changes across pregnancy in both women with and without T1D. There is an association between the bacterial and fungal parts of the microbiome. These findings could help explain the higher rate of pregnancy complications in pregnant women with T1D. This suggests the potential to minimize or prevent pregnancy complications through anti-fungal or pro-biotic interventions, which would require further research.

The paper is available here: <https://doi.org/10.1016/j.diabres.2022.109189>.