

# Comparing gut biome diversity in preemies fed human versus bovine-derived milk fortifiers

August 23 2022, by Bob Yirka



Human milk-fed infants born <1250g

**Blinded, randomized clinical trial:**  
Nutrient enrichment of human milk with human versus bovine milk-based fortifiers

## Human milk-based fortifiers

63 infants  
269 stools

↓ Microbial diversity  
Uniform microbiota  
↑ Enterobacteriaceae



## Bovine milk-based fortifiers

56 infants  
239 stools

↑ Microbial diversity  
↑ Bacterial density  
↑ *Clostridium*

## ***Post hoc analysis***

Dose-response microbial changes with mother's milk, donor milk, and fortifier feeding volumes

Graphical abstract. Credit: *Cell Host & Microbe* (2022). DOI: 10.1016/j.chom.2022.07.011

A team of researchers affiliated with a host of institutions in Canada has found differences in gut microbiota in prematurely delivered babies given human-derived milk fortifiers versus cow-derived milk fortifiers. In their paper published online in *Cell Host & Microbe*, the group describes the triple-blind randomized clinical trial they ran to learn more about the benefits of giving preemies milk fortifiers.

Over the past several decades, medical scientists and doctors have found that giving prematurely delivered babies [milk](#) fortifiers helps them [gain weight](#) and become healthier than when given milk alone. More recently, a debate has arisen regarding whether using milk fortifiers made using bovine-milk-based fortifiers (BMBFs) is better for preemies than human-milk-based fortifiers (HMBFs). In this new effort, the researchers conducted a clinical trial for the purpose of learning more about the impact on the gut biome of preemies fed one or the other milk fortifier.

The trial involved feeding some of the preemies in a hospital setting BMBFs and others HMBFs and then testing stool samples from the preemies to learn more about the impact of the two kinds of fortifiers on biome diversity. The researchers found that the babies receiving the HMBFs had on average a lower amount of microbial diversity. They also found differences in the structure of the microbial community and microbial function. They note that because the BMBFs were procured in powder form while the HMBFs were procured in [liquid form](#) there could have been some differences in microbial changes due to dose differences. They note also that it is still not known if differences in

microbiome communities in preemies is related to their overall health.

The findings by the researchers in this effort might not be the last word on the subject, however, as another team is about to publish the results of similar testing in *Cell Reports Medicine*. And their results showed very little to no differences in gut biome between preemies fed HMBFs versus BMBFs. They also found that [babies](#) fed HMBFs derived from their own mother's milk had higher levels of *Veillonella* in their stools, which has been shown to help protect infants from developing asthma.

**More information:** Michelle R. Asbury et al, Human milk nutrient fortifiers alter the developing gastrointestinal microbiota of very-low-birth-weight infants, *Cell Host & Microbe* (2022). [DOI: 10.1016/j.chom.2022.07.011](#)

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