

Protein in breast milk reduces infection risk in premature infants

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Credit: University of Missouri-Columbia

Full-term babies receive natural protection from their mothers that helps them fight off dangerous infections. However, babies born prematurely lack protective intestinal bacteria and often are unable to be nursed,

causing their infection-fighting capabilities to be underdeveloped. Now, researchers at the University of Missouri School of Medicine have found that a manufactured form of lactoferrin, a naturally occurring protein in breast milk, can help protect premature infants from a type of staph infection.

"Babies born with low levels of protective intestinal bacteria are at an increased risk of devastating and sometimes deadly infections," said Michael Sherman, M.D., professor emeritus in the Department of Child Health at the MU School of Medicine and lead author of the study. "Our study found that giving very-low-birth-weight [premature infants](#) a manufactured form of lactoferrin can virtually eliminate the germ that causes a staph infection known as staphylococcus epidermidis."

The researchers studied the immune systems of 120 premature infants in the [neonatal intensive care](#) units at MU Women's and Children's Hospital and the University of Southern California Children's Hospital Los Angeles between July 2009 and January 2012. Infants in the trial weighed between 1 pound, 10 ounces, and 3 pounds, 4 ounces, at birth. Sixty of the infants received lactoferrin via a feeding tube twice a day for 28 days to simulate receiving mother's milk while nursing.

To understand the protein's role in the development of protective intestinal bacteria, the researchers examined fecal matter of the infants. The researchers found that germs responsible for the colonization of staph infection were virtually eliminated in the newborns who received lactoferrin.

"These germs are the most common cause of in-hospital bloodstream infections in premature babies, causing up to 50 percent of infections," Sherman said. "As physicians, we've had limited knowledge of how lactoferrin affects the development of protective [intestinal bacteria](#). Our study shows that it can modify germs in the bowel of [infants](#), and those

germs can protect [premature babies](#) from [staph infections](#)."

As part of the study, lactoferrin was provided to the patients at no cost. According to Sherman, lactoferrin can cost an estimated \$25 to \$500 per dose, though an infection can extend an infant's hospital stay by 10 to 14 days at a cost of \$40,000 to \$56,000.

Though it is too early to recommend lactoferrin as a standard treatment protocol in NICUs across the country, the researchers say more research could shed light on its role in preventing infections.

"These vulnerable [babies](#) need all the support they can get to fight off infections," Sherman said. "Our results justify the need for a large-scale trial of lactoferrin, as well as its counterpart derived from cow milk, bovine lactoferrin."

Provided by University of Missouri-Columbia

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