

BIOMEDICINE

Breast milk component assails rotavirus

Breast milk comes equipped with antibodies that a woman generates and passes on to her infant. Babies have immature immune systems, less stomach acid to destroy foreign substances, and unsanitary eating habits, so these antibodies improve their chances of survival. One such antibody works against rotavirus, the most common cause of diarrhea in infants.

Now, researchers in the United States and Mexico have discovered that a complex carbohydrate in breast milk affords babies even more protection than the antibody specifically made to fight the disease.

The compound, called lactadherin, is manufactured in the breast and doesn't break down in the baby's stomach. Instead, it mimics natural carbohydrates found along the child's intestinal walls. The rotavirus mistakenly identifies lactadherin as this home-grown carbohydrate and latches onto it in order to anchor itself in the gut. Both lactadherin and the bound virus are then flushed out of the child's system, says David S. Newburg, a biochemist at Harvard Medical School in Boston and coauthor of the study, which appeared in the April 18 *LANCET*.

Researchers tracked 200 breast-fed infants in Mexico City, documenting any cases of diarrhea and taking regular blood and stool samples to check for rotavirus infections. Of 31 babies with the infections, 15 had diarrhea and 16 had no symptoms. Breast milk consumed by the asymptomatic infants had higher quantities of lactadherin, indicating that the carbohydrate effectively suppresses the symptoms of viral infection and that some women make more of it than others.

Breast milk contains other complex carbohydrates that may protect against disease-causing organisms, says study coauthor Ardythe L. Morrow, an epidemiologist at Eastern Virginia Medical School in Norfolk. "A lot of work is going into that area," she adds.

If further tests prove lactadherin can prevent diarrhea effectively on its own, researchers may be able to develop a synthetic version for treating the disease, Newburg said.

—N.S.