



TEN STEP TUESDAY

Human Milk & the Gut Microbiome

Week 2 of 3

It's Ten Step Tuesday!

This week is the second in a series on human milk and the gut microbiome. We learned last week about some of the ways we are gaining a new understanding of how human milk affects the gut microbiome. Our series continues with some more fun facts from a webinar by Jarold “Tom” Johnston, DNP, CNM, IBCLC.

- There are “bonus” calories in breastmilk. Epithelial cells in human milk (formerly thought to be dead) are actually alive, active, and functional. They form clusters (called mammospheres) in the baby’s gut and continue to make more milk! This means that for every calorie of breastmilk a baby takes in, he gets bonus calories as the epithelial cells continue to generate milk inside his gut. (anyone else’s minds blown yet?)
- Breastmilk sugars are more than food. Human Milk Oligosaccharides (HMOs) play a key role in developing the infant’s gut microbiome. Human milk contains more than 100 unique types of HMOs. Each HMO has a specific benefit for the infant’s gut microbiome. Some are prebiotics, acting to increase good bacteria in the gut. Others block the attachment of invading viruses and bacteria like RSV and E.coli by providing harmless “decoy” attachment sites. Another type coats the baby’s gastrointestinal tract, preventing pathogens from sticking. But none of them are digested by baby as carbohydrates until the baby is more than four months old.
- A breastfed baby’s gut microbiome is optimized for nutrition delivery. The breastfed infant’s gut contains a specialized group of bacteria known as the phosphotransferase system. This system transports lactose and makes it available for use. Breastfed babies have higher levels of phosphotransferase than formula-fed babies. This means breastfed babies can access the maximum amount of energy available in their breast milk. This ensures a constant source of carbohydrate for the developing, glucose-dependent brain. Breastfed babies have higher numbers of gut bacteria that produce Vitamin A, B Vitamins, Vitamin K-2, and more. When they drink breast milk, it feeds the bacteria colonies in their gut that make these micronutrients.

So if you are ever asked does breast milk contain enough Vitamin A, Vitamin K, or other nutrients? Know that question is a bit misleading! Babies actually do not always “get” important micronutrients from the milk they drink – what they get from breast milk are either the vitamins/nutrients themselves or the ingredients to feed a microbiome that can synthesize these micronutrients. (whoa.)

Stay tuned next Tuesday for the final week in our series for more mind-blowing facts about the maternal-infant gut microbiome.

References: https://learning.ilca.org/products/webinar-the-maternal-child-microbiome-an-overview-of-evidence-and-implications#tab-product_tab_overview

For more information contact

Cara Gerhardt, BSN RN IBCLC, coordinator@high5kansas.org