Identification of the Mechanism Responsible for Maternal IgA Secretion That Depends on the Gut Microbial Stimulation in Peyer's Patches

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Improving breastfeeding quality increases mammalian health across generations. Although the interorgan network among distinct tissues has been implicated in maintaining essential behaviors, including breastfeeding, most details remain unknown. We discuss the essential role of Peyer's patches (PPs), a secondary lymphoid tissue in the small intestine, in breastfeeding. Specifically, PPs constitute an important source of plasma cells, recruited from the mammary glands, to produce maternal IgA, which is transferred from the mother to the offspring through breastfeeding. A more significant advance in this study was that limited intestinal microorganisms belonging to Bacteroidales were identified as essential bacteria in the gastrointestinal tract for stimulating the immune functions in PPs to produce maternal IgA in milk. Our results provide significant insights into the development of novel strategies for transferring sufficient amounts of maternal IgA to the next generation via breastfeeding.