



Prototypic Long Pentraxin PTX3 Is Present in Breast Milk, Spreads in Tissues, and Protects Neonate Mice from *Pseudomonas aeruginosa* Lung Infection

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Titre Prototypic Long Pentraxin PTX3 Is Present in Breast Milk, Spreads in Tissues, and Protects Neonate Mice from *Pseudomonas aeruginosa* Lung Infection

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Newborns and infants present a higher susceptibility to infection than adults, a vulnerability associated with deficiencies in both the innate and adaptive immune systems. Innate immune receptors are sensors involved in the recognition and elimination of microbes that play a pivotal role at the interface between innate and adaptive immunity. Pentraxin 3 (PTX3), the prototypic long pentraxin, is a soluble pattern recognition receptor involved in the initiation of protective responses against selected pathogens. Because neonates are generally resistant to these pathogens, we suspected that PTX3 may be provided by a maternal source during the early life times. We observed that human colostrum contains high levels of PTX3, and that mammary epithelial cell and CD11b+ milk cells constitutively produce PTX3. Interestingly, PTX3 given orally to neonate mice was rapidly distributed in different organs, and PTX3 ingested during lactation was detected in neonates. Finally, we observed that orally administered PTX3 provided protection against *Pseudomonas aeruginosa* lung infection in neonate mice. Therefore, breastfeeding constitutes, during the early life times, an important source of PTX3, which actively participates in the protection of neonates against infections. In addition, these results suggest that PTX3 might represent a therapeutic tool for treating neonatal infections and support the view that breastfeeding has beneficial effects on the neonates' health.

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