



Institut National de la Recherche Agronomique



Good Food, Good Life

PRESS RELEASE

Paris, March 5, 2007

Breast-feeding plays a crucial role in programming the neonatal immune system

Research teams from INRA at Jouy-en-Josas and from the Nestlé Research Centre in Lausanne, Switzerland, have been studying the effect of breast-feeding on the establishment of the intestinal microbial flora in newborns. Their studies show that bacteria from the mother's intestine transit, via her milk, to the infant's intestine. Thereby, the mother transfers components that influence bacterial colonisation of her infant's intestine and subsequent development of the neonatal immune system.

At birth, the neonatal digestive tract is sterile but is very quickly colonised by micro-organisms coming predominantly from the mother and the environment. The intestinal microbiota establishes itself gradually and plays a major role in educating the immune system to recognise and respond to harmful bacteria while remaining tolerant to the intestinal flora.

It has already been shown that bacterial colonisation and susceptibility to illnesses differ between breast-fed and bottle-fed infants. To gain a better understanding of how breast-feeding may influence the assembly of the intestinal flora in infants, the researchers examined the microbiota in various biological compartments of mother-infant pairs from birth to 4 weeks post-partum. A link between the intestinal microbiota of breast-fed babies and that of their mothers was observed. Furthermore, the same bacterial species belonging to the genera *Bifidobacterium*, *Streptococcus* and *Staphylococcus* were present in the breast milk of nursing mothers and in their babies' intestinal microbiota. Bacterial components of these species were also found in maternal blood cells.

Taken together, the results suggest that bacterial components traffic from the mother's intestine to the mammary glands via the blood and are subsequently transferred in breast-milk to the infant's intestine whereupon they may programme the neonatal immune system.

A parallel study in pregnant and lactating mice revealed that trafficking of bacteria from the intestine to the mesenteric lymph nodes and thereafter to the mammary gland already occurs in late pregnancy.

The researchers are currently carrying out more in-depth studies on a larger group of mother-infant pairs to examine the extent of this new form of mother-infant communication and its underlying control mechanism

These new findings will be useful for formulating nutritional recommendations for pregnant and nursing mothers, as well as for infants.

Source :

Bacterial imprinting of the neonatal immune system: lessons from maternal cells?

Pediatrics, vol XXX Mars 2007

Pablo F. Perez^a, Joël Doré^b, Marion Leclerc^b, Florence Levenez^b, Jalil Benyacoub^a, Patrick Serrant^a, Iris Segura-Roggero^a, Eduardo J. Schiffrin^a, Anne Donnet-Hughes^a

^aNestec, Nestlé Research Centre, Lausanne, Switzerland;

^bUnit for Ecology and Physiology of the Digestive Tract, National Institute for Agronomic Research, Jouy-en-Josas Cedex, France

Internet site: <http://pediatrics.aappublications.org/cgi/content/abstract/119/3/E724>

Contacts :

Scientific Contact

Marion Leclerc,

Tél : +33 1 34 65 23 06

marion.leclerc@jouy.inra.fr

Ecology Physiology Digestive System Unit

INRA Centre at Jouy-en-Josas

France

Joël Doré

Tél. :+33 1 34 65 27 09

joel.dore@jouy.inra.fr

Press Contact

INRA Press Service

Céline Goupil

Tél : +33 1 42 75 91 69

presse@inra.fr

Anne Donnet,

Tél : +41 21 785 88 99

Anne.donnet@rdls.nestle.com

Nestlé Research Centre,

Switzerland

Press Contact

Communications Group

Nestlé Research Centre,

Tél : +41 21 785 95 57

lsn.communicationsgroup@rdls.nestle.com