



HAL
open science

Peri-partum scFOS supplementation modifies colostrum immune quality and intestinal immune system development of the offspring

Stéphanie Ferret-Bernard, Cindy Le Bourgot, Sophie Blat, Enrique Menendez Aparicio, Gérard Savary, Laurence Le Normand, Emeline Grand, Frederique Respondek, Isabelle Luron Le Huërou-Luron

► To cite this version:

Stéphanie Ferret-Bernard, Cindy Le Bourgot, Sophie Blat, Enrique Menendez Aparicio, Gérard Savary, et al.. Peri-partum scFOS supplementation modifies colostrum immune quality and intestinal immune system development of the offspring. 2nd International Symposium Microbes for Health, Dec 2011, Paris, France. 2011. hal-02806561

HAL Id: hal-02806561

<https://hal.inrae.fr/hal-02806561>

Submitted on 6 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

TITLE: PERI-PARTUM scFOS SUPPLEMENTATION MODIFIES COLOSTRUM IMMUNE QUALITY AND INTESTINAL IMMUNE SYSTEM DEVELOPMENT OF THE OFFSPRING.

AUTHORS: S. Ferret-Bernard^{1,2}, C. Le Bourgot^{1,2}, S. Blat^{1,2}, E. Menendez-Aparicio^{1,2}, G. Savary^{1,2}, L. Le Normand^{1,2}, E. Grand³, F. Respondek³, I. Le Huërou-Luron^{1,2}

¹INRA UMR1079 SENAH, F-35590 Saint-Gilles, France.

²Agrocampus Ouest, UMR1079 SENAH, F-35000 Rennes, France.

³TEREOS-SYRAL, F-67390 Marckolsheim, France.

KEYWORDS: prebiotic, mother supplementation, colostrum quality, offspring, intestinal immune system.

Introduction: Diet supplementation with short-chain fructo-oligosaccharides (scFOS) is known to improve intestinal defence mechanisms and to modify local immune system development, notably by improving beneficial bacteria growth. Objectives of our study were to determine impact of scFOS mother supplementation on immunity transfer to their offspring and consequences on development of neonatal intestinal immunity, which is still poorly considered.

Material & Methods: 24 [Large White x Landrace] pregnant sows received during the last month of their pregnancy and lactation a standard diet (CTRL group) or a diet supplemented with scFOS (SUPP group). Systemic immunity has been evaluated by serum immunoglobulin dosage (IgG and IgA) from pregnant sows (4 and 1 weeks before parturition) and suckling piglets (1 and 3 week old). IgG, IgA as well as TGFβ1 have been analysed on colostrum collected between parturition and 15h later.

Secretory activity (sIgA) and cytokine pattern (IFNγ and IL-10) of ileal Peyer's patches have been studied following culture of mononuclear cells isolated from 3 week old suckling piglets (6/group).

Results: scFOS supplementation did not affect IgG and IgA serum levels of the sows before parturition. IgA concentration similarly increased ($p < 0.001$) between serum collected at 28 and 7 days before parturition in both groups. Contrarily, colostral IgA concentration ($p < 0.04$) as well as TGFβ1 one ($p = 0.1$) were superior in SUPP sows, signs of cellular recruitment and/or higher production in mammary glands of SUPP sows at the end of gestation. Colostral IgG level was not affected by scFOS supplementation. The decrease of serum IgG and IgA observed between 1 and 3 week old piglets was not modified by mother supplementation. At the mucosal level, IFNγ secretion by ileal Peyer's patch cells was higher ($p < 0.02$) in piglets whose mothers received the supplemented diet. However, sIgA and IL-10 secretion were not modified.

Conclusion: Diet supplementation of sows with scFOS during the last month of pregnancy and lactation reinforces colostrum immune quality and modifies intestinal immune system development of the offspring. Microbiota role in these modifications worth to be evaluated.

Titre : 15 mots

Abstract : 300 mots (ici 334!!!)