



September 9-12, 2013 • Portland, Maine USA

**SAFEPORK 2013**



Topics :

Foodborne pathogen epidemiology and control strategies

Pathogenesis of infection

### **Evaluation of the impact of functional food on the course of *Salmonella* infection in piglets**

Nadia Bergeron<sup>1,2\*</sup>, Martin Lessard<sup>2,3</sup>, Sylvain Quessy<sup>1,2</sup>, Ann Letellier<sup>1,2</sup>

1 Chaire de recherche en salubrité des viandes (CRSV), Groupe de recherche et d'enseignement en sécurité alimentaire (GRESA), Groupe de recherche sur les maladies infectieuses du porc (GREMIP), Faculté de médecine vétérinaire, Université de Montréal, St-Hyacinthe, Québec, Canada;

2 Centre de recherche en infectiologie porcine et avicole (CRIPA), Faculté de Médecine Vétérinaire, Université de Montréal, St-Hyacinthe, Québec, Canada;

3 Dairy and Swine R&D Centre, Agriculture and Agri-Food Canada, Lennoxville, Québec, Canada.

With the aim to improve growth of weaning piglets and to minimize incidence of intestinal diseases, the effect of a combination of functional foods able to stimulate the development of systemic and mucosal immune system and to modulate bacterial populations in the gut is being evaluated. In this study, we assessed the impact of functional food on the course of *Salmonella* infection in piglets. Piglets were assigned to 1 of the 4 feed additives as follow: 1-control (CTRL), 2-antibiotic (ATB), 3-cocktail of functional food (CFF), 4-bovine colostrum + cocktail of functional food (COL-CFF). At 49 days of age (day 0), piglets were orally inoculated with 10X8 CFU of *Salmonella Typhimurium*. A clinical exam was done for each piglet twice a day. Fecal samples were taken to evaluate the *Salmonella* shedding before and post-infection (days 1, 3, and 7 post-infection). Before challenge and on days 2 and 6 post-infection, blood samples have been taken from all piglets to evaluate serum level of prostaglandins and TNF-alpha. Three and 7 days post-infection, two piglets per litter have been euthanatized. Regarding fecal excretion at day 1 post-infection, the ATB group, pigs showed lower *Salmonella* fecal excretion than CFF group and the lower weight piglets showed a higher fecal excretion than the higher weight piglets. The ATB group pigs showed a lower *Salmonella* fecal excretion level than CTRL group at 3 days post-infection. At days 3 and 4 post-infection, ATB group pigs showed lower diarrhea severity score than ones in CTRL and CFF groups. At days 4 post-infection, COL-CFF group pigs showed lower

diarrhea severity score than ones in CTRL and CFF groups. A significant time effect indicated that prostaglandin level was significantly reduced 3 and 7 days post-infection compared to before challenge and blood TNF-alpha level significantly increased after *Salmonella* challenge compared to before challenge.

\* 3200 rue Sicotte, C.P. 5000, St-Hyacinthe, Québec, Canada, J2S 7C6  
e-mail: [nadia.bergeron@umontreal.ca](mailto:nadia.bergeron@umontreal.ca) Fax: 450-778-8128