among the herds using organic acids for the weaners. As expected there was a positive correlation between microbiology and serology. Thus, the chance of finding Salmonella in pen faecal samples was higher with increasing serology.

**Discussion:** The criteria for the query were based on research in the Danish swine production, primarily the Salmonella reducing effect of meal feed in finishers, and use of acids in water and feed for weaners, finishers and sows (J. Røgensen et al., 2001, Kjørgaard et al., 2001). There are two important biases in this investigation that make it difficult to show a clear effect. Firstly, only herds that have delivered pigs to finisher herds in level 2 or 3 are included. Kranker et al. (2001) demonstrated that buying pigs from infected sow herds is a main risk factor. This means that Salmonella-negative herds have less risk of being tested. The other important bias is that sow herds with a production of finishing pigs can have the request cancelled, if they can demonstrate, that their finishers are serologically negative. These herds are more likely to use protective management and feed factors, but are not included in this study.

Despite these results, we were able to demonstrate a tendency towards a protective effect of home-mixed meal. Among herds using organic acids in feed or drinking water for the weaners a higher, not significant Salmonella prevalence was found. This tendency might reflect the veterinarian’s recommendation to start using acid in Salmonella-positive herds. The relatively low acid content in the feed and drinking water is another possible explanation. Factors like live-pig trading habits, continuing housing/all-in all-out, general management; cleaning and disinfection were not included in the query. These factors are known to play important roles concerning Salmonella reduction.

**Conclusions:** The results of this study confirm previous results that describe a larger complexity regarding Salmonella in sow herds compared to finisher herds. Use of the general recommendations for feed intervention against Salmonella in pigs did not result in clear-cut, reducing effects on Salmonella in sows and weaners. Other measures such as cleaning, disinfection and management may be more important.

**References:**


**O 47 Feeding fermented liquid feed to the gestating sow can reduce pathogen challenge of the neonatal environment**

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**Summary:** This study demonstrated that the coliform and *E. coli* challenge to the newborn piglet can be reduced by feeding sows fermented liquid feed (FLF). The faeces excreted by sows fed FLF...
had significantly lower numbers of E. coli at parturition compared with sows fed non-fermented liquid feed (NFLF) and dry feed (DF). More importantly, significantly lower numbers of both coliforms and E. coli were found in the faeces of FLF-fed sows throughout the whole lactation period. The faecal Lactobacillus:E. coli ratio of piglets from FLF-fed mothers was significantly higher than for piglets born to DF-fed mothers. Higher Lactobacillus:E. coli ratio is usually associated with a bacterial flora that contributes to improved animal growth and performance.

**Keywords:** E. coli, coliforms, Lactobacilli, lactating sow, neonatal piglet

**Introduction:** One of the key environmental factors, which can have a big influence on newborn health and performance, is hygiene of the farrowing house. Gastrointestinal infections associated with E. coli represent a serious problem for neonatal pigs. It is known that the stress occasioned by movement into the farrowing house and parturition may lead to a decreased excretion of Lactobacillus and increased excretion of potential pathogens especially haemolytic Escherichia coli (Maclean & Thomas, 1974). The main aim of this study was to investigate the potential of fermented liquid feed to control the pathogen load within the piglet’s environment by reducing the rapid multiplication of E. coli in sows associated with farrowing.

**Materials and Methods:** A study was conducted according to a randomized block design, with two replicates. Eighteen gilts (Large White x Landrace) were randomly allocated to one of the three dietary treatments namely: fermented liquid feed (FLF), non-fermented liquid feed (NFLF) and dry feed (DF) in pelleted form. Lactobacillus salivarius, of pig origin, was used as a starter culture for FLF. Feeding took place twice a day for a period of 2 weeks before farrowing date, and for 3 weeks after farrowing. The inoculated feed was fermented for 36 hours at 30 °C. Fresh faecal samples were collected from the rectum of each sow each week during the experimental period. Rectal swabs were taken from individual piglets 14 days post farrowing. Lactobacilli, coliforms and E. coli were analysed in each faecal sample by standard methods. A PCR-based identification method was used to monitor the faecal presence of the Lactobacillus salivarius strain used as a starter culture. Statistical analyses were undertaken using GLM-ANOVA.

**Results:** While the Lactobacillus population was not affected by dietary treatment, significant differences in coliform and E. coli populations were observed in the sow faecal samples taken at parturition as well as post farrowing (Table 1). The faeces excreted by sows fed FLF had significantly lower numbers of E. coli at parturition compared with sows fed NFLF (P<0.05) and DF (P<0.0001). These significantly lower numbers of E. coli, as well as coliforms in the faeces of FLF-fed sows, were maintained throughout the lactation.

**Table 1.** Microbial counts (log10 cfu g⁻¹ (dry weight)) of Coliforms, E. coli and Lactobacilli in the gilt’s faeces 14, 7 days before farrowing (BF), at farrowing (F) and 7, 14 and 21 days post farrowing (PF). FLF-fermented liquid feed; NFLF-nonfermented liquid feed; DF-dry feed. a,b Within columns, means with a common superscript are not statistically different.
The faecal *Lactobacillus: E. coli* / coliform ratio of piglets from liquid-fed mothers was significantly higher (P<0.01) than for piglets born to DF-fed mothers (Table 2). PCR method confirmed that the *L. salivarius* strain, used to ferment the feed, survived passage through the intestinal tract of sows and that it was present also in piglets' faeces on the 14th day of suckling.

**Discussion:** These results demonstrate that the coliform and *E. coli* challenge to the newborn piglet can be reduced by feeding sows fermented liquid feed. A similar beneficial effect of FLF on the microbial ecology of the pig gut was obtained in the study of Moran (2001). Multiple factors may account for this beneficial effect of FLF, which may act independently or synergistically. The low pH of the diet, the high numbers of lactobacilli and high concentration of lactic acid represent the most important characteristics of FLF in terms of its protective effect. The ability of LAB to inhibit the growth of various gram-negative bacteria, especially pathogenic *E. coli*, is well documented both in vitro (Jin et al., 2000) and in vivo (Muralidhara et al., 1977). Higher faecal *Lactobacillus: Coliform / E. coli* ratio is usually associated with bacterial flora that contributes to improved animal growth and performance (Muralidhara et al., 1977).

**Conclusions:** This study demonstrated that by appropriate nutritional regimes there is an opportunity to beneficially influence the sows' bacterial excretion, which could be reflected in more 'friendly' bacterial flora in the neonate GI tract. This approach would represent a very natural way of protecting piglets during this short but critical period after birth.

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**References:**

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**O 48**

**A Randomised Controlled Trial To Reduce Salmonella Infection In Finisher Pigs**

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**Summary:** Twenty-two finisher farms were randomly assigned to an intervention or a comparison group. The intervention group implemented a package of hygiene and biosecurity measures to