

## A FOLLOW UP STUDY TO *SALMONELLA* spp. ANTIBODIES IN A PIG UNIT

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### Introduction

Current levels of occurrence of a number of pathogens, including *Salmonella*, pose potential threats to consumers and, in the longer term, to the viability of the pork processing industry. For example, surveys of retail outlets in Ireland have found pork products to be contaminated with *Salmonella* (9.9%, [1]). This report is generally in line with data from other countries that confirm the significance of pork as an important source of food-borne pathogens. The inadequacies and cost of conventional culture methods and the convenience of modern serologic techniques have spurred the development of serologic testing for *Salmonella* in pigs (3). A fundamental characteristic of serological testing is that serum antibody persists much longer than detectable faecal shedding. In Italy, *Salmonella* spp. infection and correlated diseases are submitted to control measures but a national control program is not present. Due to the relevance of damage related to *Salmonella* infection, voluntary control programs are in progress at herd level. The study of the antibody patterns to *Salmonella* within herd population is a useful tool at detecting critical points. The primary objective of this study was to provide baseline data on *Salmonella* infection involving swine population of an Italian farrow to finish herd.

### Material and Methods

Antibody response to *Salmonella* spp. was detected in 54 pigs by ELISA (IDEXX HerdChek Swine *Salmonella* test kit) belonging to a farrow to finish 550 sow herd in Italy and experiencing a history of *Salmonella choleraesuis* infection. Serum samples were collected at 0, 21, 42, 63, 84, 112, 140 and 180 days after birth. In addition, *Salmonella* antibodies were checked in blood samples of 11 sows at farrowing and in their colostrum.

### Results

The data concerning the antibody response to *Salmonella* spp. detected at different times are shown in Figure 1.

At time 0, after colostrum feeding, antibody response involved 98% of suckling piglets. These data are in accordance with seropositivity of sows (100%) and their colostrum samples (90%).

The trend of the seroprevalence showed a gradual decrease and at time 63 days the figure was 14%. This fact leads to the decline of maternal derived antibody (MDA). From 63 to 140 days we observed an increasing of antibodies from 14% to 95% as a consequence of *Salmonella* infection. Afterwards, the seroprevalence had a slight decrease to 78%. On clinical basis, no signs of disease referable to *Salmonella* spp. infection has been recorded during the observation period. In addition, the onset of respiratory disease was detected between 84 to 112 days of age. Laboratory investigations on lung samples did not allowed *Salmonella* to be isolated. In comparison with the standard productive performances, we have detected a 10% reduction of the average daily weight gain (ADWG).

### Discussion

The study involved a typical Italian pig production unit so that it could be considered as a model. On epidemiological criteria, this was a longitudinal serological survey that, on the contrary of a single cross sectional sampling (2), was reliable estimate to monitor the follow up of *Salmonella* infection in a farrow to finish sow herd. Nevertheless, the lack of *Salmonella* isolation from faecal samples does not allow serological evidences and microbiological findings to be associated. In case of an infected herd, the infection involves 100% of sows as demonstrated by antibody response. So that suckling piglets result seropositive following colostrum feeding. Considering the pathogenesis of *Salmonella* infection has to be hypothesise a certain degree of faecal shedding from infected-healthy sows to piglets without clinical signs. Due to serological pattern, the time at major risk of *Salmonella* spp. infection starts from 63 days of age when MDA disappears and pigs are commingled at the beginning of the fattening period that triggers the shedding of the pathogen. On clinical basis, *Salmonella* infection did not elicit enteric signs but might contribute at the onset of respiratory disease by other pathogens and to cause a reduction of ADWG.

### Conclusion

In the Italian production system the common use of wet whey acidifying liquid feed could control the facets of *Salmonella* infection. However this tool looks not able to control the infection. The use of antibiotic treatment at the beginning of *Salmonella* spread (about 2 months of age) could be suggested at controlling the infection in fatteners.

### References

1. Duffy G. (1999) Food Microbiology 16: 623–631
2. Hurd S. et al. (2003), Epidemiol. Infect, 132: 127-135
3. Nielsen B. et al.. 1995, Vet Microbiol., 47: 205-218

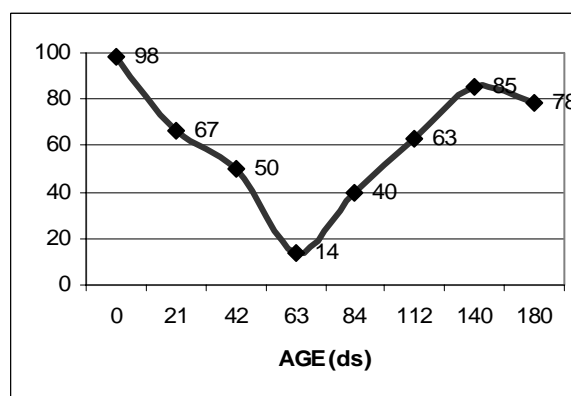


Figure 1 : Pattern of seroprevalence to *Salmonella* spp. detected in pigs at different times of observation.