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Effect of K-diformate in fattening diets on Salmonella carriage in high prevalence pig herdsIsabelle Corrége¹ Anne Hémonic¹ Eric Royer¹ Marc Le Roux²

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Introduction

The control of Salmonella carriage by pigs is one strategy for reducing the contamination of pig carcasses at slaughter. Several risk factors of high prevalence herds, mainly related to biosecurity and management have been identified. The addition of acids or acid salts in water or feed also appears as a protective factor (5). A study was conducted in farms with high prevalence, to assess the influence of the inclusion of an organic acid salt in fattening feeds on the carriage of Salmonella at the slaughterhouses.

Materials and Methods

Five farms with high Salmonella prevalence in fatteners were selected to evaluate the influence of 0.6% K- diformate (Formi[®]) addition in growing-finishing pelleted feeds. The Salmonella antibodies were analyzed with the IDEXX serological test on 50 meat juice samples collected from pigs at slaughterhouse during 9 months. An optical density reading of 40% or above was classified as positive.

Then, the prevalence of three successive batches of pigs fed with the acidified diet during fattening was calculated on 20 samples per batch. After that, the incorporation of K- diformate was stopped and the contamination of 2 new batches was evaluated, respectively 5 and 7 months after stopping. A monitoring was carried out on farms in order to take into account any change of health status, management or housing practices during the treatments.

Results and Discussion

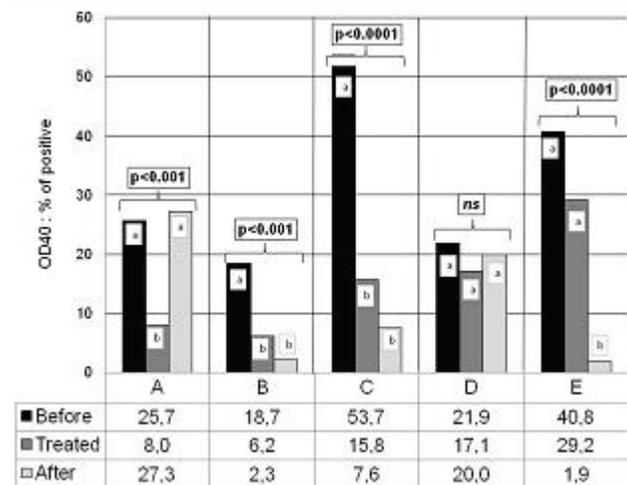
Three patterns of the evolution of the Salmonella prevalence were obtained (Figure 1).

In the 1st pattern (herd A): prevalence significantly decreased during treatment, but increased after cessation and reached a level which was identical to the original one. The survey revealed no change in management that could explain these variations.

In the 2nd profile (herds B and C): prevalence significantly decreased during treatment but did not increase after cessation of treatment. Two assumptions are made:

- 1) The acidification limits the shedding and transmission of salmonellae during treatment but also after stopping the treatment.
- 2) The status improvement may be independent of treatment. Indeed, the Salmonella infection in some farms may vary significantly from one period to another, without any evidence of housing or management changes explaining these variations (1).

In the 3rd pattern (herds D and E), the prevalence was not modified during the treatment. It remained unchanged after the treatment for herd D, whereas it significantly decreased after cessation of the treatment for farm E.

Figure 1: Evolution of Salmonella contamination

The addition of 0.6% K- diformate to the feed during the fattening period results, in some farms, in a reduction in Salmonella carriage during treatment, and sometimes in a reduced infection after the treatment. In other farms, we do not measure any effect on incidence. These facts confirm previous studies: Papenbrok et al. (3) reported that the inclusion of 1.2% K- diformate in feed can reduce the faecal excretion ratio and shedding duration of infected piglets. However, other trials show that acidifying drinking water or feed has inconsistent effects (4) or sometimes no beneficial effect (2). This study nevertheless illustrates the need for an integrated strategy in which acidification should be included.

References

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