Typhimurium lacking the secondary flagella phase. As one isolate of Typhimurium was described in the herd after the waiting and without further discriminating typing, the serotype Typhimurium could not be attributed neither for a herd origine nor for a slaughterhouse one. However Derby was clearly acquired after leaving the herd (potentially during the transport but more presumably during the lairage). Despite the succession of the commonly applied stress on pigs, the quantification of the caecal contents of conventional and neo-contaminated pigs allowed to confirm that the excretion is not massive in the described conditions. In this study we could not compare the obtained percentage of positive carcasses with previously published data as the entire surfaces were swabbed. However, we could observed that the proportion of positive carcasses was not defined by the status of the group before the slaughtering: Conv group, group A and group D could not be differentiated. Moreover the proportion of the different serotypes i.e. the majority of Derby and the absence of SI 4,12:1:-, allowed to associate the carcass contamination to the last steps of the slaughtering process. The contamination of the caecum appeared to be a function of the duration of the contact time with non-SPF conditions. In this study, the 2 hours waiting in contaminated conditions seems to be insufficient to contaminate SPF pigs (see group C pigs). The transport with contaminated pigs allow to obtain contaminated pigs (at least 1/12) but with the herd serotype. Under the studied conditions and at the carcass contamination level, the slaughtering process hid the initial difference of pig status regarding Salmonella contamination.

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References:

Epidemiology of salmonellosis in fattening units of Catalonia (Spain): A bacteriological survey

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Summary: A bacteriological survey was conducted on a representative sample of swine farms of Catalonia. In each farm, fecal samples from finishing pigs were collected and a detailed questionnaire was filled. Results of bacteriological examinations and data gathered in the questionnaires were analysed by using Epi-Info 2002. Variables with p-values <0.20 were included in a logistic regression analysis. A total of 113 fattening units were examined, corresponding to 2187 samples of which 46 were positive (2.10 %), accounting for 14 different serotypes. The percentage of farms in which Salmonella carriers were detected corresponded to 20.35 %. Within positive farms, 10.0 % of samples were positive. Logistic analysis showed that the presence of other species of livestock and the number
of pigs in the farm were significant factors of risk. Poultry represented the species that most likely introduce salmonellosis in pig farms (Odds ratio = 3.71). Also, a past history of clinical salmonellosis was significant (p<0.05). Our results showed that about 2 % of the pigs and between a fifth and a quarter of farms have active *Salmonella* excretors. This high value should be taken into account when implementing future plans for *Salmonella* control in swine.

**Keywords**: *Salmonella*, *Swine*, *Excretors*, *Farms*, *Livestock*.

**Introduction**: In the last years, food safety has become one of the top priorities for most governments in Western countries. Classically, it has been considered that pig played a secondary role in the transmission of this infection for humans. However, some serious outbreaks of human salmonellosis demonstrated that pigs or pig meat products could be traced back as the source of disease in some cases. Any strategy to control salmonellosis in pigs necessarily needs a deep understanding of the epidemiology of this infection in swine. The aim of the present study was to determine the prevalence of fattening units of Catalonia having active *Salmonella* excretors and to figure out what risk factors can contribute to the presence of this infection in fattening units.

**Materials and methods**: A bacteriological survey was conducted on a representative sample of swine farms of Catalonia. The initial hypothesis was that at least 15 % of the farms would have active *Salmonella* carriers in fattening units. Considering that the total census of pig farms is 12,512, the total fattening units to be examined was calculated to be 108 (±7.5 % precision, confidence level 95 %). If a farm was positive it was considered that, at least, 15 % of the animals would be active carriers. This implied to sample 19 animals per unit. Fecal samples were collected and inoculated in Rappaport-Vassiliadis broth. Incubations were done at 42 °C and transfers to XLT4 agar were done after 24 and 48 hours of incubation. Suspicious colonies were further identified by routine biochemical tests and serotyping. For each farm a detailed questionnaire was filled including 84 questions about health, production, facilities, medications and husbandry practices of the surveyed farms. Results of bacteriological examinations and data gathered in the questionnaires were analysed by using Epi-Info 2002. Variables yielding p-values < 0.20 were further included in a logistic regression analysis.

**Results and discussion**: At the end of the study, 113 fattening units were examined, corresponding to 2187 samples of which 46 were positive (2.10 %), accounting for 14 different serotypes. The percentage of farms in which *Salmonella* carriers were detected corresponded to 20.35 % (95 % confidence intervals: 13.59 % - 29.18 %). Within positive farms, 10.0 % (7.49 % - 13.20 %) of samples were positive. Epidemiologic analysis of the results showed that the presence of other species of livestock and the number of pigs in the farm were significant factors of risk. Poultry represented the species that most likely introduce salmonellosis in pig farms (Odds ratio = 3.71 (1.11-12.39), p=0.032). Also, a past history of clinical salmonellosis was significant (Table 1).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio (95 % Confidence interval)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other livestock in farm</td>
<td>5.82 (1.55-21.83)</td>
<td>0.009</td>
</tr>
<tr>
<td>&gt;1600 fattening pigs in farm</td>
<td>4.76 (1.21-20.0)</td>
<td>0.020</td>
</tr>
<tr>
<td>Past history of clinical salmonellosis</td>
<td>4.03 (0.90-18.05)</td>
<td>0.004</td>
</tr>
<tr>
<td>MLE of the model: 81.67 % , p = 0.004</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Our results showed that about 2 % of the pigs and between a fifth and a quarter of farms have active *Salmonella* excretors. This is in agreement with previous reports (Barber et al., 2002). This high value should be taken into account when implementing future plans for *Salmonella* control in swine. On the other hand, the results of the epidemiological analysis showed that mixing of different livestock species
is an important risk factor. This fact has been reported previously (Funk et al., 2001) and confirms that this practice should be avoided if salmonellosis is to be controlled. On the other hand, large fattening units were more prone to have positive animals than small ones. One possible explanation is that these large units usually receive animals from different source farms, increasing thus the chance to introduce infected pigs. Taken together, these results indicate that salmonellosis is widespread in swine farms of Catalonia (Spain) and that implementation of control measures is urgently needed.

References:

Epidemiology of salmonellosis in sow units of Catalonia (Spain)

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Summary: A bacteriological study aimed to the detection of sows excreting Salmonella was carried out in 74 sow units. Individual faecal samples were collected and a detailed questionnaire was filled in each farm and the data gathered were used in a bivariate logistic regression analysis to determine risk factors for Salmonella positivity. In 18 farms (24.32 %) Salmonella carriers were detected. Of the total 1480 samples analysed, 50 were positive (3.38 %), accounting for 11 different serotypes. Within positive farms, 13.8 % of sows were positive. Epidemiologic analysis of the results showed three main risk factors: to have open-flushed drainage of slurry, rodent control, and the number of sows in the unit. Our results showed that, in infected farms, the proportion of sows actively excreting Salmonella was considerably high (3.38 %). This fact, and the risk factors detected should be taken into account when designing effective plans for the control of salmonellosis in sows.

Keywords: Salmonella, Carrier, Risk factors, Catalonia, Swine

Introduction: Salmonella infection is a recognised problem in pig-meat production. The greatest emphasis in reducing S. enterica contamination has focused on finishing swine. A study demonstrated that sows are a potential source for S. enterica (McKean et al., 2001). However, detailed scientific results are fewer in this age group.

The aim of the present study was to determine the prevalence of sow units of Catalonia having active Salmonella excretors and to figure out what risk factors can contribute to the presence of this infection in sow units.

Materials and methods: A bacteriological survey was conducted on a representative sample of swine farms of Catalonia. The initial hypothesis was that at least 20 % of the farms would have active Salmonella carriers in sow units. Considering that the total census of pig farms with sow units is 5742, the total number of farms to be examined was 61 (± 10 % precision, confidence level 95 %). If a farm was positive it was considered that, at least, 15 % of the animals would be active carriers. This level