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SOWS ROLE IN *SALMONELLA* TRANSMISSION

Zoriţa Maria COCORA[1], Laurenţiu Marcel PANDELE[2], Ioan ŢIBRU[1]

[1]Faculty of Veterinary Medicine Timisoara, Department of Veterinary Hygiene, cod 300645, Calea Aradului No. 119, Timisoara, Romania
[2]S.C. Smithfield Prod:SRL, cod 300523, Str. Polonă, no. 4, Timişoara, Romania

Corresponding author e-mail: zoritzacocora@yahoo.com

Abstract

Identification of Salmonella spp. carrier sows is an important factor for the implementation of control programs at farm level. In this study we observed the transmission of Salmonella on the farm during the technological flow, by faecal sampling from gilts, their piglets until weaning age, the piglets after weaning age, and from youth at fattening, prior slaughtering.
Identification and isolation of Salmonella was done by two methods: SR EN ISO 6579:2002, or by molecular methods (PCR). The prevalence of Salmonella spp. after examination of (n=150) samples of faeces was 50% at sows and their piglets , observing a slight increase in piglets after weaning (78.57%) and the fattening pigs (90%). The most common serovars isolated were S. Typhimurium, S. Derby and S. Newport.
Study results indicate that sows are a source of contamination of piglets, and the presence of salmonella during other stages may be due to environmental stress factors and the Salmonella carrier state.

Keywords*: Salmonella spp, pigs, farm, serovars, transmission.*

INTRODUCTION

Asymptomatic pigs play a major role of intestinal carriage and intermittent shedding of a small number of *Salmonella*. Also, pork was recognised as one of the major source for human salmonellosis (Berends et al., 1996). In order to minimize salmonellosis resulting from pork consumption, it is necessary to prevent the spreading within the farms, the cross contaminate at the slaughterhouse and purchase *Salmonella*-free fattening piglets farms. *Salmonella* monitoring program can be achieved by culture of individual pig samples or fecal pool samples or antibodies detection in serum. In order to obtain *Salmonella*-free piglets, sows shouldn't play a role of *Salmonella* shedding; their piglets will carry the agent to the fattening unit. Several studies reported that the prevalence of *Salmonella* by isolation in sows during gestation period, farrowing period and lactation period is 10 % (Kranker et al., 2001; Nollet et al., 2005). The prevalence of fecal samples for pregnant sows was 8.1% and for young and lactating sows 2.9% (Korsak et al., 2003). From Netherlands it was reported that the prevalence in breeding sows herd was 44.4 % (van der Wolf et al., 2001). With a *Salmonella* control program, the herd apparent prevalence of *Salmonella* was 16.7% in sows (Christensen et al., 2002). Sows can maintain *Salmonella* infection in farrow to finish herds. Therefore, the status of *Salmonella* in sows should be classified to facilitate prevention of shedding.
Identification of carrier sows is an important factor on Salmonella dynamics to implement specific control programs in pig farms. The aim of this study was to describe the prevalence of *Salmonella spp.* in pigs farm, isolated at each stage of production.

MATERIALS AND METHODS

The study was conducted between April and September 2013 in a production farm, which used a three- stage management system (breeding, nursery, finishing), where each stage was separated. 150 pigs were followed during each stage from birth to the finishing stage. There were a total of 150 randomly collected faecal samples from sows after farrowing, and the same number of samples were collected from the same sows piglets. After weaning period (21 days) were collected 150 samples from pigs, then, on the same principle were collected faecal samples from pigs from finishing stage before slaughtering.

Samples were analyzed in the laboratory of Hygiene using two methods in parallel, SR EN ISO 6579:2002 and polymerase chain reaction (PCR). After isolation and identification, the samples were sent to sequencing.

RESULTS AND DISCUSSIONS

After analyzing samples from sows and from the piglets until weaning, was found a prevalence of 50 % positive samples,(same piglets were noted).

On other stages of production, in piglets after weaning, there was an increase in the prevalence of *Salmonella spp.* at 78.57 %.

Compared to the previous stage of production, at the pigs from finishing stages was found increas of positive samples with 11.43 % reaching to 90% positive samples (Figure 1).

After analyzing the samples by molecular methods (PCR), after sequencing and after introduction into the gene pool (Genebank), it was found that the most common serovars isolated from feces of 96 % were: S. *Typhimurium, S. Newport* and *S. Derby.*

The results were similar to those in the literature, which showed the role of sows as a possible source of infection of piglets (Davies et al., 1998; Funk et al., 2001a; Letellier et al., 1999).

Sows without clinical signs, but *Salmonella spp.,* carrier is a hidden risk factor, but substantial for the pigs in the same herd. Therefore, it can lead to the spread of salmonella in other herds, consisting of piglets from these sows.

Following a study by Beloeil et al. (2003), the authors observed an increased excretion of *Salmonella spp*. microorganisms in sows around farrowing and during lactation, leading to contamination of piglets during lactation (EFSA. 2010). Contamination after weaning is due to increased susceptibility to infection due to *Salmonella spp*. weaning stress, reduced immunity, sudden change of regime and mixing piglets (Funk et al., 2001b; Kranker et al., 2001; Nollet et al., 2004, Van de Ligt et al., 2002).

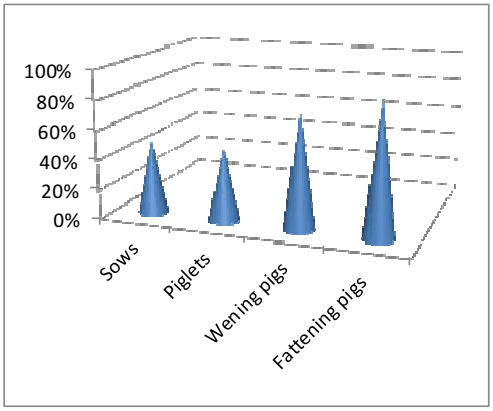

Figure 1. The presence of *Samonella spp.* in

CONCLUSIONS

Of the 150 stool samples examined from lactating sows, it was achieved a 50% positive samples. Due to failure to of hygiene requirements, wich constitute a source of contamination for pigs, the same number of positive samples was found (50%).

After analyzing samples from pigs during the technological flow, it was found an increase of the presence of Salmonella, where at pigs after weaning and at the age of slaughtering pigs, it was 78.57% and 90%, mainly part due to *Salmonella spp*. carrier status

Most commonly identified serovars were *S. Typhimurium, S. Newport, S. Derby*.

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