



International 58th Meat Industry Conference “Meat Safety and Quality: Where it goes?”

Epizootiology and control measures for *Salmonella* in pigs

Branka Vidic^{a,*}, Sara Savic^a, Nadezda Prica^a, Ljiljana Suvajdzic^b

^aScientific Veterinary Institute „Novi Sad“, Rumenacki put 20, 21000 Novi Sad, Serbia

^bUniversity of Novi Sad, Faculty of Medicine, Department of Pharmacy, Hajduk Veljkova 3, 21000 Novi Sad, Serbia

Abstract

Pigs and pork meat products are often causes of *Salmonella* in humans. *Salmonella* can enter the human food chain at any part of the meat production process. Contamination of pork can be reduced by lowering the contamination of pigs at primary production. Production of “*Salmonella* free pigs” will reduce the risk of this zoonosis in people. It is possible to determine the serological status of pig farms. Prevention of *Salmonella* in humans should aim at: prevention of entrance of *Salmonella* to the pig farm, reduction of the number of infected animals and stopping the spreading of microorganism.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of scientific committee of The 58th International Meat Industry Conference (MeatCon2015)

Keywords: pigs; *Salmonella* sp.; epidemiology; control measures

1. Introduction

Salmonella is one of the most important food borne pathogens. For pigs, the sources of infection are infected animals, contaminated food, stables, equipment, manure, dogs, cats, rodents, etc. Infection of pigs most usually appears in subclinical form. The most usual type of infection is the condition in which the carriers do not have any symptoms, but they can serve as a reservoir.

* Corresponding author. Tel.: +021-4895-302; fax: +381-21-518-544.
E-mail address: branka@niv.ns.ac.rs

Salmonella can enter the human food chain at any part in the meat production process: at animal feeding, production on the farm, in the slaughter house, during the packing process, and during shopping or even preparation of the food in households. Contamination of pork can be reduced by lowering the contamination of pigs at the level of primary production. These measures demand the understanding of *Salmonella* epidemiology within and among connected parts of production chain¹. Pork meat and products are an important source of *Salmonella* in humans. In Denmark and the Netherlands, the number of cases of *Salmonella* in humans from pork meat and products is considered to be 10 to 15%².

Production of “*Salmonella* free pigs” would reduce the risk from occurrence of this zoonosis in people, but it is hard to achieve for many practical and financial reasons. Different countries apply different control models for *Salmonella* in pigs, but all of them include feed and feed components control, microbiological and serological monitoring of a percentage of animals (piglets, sows and fatteners) in defined time frames³. In order to successfully resolve the problem of *Salmonella* in humans, control measures are needed at the same time at all levels in the meat production chain. In most EU countries, control and examination programs are implemented on the national level. In Denmark for example, by implementing defined control programs, the percentage of *Salmonella* in pigs has dropped from 3.5% in 1993 to 0.7% in 2000, and by 2014, it was reduced even further, to 0.4%. This trend was followed by a reduced number of cases of *Salmonella* in humans; for the same period, cases reduced ten times on the annual level^{2,4}. In our country, we have conducted analysis using an ELISA method, and the presence of *Salmonella* reactivity was detected in farmed pigs. Altogether, 628 blood sera samples of fatteners from five different farms were examined. In total, 46.5% of animals reacted positively for *Salmonella*, with the cut off at 10%. The sample: positive ratio for the farms was between 0.25 and 3.147⁵. After analysis of 256 sera samples from sows and boars with an ELISA test, 25.9% were found to be sero-positive with a serology test⁶. Feed and feed components can be contaminated with *Salmonella* and as such, can be a potential source of *Salmonella*. Davies and Wray⁷ have found a very high level of contamination with *Salmonella* on the cooling equipment inside the manufacturing building, on the fresh feces of wild birds collected in the warehouse and on the crane for unloading in some mills.

2. Epidemiology of *Salmonella* in pre-harvest stage

The basic goal that has to be achieved in control and epidemiology of *Salmonella* is prevention of infection from entering the farm and also prevention of transmission and maintenance of the infection. Farms are not closed systems, as in herds there is constant intake of feed and new animals, and these can be potential sources of *Salmonella*. This was found in different studies which deal with risk factors⁸. Feed mixtures treated with heat can help to prevent *Salmonella* in serologically negative herds, but in herds where *Salmonella* is already present, this measure cannot help much. In many studies, a protective effect of feed with low pH (in the form of added organic acid, whey or fermented additives) was described⁹.

Control of birds, flies and rodents is necessary in pigsties and warehouses as is also keeping small animals, such as cats and dogs, out of pigsties. Hygienic practice should be implemented inside the facilities and drains. Purchase of new animals should be only from certified *Salmonella*-free herds. New animals should be kept in quarantine with health monitoring. The number of farms from which new animals are purchased should be limited. After every turn out or movement of animals, all animal boxes have to be thoroughly washed and disinfected, following defined procedures. Toilets, bathrooms, rooms for changing clothes and shoes should also be in accordance with standard operating procedures.

Changes in the strategy of feeding can help in reduction of exposure to *Salmonella* and increase pig resistance to this microorganism⁹. The use of sufficiently high partitions and pen walls can be useful in prevention of spreading of infection between boxes and buildings. Also a facility for keeping sick animals should be in use^{10,11}. Application of only one control measure is not effective to prevent the spread of *Salmonella*. For every farm, defined measures and strategies, based on the realistic current situation on the farm, are necessary. Multifactorial infection such as one with *Salmonella* in pigs demands a complex approach to the matter, after which the procedures will be defined between farms, within the farm itself and within a single animal on the farm¹⁰.

Download English Version:

<https://daneshyari.com/en/article/1266349>

Download Persian Version:

<https://daneshyari.com/article/1266349>

[Daneshyari.com](https://daneshyari.com)