

## ***Salmonella* spp. infection in piglets from *Salmonella*-positive breeding holdings**

Alejandro Casanova-Higes<sup>1\*</sup>, Sara Andrés-Barranco<sup>1</sup>, Clara M<sup>a</sup> Marín-Alcalá<sup>1</sup>, Raúl C. Mainar-Jaime<sup>2</sup>.

<sup>1</sup>Unidad de Producción y Sanidad Animal. Centro de Investigación y Tecnología Agroalimentaria de Aragón. Instituto Agroalimentario de Aragón - IA2- (CITA-Universidad de Zaragoza). Avda. Montañana, 930. 50059 Zaragoza, Spain.

<sup>2</sup>Dpt. de Patología Animal. Facultad de Veterinaria. Instituto Agroalimentario de Aragón - IA2- (Universidad de Zaragoza-CITA). Avda. Miguel Servet, 177. 50013 Zaragoza, Spain.

\*presenting author: acasanovah@aragon.es. Phone: +34 976716300 ext. 6454

### **Introduction**

The dynamic of pig salmonellosis during the first weeks of life is barely known. Studies suggest that *Salmonella* prevalence is very low as the percentage of shedders is low (<9%), but they are usually based on analyses of a small amount of fecal matter, which yield poor diagnostic sensitivity. Thus the true prevalence of infection is unknown, and therefore the potential of these young pigs to become shedders. This study shows results of a project aimed at assessing the level of infection in piglets from *Salmonella*-positive sow farms.

### **Material and methods**

A total of 405 four weeks-old (wo) and 334 six wo pigs from 5 farms were included in this study. The maximum possible amount of mesenteric lymph nodes (MLN) and fecal content (FC) was collected at slaughter for bacteriology (EN ISO 6579:2002/A1:2007) and serotyping performed on positive samples. Diaphragm juice was used for serology (HerdCheck<sup>®</sup> Swine *Salmonella* ELISA).

### **Results**

A total of 247 (33.4%) MLN-positive (i.e. infected) and 251 (33.9%) FC-positive (i.e. shedding) piglets were identified. Both proportions were higher for 6-wo pigs compared to 4-wo pigs (38.6% vs. 29.1%, and 39.2% vs. 29.6%, respectively;  $P<0.01$ ). Prevalence of infection was higher in summer (57.7% vs. 28.6% in autumn, 30.2% in winter or 25.3% in spring). About 67% of the infected pigs shed the pathogen. Overall, the odds of shedding *Salmonella* for an infected piglet was 10 times higher than that for a non-infected one (OR=9.8; 95%CI:6.8-14.2).

Out of 260 isolates serotyped, Rissen was the most common serotype (38.8%), followed by 4,[5],12:i- (23.5%), Typhimurium (14.2%), Brandenburg (7.3%), Goldcoast (7.3%), Derby (5.4%). A distribution similar to that found for sows from the same farms (data not shown).

Out of 659 piglets serologically analyzed 34% were seropositive. Seroprevalence was higher for 4-wk pigs than for 6-wk pigs (45.6% vs. 20.8%;  $P < 0.01$ ). The odds of being *Salmonella* infected was lower for seropositive pigs (OR= 0.63; 95% CI: 0.4-0.9).

## **Conclusions**

The prevalence of *Salmonella* infection and shedding among piglets was high, which could have been put in evidence due to the thorough analyses done. The serotypes identified suggested a sow-to-piglet transmission. Infection was also associated with seasonality. All results together suggested that better hygiene and isolation of farrowing units should help to reduce infection.

Seropositivity decreased as age increased, and it was associated with a lower proportion of infected piglets, suggesting the presence of maternal antibodies that would confer some protection. Boosting humoral protection through sow/piglet vaccination and assuring proper colostrum intake may help to reduce infection levels.