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Use of Enterisol® Ileitis at Genetiporc Canada

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Managing *Lawsonia intracellularis* infections in a large production system in the USA

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1. Use of Enterisol® Ileitis at Genetiporc Canada

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Introduction

Genetiporc is a swine genetic company founded in Quebec (Canada) in 1984. It is a division of Aliments Breton Foods Canada. The latter is actively involved in different sectors of the agri-food industry (pork, poultry and egg production, slaughter and processing, feed manufacturing, etc.). Genetiporc is established in Canada, the United States, Mexico and Brazil. We have about 60,000 sows in selection (nucleus) and multiplication. Genetiporc has about 33% of the breeding stock market in the province of Quebec where about 7.5 millions pigs are produced annually, and about 12% of the entire Canadian breeding stock market of about 30 million pigs produced annually. Genetiporc is renowned for the health quality of its animals. These are free of numerous important pathogens like PRRS virus, TGE virus, Mycoplasma hyopneumoniae, Actinobacillus pleuropneumoniae, toxigenic Pasteurella multocida, Brachyspira hyodysenteriae, etc. Genetiporc is also considered a leader in terms of biosecurity and health monitoring.

For about a decade now, the animals of Genetiporc Canada have been produced in multi-site systems: the piglets come from sow herds of ≥1,000 sows, they are weaned at about 17 days of age and transferred to off-site nurseries and then to off-site finishing units; nurseries and finishing units are operated in an all in-all out system.

1. Foresee one week in advance the barns to vaccinate. To make this prevision consult the file “sales authorization” updated daily by the Health Department auxiliary. Select “exit of the finishing units” and make the prevision with the help of column “foreseen vaccination date”. Regroup the vaccinations by area.

2. Ensure with the producer that he will not use or does not anticipate to use medication in water or feed 3 days before or after vaccination. (If there is a medication in progress or an imminent medication, contact the veterinarian in charge to make an agreement for the possible window of vaccination).

3. Order the vaccine at QSB with a sufficient quantity. Do not forget that:
   a. The vaccine is preserved in the freezer only 5 days;
   b. The vaccine must be kept frozen until its use;
   c. There is no deliveries on Friday and on holidays;
   d. The vaccine is available in formats of 100, 250 and 500 doses (favor the 500 dose format considering the lower cost).

4. Inform the producer 3 days before the foreseen date of vaccination.
   a. Ensure with the producer that he will not use or he does not anticipate to use medication in water or feed 3 days before or after vaccination;
   b. Ask him to stop his chlorinator 3 days before vaccination (if necessary);
   c. Ask him to evaluate the water consumption of the animals some days (max 5 days) before vaccination with the help of his medicator;
   d. Ask him to stop water the evening before vaccination (around 21 hours).

5. The day of vaccination
   a. Take the vaccine at the hardware and verify its state. (Quantity of dry ice, vaccine completely frozen and take note of the vaccine lot number);
   b. Arrive at the farm at the date and hour intended with the producer;

Enterisol Ileitis® Vaccination: How we do it

Figure 1.1: Genetiporc MN

Figure 1.2: Protocol for vaccination of Enterisol® Ileitis in Genetiporc farms
**Situation before vaccination**

For several years (1984 – 2000), we had no problems with *Lawsonia intracellularis* ileitis in our herds. In fact, only 3 cases of proliferative hemorrhagic enteropathy (PHE) have been diagnosed at the beginning of the year 2000 in maturing gilts and it is only at the end of 2002 that we have seen our first PHE outbreaks in sows of multiplier herds.

In contrast, our animals regularly developed PHE in our clients’ herds. The most frequent claims concerned gilts after their introduction into sow herds, with or without a previous acclimatization period.

When the IFA (serology) and PCR tests for *Lawsonia intracellularis* became available in the early 2000, we tested some finishing units of replacement females. In nearly 50% of these finishing units, the animals were negative by serology and PCR on feces.

**Situation since vaccination**

In 2002, Enterisol® Ileitis became available in Canada. However, at that time, Genetiporc had the policy of not using live vaccines in its multiplier and nucleus herds. This policy was based on biosecurity considerations to protect our herds from the introduction of potential new infections.

However, due to difficulties to control the disease with antibiotics, the cost of these treatments, losses in animals of value and accumulated evidence concerning the vaccine safety, we reconsidered the use of Enterisol® Ileitis.

Finally, in February 2004, we decided to vaccinate the replacement animals produced in Canada. These animals receive a dose of Enterisol® Ileitis at about 16 weeks of age. In the last 18 months, we have vaccinated about 125,000 replacement animals.

Besides, we have also vaccinated all the sows in our multiplier and nucleus herds and boars in our artificial insemination centers. So, nearly 15,000 animals have received a dose of Enterisol® Ileitis in July 2004. No secondary effects were observed in sows or barrows following vaccination.

We must point out that non-selected females and barrows are not vaccinated with Enterisol® Ileitis and that we have never had PHE problems with these animals in our own finishing units.

Since July 2004, PHE signs have completely disappeared from our sow herds and no antibiotics are used in prevention in our finishing units. Furthermore, most of the PHE problems in both our own herds and our clients’ herds have also been resolved. In fact, only four suspected cases have been reported to us since.

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c. Before thawing the vaccine, make sure that the medicator is functional and that the running water for the pigs has been stopped the evening before;
d. Make the vaccine thaw in the sink with lukewarm water (much colder than warm to avoid thermic shocks and thus alter the vaccine) until completely thawed;
e. Fill the water container of the medicator according to the estimate done by the producer the day before and add the blue dye that will neutralize any traces of chlorine in the water. (evaluate if the quantity seems logical, that is to say about 8 liters of water per 30,000 kg of weight during 6 hours when the medicator is adjusted at 1/100);
f. Adjust the medicator at 1:100;
g. Start the medication (open the valve of the medicator line and close the other valves of water);
h. Verify that the colored water goes at each end of the line. (This can take around ten minutes);
i. Come again 4 hours later to ensure that the water is circulating properly and that the diluted vaccine will be consumed entirely before 6 hours;
j. When the vaccine is completely consumed, stop the medicator and let the water available for the animals.

6. Note the vaccination date on the notice “Vaccination Enterisol® Ileitis” which prohibits any treatments in the water or feed and put it in evidence.

7. Remind the producer to make his chlorinator running 3 days after vaccination (if necessary).

**Instructions**

- Always be sure that the feed and water do not contain antibiotics for a period of 3 days before and after vaccination.
- Handle this vaccine with gloves.
- Do not keep the vaccine more than 5 days in a freezer.
- Once diluted the vaccine must be used entirely within the following 6 hours.
- Fill the „Enteris Ileitis Vaccination Check list” all along the process and give a copy to the Health Department.
One case in September 2004, in which 10% of the gilts from a shipment had clinical signs of PHE less than one month after their arrival and three of them died. One case in May 2005 in which 13% of the gilts supplied in November 2004 showed clinical signs of PHE and 3% died. A third case in June 2005 in which three gilts of a shipment had clinical signs and two of them died. And in 2005, three single gilts in three different herds had clinical signs of PHE and one of these died. The gilts where despite protocol of vaccinating at 16 weeks of age, vaccinated at an earlier age.

Even if the vaccination of about 140,000 animals with Enterisol® Ileitis appeared to be very safe and effective, these few apparent breaks in vaccination efficacy incited us to review the way we used the vaccine. Two aspects appeared to us as important.

One aspect is the age at the time of vaccination. We suspect that vaccination of naïve animals 14 weeks of age and under do not always protect with enough efficacy and duration if these animals remain naïve until they are delivered to the commercial herds where they are exposed to a high challenge of Lawsonia. So, since June 2005, we are now vaccinating our replacement animals at 18 weeks of age.

Another aspect is storage and handling of the vaccine and its administration mode. From now on, in order to ensure the respect of the protocol, only one person in each province has the responsibility of this vaccination. Furthermore, we have put in place a vaccination protocol and check list.

In order to ensure the vaccine quality regarding contamination, an independent laboratory is testing each lot we use for the presence of different viral and bacterial contaminants. So far, no contaminants have been reported.

Conclusion
In conclusion, Enterisol® Ileitis has constituted for Genetiporc Canada an extremely effective and safe tool to prevent the losses associated with PHE in our sow herds and the breeding stock we commercialize.

2. Managing Lawsonia intracellularis infections in a large production system in the USA
Andrew John Holtcamp

Introduction
Our production system raises approximately 2.5 M pigs per year, out of a total US production of 100 M pigs. Production facilities are typical for the Midwestern U.S. We have an average sow farm size of 4,000 sows, with approximately 1,500 new gilts per farm per year. Nurseries and finishers are housed separately off site (multi-site production). Most finishing barns have deep pig manure storage over slatted floors, though 20% are shallow pits with “pull plug” systems. In this large a production system, health controls, like any management programs, must be standardized, simple and repeatable to apply, and deliver consistent results, with little added treatments needed.

Situation before vaccination
The history of enteric disease in our pigs included all common pathogens seen in commercial pig production – feed induced diarrhoea, gastric ulcers, Salmonellosis, PCV-2, non-specific colitis, hemorrhagic bowel syndrome, torsions and endemic TGE (transmissible gastroenteritis virus). These conditions were diagnosed by routine pathology and histopathology. Both the chronic/PIA form and acute/PHE forms are present in the system. Chronic diarrhoea historically began in commercial pigs from 70 kg/150 lb to market, in the finishing barn. Hemorrhagic ileitis would occur in some groups of pigs around the first marketing cut, and in replacement gilts after placement into sow farms, at around 33 weeks of age.

Control of Lawsonia intracellularis and other enteric diseases was attempted with feed grade medications. In nursery pigs, a system of carbadox, tiamulin/chlortetracycline and chlortetracycline alone was used. This continues today for its broad spectrum respiratory and enteric benefit. Control of Lawsonia intracellularis in finishing was based on several combinations of tylosin, either at 100 ppm followed by
40 ppm, or 40 ppm continuously from 35 to 60 kg. Breaks on this medication program occurred frequently, at an average of 70 or more enteric cases per month. Water soluble tylosin was used as the first treatment option. When cases would not respond, water therapy was changed to tiamulin.

Situation after vaccination
The goal for use of Enterisol® Ileitis FF was to reduce overall in-feed and water medication use, and, with similar cost, improve clinical control of disease in both high value replacement gilts and finishing pigs. Replacement gilts were the first target for vaccination given their cost and the poor response to treatment of PHE cases. Vaccination of these animals began in 2001. Following success in these animals, vaccine was tested in finishing pigs in 2002, with pigs vaccinated at 12 – 14 weeks of age, just following placement into finishing.

To manage the deep frozen vaccine, ultra-low freezers were purchased to allow for better quality control and insure the potency of vaccine. A dedicated administration team both measures water intake the day prior to vaccination and gives vaccine the following day. This format gave better results than multiple farm managers trying to apply vaccine themselves, as indicated by fewer treatments following vaccination done by dedicated field personnel. These breaks could be tracked back to improper storage or thawing of the deep frozen vaccine, use of chlorinated water for stock solution, or inadequate vaccination time due to excess consumption of water. When properly handled and administered, diarrhea breaks in vaccinated pigs or gilts are rare.

Vaccination has dramatically altered the feed medication program in finishing pigs and replacement gilts. Routine use of both in-feed tylosin as well as growth promoting antibiotics has dropped to zero. The numbers of groups needing treatment for diarrhea of any kind has been reduced over 75% (&lt;15 cases/month now) even with the removal of all in-feed medications. This has made health management much simpler at the field supervisor level, as well as in the feed mill.

Figure 2.1: Influence of vaccination with Enterisol® Ileitis on use of Feed-Grade Tylan®

Figure 2.2: Treatments for Ileitis-like disease pre- and post-vaccination

Conclusion
The clinical response to vaccination drove the decision to apply vaccine in all pigs in our system nearly three years ago. We continue to vaccinate all production animals today with a consistent benefit and ability to feed our finishing pigs without growth promoters or therapeutics in feed.
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