THE PIG ISSUE

Garth Pig Practice Ltd

September 2020

Pandemic H1N1 Flu

Pandemic flu has been present in UK pig population for some time. Recent laboratory investigations have indicated that pandemic H1N2 may also be present and circulating in the North East. This is a strain that is not uncommon in Northern European pig dense areas and may be related to reassortment (when multiple strains of flu viruses infect the same pig and they swap genes) of pandemic H1N1 and H1N2 when circulating together on farms.

Testing is available if you suspect signs of flu within your herd – reduced growth and reproductive performance, increased susceptibility to disease and decreased feeding herd efficiency. Testing for flu is time critical – we can only detect flu virus from nasal swabs very early in the course of infection (as soon as you see clinical signs) while detection of the immune response on blood samples is possible only at a later stage (from 8 days post infection).

Control in Northern Europe has been achieved through vaccination with cross-protecting pandemic H1N1 vaccines e.g. Respiporc FLUpan H1N1(CEVA).

Illeitis

***Lawsonia intracellularis*:**

- Is the bacteria; PHE (porcine haemorrhagic enteropathy) and PIA (proliferative intestinal adenopathy) are the disease syndromes; and 'ileitis' is the umbrella term we tend to (inaccurately) use to describe the lot.
- Was first identified in the mid-90s as the bacteria responsible for gut wall thickening lesions in grower-finishers and very sudden dramatic intestinal bleeding in grower-finishers and gilts. Since the 1960s it's played a significant role in limiting the productivity and health of pigs worldwide.
- Is widely distributed throughout the UK pig herd and it's not just limited to pigs. It has been found to be shed in the faeces of rodents, rabbits, foxes, horses etc so wildlife reservoirs are an important part of control. It will survive in faeces in the environment for 2-3 weeks.
- Are ingested by pigs from the environment, it then travels to the intestine, attaches to the internal wall of the intestine (particularly a part of the small intestine called the 'ileum' which is where the term 'ileitis' comes from), gets inside the cells of the intestine wall and starts to reproduce itself. It's this replication inside the wall of the intestine which causes inflammation and pathology of the intestines. Infected cells are then shed into the faeces and contaminate the environment.
- Can only replicate itself inside a cell (hence the 'intracellularis' part of the name; the 'Lawsonia' comes from the name of the person who first identified it).

- Causes two main syndromes:

1. PIA (porcine intestinal adenopathy)/ileitis

Typically seen in grower-finishers and the most common signs to see are looseness, variability and disappointing FCR. The gut wall of infected pigs is thickened and the pig's ability to convert feed efficiently is compromised. Pigs will rarely die from ileitis unless another bacteria takes advantage of the weakened gut wall e.g. *Salmonella spp*, *Brachyspira pilosicoli*

2. PHE (proliferative haemorrhagic enteropathy)

Typically seen in older fatteners and especially replacement gilts. Usually seen when pigs that haven't had much exposure to *Lawsonia intracellularis* (perhaps from a particularly clean environment) suddenly encounter a very contaminated environment. The first you may see of this are very sudden deaths of good pigs or pigs looking very pale with black tarry faeces (bleeding in the intestines results in black faeces).

- Is everywhere so finding it in pig faeces doesn't indicate that it's responsible for all of the farm's woes. However, finding the bacteria in faeces/intestinal content alongside seeing the syndromes above AND lesions seen at post-mortem gives us confidence in its diagnosis.
- Can be controlled on your farm (never eliminated) with a combination of good hygiene (AIAO, C&D between batches) & husbandry, medication with antibiotics when necessary and vaccination. Vaccination is available in two forms – oral vaccination (either directly into the mouth or via water lines) or by injection.

How Lab Tests Work- ELISA

We continue our series with a very popular laboratory test, the Enzyme Linked Immunosorbent Assay.

ELISA is a technique used to detect and measure the amount of certain proteins in a sample, with implications for example in medicine as a diagnostic tool, in blood typing, in biotechnology and disease detection in plants.

For disease diagnostics in veterinary medicine we are interested in the detection of antigens or antibodies from a sample. Antibodies are proteins made by the immune system in response to infections and have the ability to bind to specific proteins on the surface of a virus or bacterium which are called antigens. Antibodies only mark the virus or bacterium for destruction, which is then done by other cells of the immune system. The bonding of antibodies to antigens is the basis for performing this test.

There are different variations of ELISA currently being used, including direct, indirect, "sandwich" and competitive ELISA, but in the most basic form (direct ELISA), the test involves having the antigen from a sample attached to a plastic surface and then having the corresponding antibodies from the test kit bound to them. The plastic wells are then washed and only the antigen-antibody pairs remain attached to the surface of the wells. The corresponding antibodies are linked to an enzyme (hence the name of the test) which changes colour in the presence of a reagent (also called substrate) (fig. 1). This colour change signals a positive test as shown in fig. 2. If there are no specific antigens of the disease we are testing for in the sample, then the enzyme linked antibodies will be washed away and there will be no colour change in the wells.

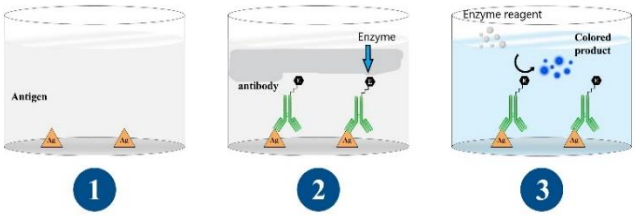

Fig.1 Direct ELISA diagram

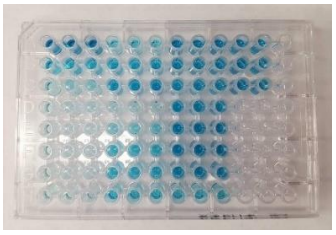

Fig.2 Microwell plate used for ELISA

1- Antigen attached to well
- Washing of the wells

2- Enzyme linked antibodies binding to the antigen
- Washing of the wells

3- Reagent reacting with the enzyme, resulting in colour change

Same basic principle is used for indirect ELISA with the addition of secondary antibodies that will bond with the primary ones. The secondary antibodies are the ones linked with an enzyme in this case and the advantage of this method is that more than one secondary antibody can bind to one primary antibody making the detection much more accurate if there is a small amount of antigen in the sample.

For example, if we want to confirm the PRRS free status of an unvaccinated herd we can collect blood samples and look for PRRS virus antibodies. The wells will be pre-coated with PRRS specific antigens and then serum from the blood sample is added. If PRRS antibodies are present they will bind to the attached antigens. The wells are washed and secondary enzyme linked antibodies are added. After another wash the reagent is added and if the colour of the medium changes, we have a positive result. This may indicate that PRRS is circulating in the herd.

Although no test is perfect, due to the number of variables involved, like sample size, early outbreaks where we don't yet have circulating antibodies and cross-reactivity between different antigens and antibodies, which can result in a false positive, there is a known margin of error. The accuracy can be improved by repeating the test over a period of time and is sometimes the most cost effective way of monitoring the health of the herd.

Meet the Team

Meet Sharon Darlington, who works in the dispensary department taking orders and organising for your medicines to be safely delivered to you.

Sharon has worked at Garth for 3 ½ years – previously had no dispensary experience – originally trained in Catering & Hotel Management, and ran a pub in London for several years with husband.

Married for 34 years, with 2 daughters, a few chickens & a spotty dog! Has had Dalmatians for over 30 years – usually rescued – current one, Luna is a liver – spotted one!

Spends spare time on her allotment – growing organic veg, fruit & flowers (and plenty of weeds!) and makes a mean lemon drizzle cake – even won prizes at Driffield show for them!

Enjoys a G& T or 3!

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