International Pig Topics

Pig Focus Asia 2020
NEW DATES - 7-8 July 2020

ESPHM 12th EUROPEAN SYMPOSIUM OF PORCINE HEALTH MANAGEMENT

Pighealth BYTES
Your own reference source on pig health

Number: 169

# Vaccinology V



## Maternally derived antibodies

In Vaccinology IV, possible interference with maternally derived antibodies (MDA) was briefly touched upon. Questions were asked about how this negative impact on vaccine efficacy can be detected on farm. However, it is not easy to give advice and effectively answer all these questions while still considering all the practical conditions.

In general when vaccines are tested in the field, they are tested against a control group that receives either no vaccination or a vaccination with a placebo (which looks like the 'real' vaccine but does not contain the active component). In most of these studies a difference between the vaccine and the placebo group will be detected, even when the protection is only partial. That is ultimately what it all comes down to.

When MDA has an impact on vaccination efficacy, the optimal protection moves more towards a level of 'partial' protection. This partial protection is still considered protection when compared to the placebo group. When translated to economic data, often a lower return on investment (ROI) is seen. This classification of 'lower ROI' is then based on a vaccination experiment where the vaccinated piglets are 100% free of MDA.

The second option possible under practical conditions is to compare the vaccine under testing to either another vaccine or another vaccination scheme that limits the negative influence of MDA. The easiest method is to alter the vaccination timing. MDA declines over time. When the vaccine under testing is normally given at three weeks of age, the same vaccine can also be given at six weeks of age to groups of pigs of the same origin.

Compare both groups for their economic parameters. When differences are found, they are most likely due to an influence of the MDA on vaccination efficacy. A better result in the second group vaccinated at six weeks of age represents lower antibody titers that have a lower partial efficacy on the vaccination take. Often farm managers and veterinarians are puzzled why this is the case. Protection in the group vaccinated at a young age is still present, but what is the explanation for the difference with the group vaccinated at a later age? The answer is relatively easy.

## Conclusion

When partial protection is present, a field virus or bacterial infection can still cause an infection leading to higher levels of virus or bacteria compared to when the pigs are protected in an optimal manner. These pathogens need to be cleared from the body. This requires energy to mobilise the immune apparatus and proteins to build-up the required antibodies. This is called 'the metabolic cost of infection' and means that the feed consumed by the pigs is directed away for other purposes resulting in less growth. When the parameters used to check such a vaccination testing experiment are rightly chosen and the population under testing is large enough, data will be generated that shows a very interesting economic advantage.