



Use of rapid methods for animal health, welfare and food safety.

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Pilot Chain III PigChamp Pro

Animal health, welfare and food safety issues are becoming increasingly important to all sectors of livestock production. As general biomarkers of disease acute phase proteins (APP) may play a role in health management programmes. An APP rapid test, developed by PigCHAMP Pro, is ready to be used on farms. An implementation programme has been started in March 2009 with about 20 farms from Segovia (Spain).

Participants:

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Development and implementation of the APP rapid test

Pig MAP (Major Acute Phase Protein) dipstick test

The rapid test consists of a vial and a reactive strip. After the blood sample is added to the vial, it has to be mixed before the reactive strip is dipped. If the Pig-MAP concentration in sample is increased (> 1,5 mg/ml) a pink line can be seen on the strip after 10 minutes of incubation. The test can be used with serum or whole blood only the volume of sample added to the vial has to be changed depending on the matrix (see figures 1 and 2).

First results of the implementation phase

Testing programmes have been initiated for two different issues:

For replacement gilts:

20% of the animals were tested one day after arrival. A long term study includes evaluation of productive performance of the different batches.

For fattening pigs:

10 blood samples were collected randomly from each different age group (60-70, 80-90, 118-130, 160-170 days). Different numbers of positive samples could be observed between farms and age groups according to differences in health status (figure 3).

All serum samples were additionally analysed by ELISA to obtain quantitative results. The technical performance of the test was evaluated, considering the concentration values obtained by ELISA as the gold standard. Specificity and sensibility were found to be above 99%, indicating a good performance of the technique. The study design includes repeating the sampling at 4 months intervals, to evaluate seasonal effects on APP levels, as well as the effect of health improvement measures implemented on the farms.

Acute Phase Proteins and meat quality

First analysis on the correlation between acute phase proteins and meat quality traits have been conducted.

Study 1: 310 fattening pigs: performed by the University of Bonn, Germany

Study 2: 40 fattening pigs: performed by YOUNG et al. (2007)¹ in Aarhus, Denmark

Parameters:

- Hp and PigMAP
- Meat quality traits (pH, colour, etc.)
- Carcasses composition (meat content, weight, etc.)
- Production data (age, daily gain, etc.)

The results of these studies showed correlations between the values of the acute phase proteins and meat colour, slaughter weight and other parameters. Further studies with a larger variance of the APP concentrations must be performed to obtain more significant results.

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Fig. 1: PigMAP test in use



Fig. 2: Procedure of the dipstick test

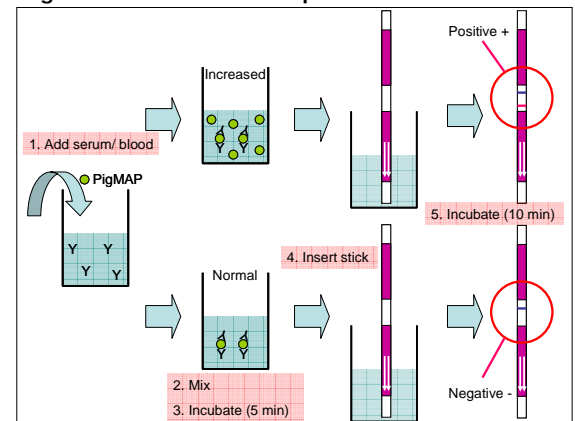
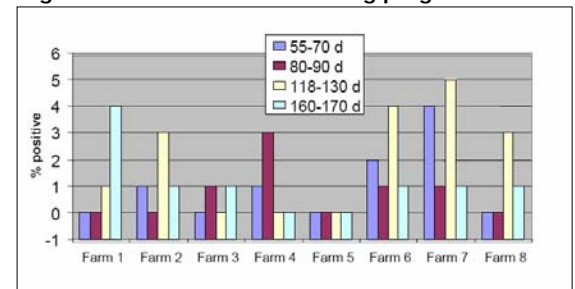


Fig. 3: First results of the testing programm²



Literature:

¹ Young, J.F.; Leoni, F.; Straadt, I.K.; Williams, J.H.H. and Oksbjerg, N. (2007). Heat shock proteins as markers for pre-slaughter stress and prediction of meat quality. Proceedings of 53rd International Congress of Meat Science and Technology, Beijing, China, pages 609-610.

² Piñeiro, M. and Piñeiro, C. (2009). Acute Phase Protein in pig production. Presentation at a QPC-Training of Module B, Segovia, Spain.

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