



O.272

Testicles of castrated piglets an anachronism - but a powerful sample for disease surveillance in sow herds

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Introduction

Collecting blood from adult sows is laborious; time consuming and sometimes hazardous to the veterinarian and/or the sow. Alternative samples would be of benefit. Some authors proposed colostrums as an alternative material, however antibody level in colostrums declines rapidly after parturition and due to high fat content samples have to be processed in the lab. Meat juice is a suitable sample for serodiagnosis in slaughtered animals (e.g. Salmonella enterica, PRRSV, Trichinella spp.). Therefore pieces of meat (4 cm³) are submitted to vials. After freezing and thawing meat juice is collected. As a general rule antibody concentration in meat juice is 1/20 of that in blood. In the present study it was analysed if tissue fluid from testicles (TJ) of castrated piglets could serve as a sample to predict the dam's seroreactivity.

Material & Methods

The following ELISAs (Dilution of TJ) were used: PRRSV (1/10), SIV H1N1 (1/10), Salmonella (1/2), Mycoplasma hyopneumoniae (Mhyo; 1/10) supplied by Idexx and PCV2 (1/20), PPV (1/40) supplied by Ingenasa. Except for the dilution of TJ tests were performed according to manufacturer's instructions. Results were expressed as titre (PCV2) or relative S/P-value after subtraction of the optical density of the negative control (other tests).

Blood and testicles were collected from piglets within the first week of life (not necessarily the same animal!) and blood was collected from the dam. Mean reactivity of OD or geometric mean of titre per litter were calculated and compared with the dam's value. Individual results were compared by kappa statistics. Finally, serological classification of herds based on testing TJ and dam's blood was compared.

Results

For each test a positive correlation between serum samples of dams and mean TJ reactivity of the litter was observed. Data for the comparison TJ versus dam's serum were summarized in the Table. Agreement of TJ with serum from piglets as determined by k-statistics was generally higher.

	PRRSV	SIV	PPV	PCV2	Mhyo	Salmonella
Sow/litters	246	180	221	193	181	266
herds	31	23	25	28	21	32
TJ-Cut-off	40%	60%	30%	422 (titre)	30%	40%
kappa	0.786	0.784	0.491	0.59	0.694	0.587

In the case of PRRSV, SIV and Mhyo 100% of the herds were correctly classified. Agreement between dam's serum and TJ was moderate for PPV, PCV2 and Salmonella. In the case of these infections pairs of samples with borderline reactivity tended to be misclassified.

Discussions & Conclusions

TJ is an alternative sample for serology in sows. Although k-values were sometimes below 0.8 one has to consider that mean reactivity per litter was compared. Agreement for PRRSV, SIV and Mhyo on herd level was excellent. Thus TJ-testing is a powerful tool especially for surveillance of PRRSV, SIV and Mhyo in sow herds.

In the case of Salmonella the ELISA-cut-off for meatjuice/serum was validated for slaughterhouse pigs and not for sows. The observation that ELISA-reactivity of piglets from negative sows (serum) was below 20% might indicate the need for an age-related cut-off. Agreement was higher at a cut-off at 60% for sow serum and 40% for TJ. Comparison of sample materials in the case of PPV and PCV2 were complicated by high numbers of samples with borderline reactivity. This might be explained by vaccination (PPV) or frequent infection (PCV2). Application of ELISA tests for detection of protective antibodies (e.g. correlation with neutralizing antibodies) in the future might allow prediction of optimized time-points for vaccination of piglets.

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