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A Longitudinal assessment of *Mycoplasma hyopneumoniae* serology, comparing three different infection routes and two ELISA tests.

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Introduction and Objectives

Although molecular techniques have emerged for *Mycoplasma hyopneumoniae* diagnostics, serological profiles are still critical to determine infection patterns within the swine herds. Serologic patterns under field conditions can be very variable, reflecting epidemiological features such as infection pressure and infection route. The DAKO test has been described as being more sensitive than the Tween 20 ELISA, but a comparative performance in repeatedly measured pigs infected by different routes has not been performed. The objectives of the present study were to compare the epidemiological pattern of pigs infected by three different routes and to compare the dynamics of the detection of *M. hyopneumoniae* by these of two ELISA tests.

Materials and Methods

Three different infection routes were evaluated in this study: intratracheal inoculation, direct contact exposure, and indirect contact exposure. Twelve 3-month old *M. hyopneumoniae* negative gilts were inoculated intratracheally with 10 ml of *M. hyopneumoniae* strain 232 (10^5 color-changing units [CCU] per ml). On the same day 12 age-matched negative pigs were placed along the inoculated pigs, allowing direct contact-exposure. A third group of 12 pigs was allocated in an independent pen at 3 m of distance. This last group was considered as indirect contact-exposure pigs. In order to assess the serological pattern, a longitudinal profile was performed in the three groups. Blood samples were taken to all the pigs on days 0, 28, 35, 42, 49, 63, 91, 119 and 155 after the experimental infection. Serum samples were tested for *M. hyopneumoniae* antibodies using the DAKO ELISA test. To achieve the comparison between two ELISA tests, serum samples were also tested by Tween 20 ELISA.

Results and Discussion

Serologic profiles of the three groups infected by different routes are presented in Figure 1. Seroconversion was delayed both contact groups, this being more noticeable in the indirect contact-exposure group. Although inoculation and placement of the contact pigs was done in the same day, it is probable that the contact pigs were not exposed to the agent until the onset of shedding (1 week later). Even so, differences between the 3 routes of infection were clearly shown. Differences in the onset of detectable antibodies observed in this study can explain the high variability of serological patterns under field conditions. As described before (2,3), the Dako ELISA was more sensitive and detected antibodies 1 week earlier than the Tween 20 test. This difference was observed in all three groups (Figs 2,3,4).

Figure 1. Serological response in the three groups. IT, intratracheal inoculation; DC, direct contact infection; IC, indirect contact infection.

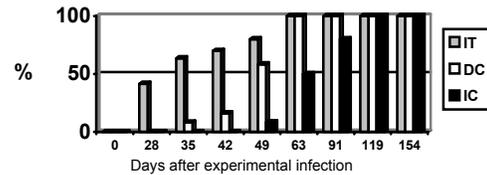


Figure 2. Tween 20 vs Dako. Inoculated pigs.

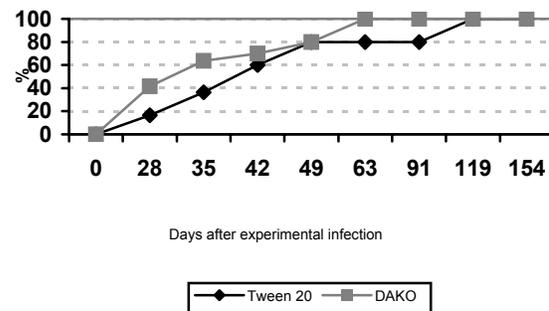


Figure 3. Tween 20 vs Dako. Direct contact.

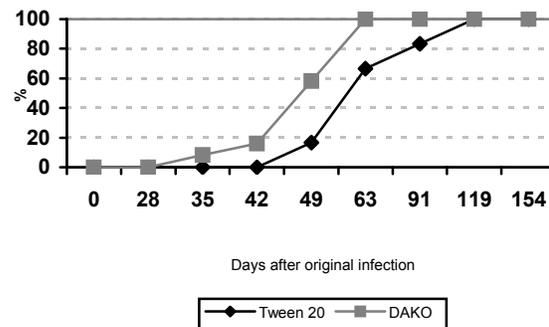
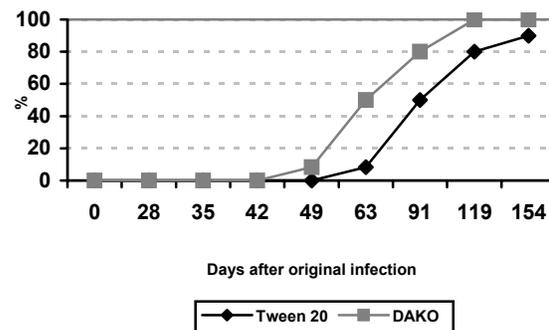


Figure 4. Tween 20 vs Dako. Indirect contact.



References

1. Sitjar M et al. 1994. Proc. IPVS p133
2. Thacker EL. 2001. Proc. AASP p.467-469