

MAT-Seroconversion of sows after basic immunization against different *Leptospira* serovars

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Background and Objectives

In case of fertility problems due to suspected Leptospiral infections, Microscopic Agglutination Test (MAT) is a standard diagnostic tool to determine infection in a sow herd but without the possibility to differentiate between infected and vaccinated animals¹. MAT titers of 1:100 and above are considered positive (OIE 2021). Single, low Bratislava MAT titers are not unusual in unvaccinated German sow herds and not necessarily connected to clinical problems, while other serovars can rise to remarkable heights following a field infection². After introduction of a commercial vaccine in 2018 the interpretation of MAT-results for different serovars is challenging especially after vaccination. This study aims to show courses of MAT-seroconversion after basic immunization in two commercial farms to support field vets in drawing the right conclusions from laboratory results.

Material and Methods

Breeding sows of two commercial piglet producing farms A and B in Southern Germany were immunized twice with Porcilis[®] Ery+Parvo+Lepto. During the following six months before the next booster vaccination, every four weeks blood samples (12 vaccinated; 6 non-vaccinated sows) were taken to determine MAT titers against various *Leptospira* serovars.

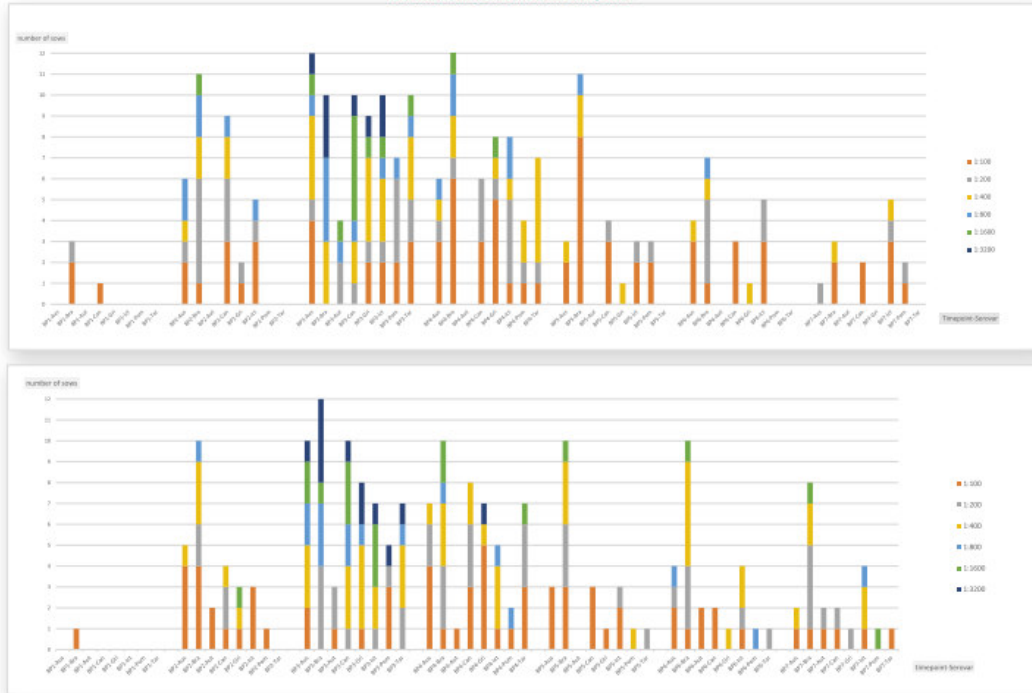
Results

Pace, extent, and duration of MAT titers differed between serovars, with the maximum consistently reached four weeks after the second vaccination. Graphics (fig. 1a and b) show the number of MAT titers $\geq 1:100$ within the two vaccinated sow groups of n=12 each on the sampling timepoints BP1-7. Maximum of seroconversion was determined 4 weeks after the second vaccination. Courses of seroconversion induced by the serovar Bratislava occurred in all samples with the highest titers as opposed to Pomona with only few low titers. MAT-Titers of other investigated Serovars were lying between Bratislava and Pomona. Apart from the Australis serogroup (serovars Bratislava and Australis), all other MAT titers were almost back to the baseline level two months after the second vaccination.

Discussion and conclusion

Data from this study indicate that MAT results from blood samples taken more than eight weeks after basic immunization can be interpreted like results from unvaccinated herds. As the Australis serogroup, i.e. the serovar Bratislava, is endemic in Germany and field contacts are present, seroconversion after Bratislava-vaccination can in many farms be interpreted as a booster effect of a former field infection. In contrast, the serovar Pomona is rarely diagnosed in Germany and Pomona-MAT-seroconversion after vaccination stays low and short. The further development of MAT-titers after multiple booster vaccinations should be investigated separately. Though seroconversion is not connected to protection neither in vaccinated nor in unvaccinated herds the results of this study can help field practitioners in interpreting MAT lab results.

Figures 1a and 1b: number of MAT-titers $\geq 1:100$ from vaccinated sows (n=12) in farms A and B on different timepoints



Timepoints: BP1: 1st vaccination BP2: 2nd vaccination BP3-BP7: samples taken every 4 weeks
 Serovars: Aus=Australis; Aut=Autumnalis; Bra=Bratislava; Can=Canicola; Ict=Icterohaemorrhagiae; Gri=Grippityphosa; Pom=Pomona; Tar=Tarassovi

References: 1: Arent und Ellis *Leptospirosis in 11th ed Diseases of Swine* 2019; 2: Saravi et al. *Re Sci Tech* 8(3) 1989

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