

THE PORCINE ACUTE PHASE PROTEIN RESPONSE TO EXPERIMENTAL *STREPTOCOCCUS SUIIS* INFECTION

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Introduction

Streptococcus suis (*S. suis*) is an important pathogen of pigs causing septicaemia with various localizations. The early detection of acute *S. suis*-infection in pig herds could help reduce morbidity and mortality and prevent spread of the infection. Here we studied the acute phase protein (APP) response to experimental *S. suis*-infection by the measurement of the positive APPs C-reactive protein (CRP), serum amyloid A (SAA), haptoglobin (Hp) and major acute phase protein (pigMAP) and the negative APPs albumin and apolipoprotein (Apo) A-I, in order to identify the most appropriate proteins for the sensitive detection of *S. suis* infection in the pig.

Materials and Methods

Five pigs, 5 weeks of age, with no history of *S. suis* serotype 2 infection were injected with 10¹⁰ CFU live *S. suis* serotype 2. Blood was sampled before and on days 1, 2, 5, 8, 12 and 14 after inoculation (p.i.), when the pigs were killed and autopsied. Rectal temperatures and clinical signs were recorded daily, and infection was confirmed by the re-isolation of *S. suis* serotype 2 from blood on day 1 and 8 p.i. The serum concentrations of pigMAP, ApoA1 and albumin (radial immunodiffusion) and CRP, Hp and SAA (ELISA) were determined.

Results

CRP and SAA showed fast increases in serum concentrations. CRP was increased from day 1-12 p.i. and peaked between day 1 and 8 p.i. with ten times the day 0-levels. SAA rose sharply on day 1 p.i. to peak levels of 30-40 times the day 0-levels on day 1-2, after which concentrations returned to pre-inoculation levels from day 5. Hp and pigMAP showed slightly slower responses. Hp was increased on days 1-14 p.i. and peaked at levels around ten times the day 0-levels on day 5 p.i., and pigMAP was elevated on days 1-12 p.i. and peaked at levels of 5-10 times the day 0-levels on day 5 p.i. Apo A-I showed a fast decrease to minimum levels 60% lower than day 0 on day 1-2 p.i. and was decreased from day 1-8 p.i. No clear pattern of changes in albumin levels could be identified. Clinical signs, fever and lameness, were observed in four of the five pigs from day 2 p.i., and these pigs also had arthritic lesions at autopsy. One pig showed no clinical signs at any time and no arthritic lesions, but showed an APP-response comparable to the other pigs.

Conclusion

Both acute clinical and subclinical *S. suis*-infections can be revealed before the occurrence of clinical signs by the measurement of one or more of the APPs CRP, SAA, Hp, pigMAP and Apo A-I. Different patterns of APP-response kinetics were identified, and a combination of 2-3 APPs with different responses may be used to achieve the highest sensitivity for the detection of *S. suis*-infection.

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