IMMUNOLOGY & VACCINOLOGY

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IMMUNOGENIC POTENTIAL OF A *SALMONELLA* TYPHIMURIUM LIVE VACCINE FOR PIGS AGAINST MONOPHASIC *SALMONELLA* TYPHIMURIUM DT 193

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Introduction

Monophasic *S.* Typhimurium (mSTm) strains derived from pork have an increasing zoonotic importance in humans. The *S.* Typhimurium (STm) live vaccine SALMOPORC (IDT Biologika GmbH) has proven to be successful in combating STm infections in pigs. This study aimed to investigate the immunogenicity and antibody response (IgM, IgA, IgG) after oral vaccination and infection with a virulent mSTm strain.

Material & Methods

Eight weaners were vaccinated twice orally at an interval of 3 weeks with $5x10^8$ CFU of SALMOPORC. Non-vaccinated controls were kept likewise. Oral infection was done 3 weeks after the 2nd vaccination with $5x10^9$ CFU of a virulent mSTm (DT 193) strain. Blood samples (serology) were taken before the vaccinations, before as well as 6/7 days post-challenge during necropsy. The immunogenicity was evaluated by the challenge strain content in ileal and caecal mucosa and ileocecal lymph nodes (CFU/g). Serum samples were analyzed to demonstrate *Salmonella*-specific LPS, IgM, IgA and IgG. Statistics were performed using the Wilcoxon-Mann-Whitney-Test ($p<0.05$).

Results

Clinical symptoms, pathological lesions and the challenge strain content in the intestine and lymph nodes were significantly lower in vaccinated animals than in the controls. Antibody levels of LPS, IgA and IgG increased significantly after vaccination and in response to challenge. In contrast, IgM antibody levels only increased in the controls post challenge.

Discussion & Conclusion

Due to the vaccination clinical symptoms and pathological lesions were significantly milder. Vaccination also led to a significantly reduced challenge strain burden in the intestine and the lymph nodes which is comparable to previous studies using the same vaccine in a challenge with biphasic STm. Therefore, it is concluded that this vaccine induces immunity against STm and mSTm. Furthermore, the results of antibody profiles in response to vaccination and infection provide additional evidence for humoral immune mechanisms triggered during *Salmonella* infection or vaccination.