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Detection of Erysipelas Antibodies in Vaccinated Pigs in a Field Trial and in a Challenge Test

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Introduction

The worldwide distribution of swine erysipelas makes it economically very important. Vaccination programs for control of the disease are recommended.

Materials and methods

In a field trial, the production of antibodies, induced by a combined vaccine, directed against both the porcine parvovirus and swine erysipelas containing Serotype 2 (PARVORUVAC®, MERIAL GmbH, Germany), was compared with that of the corresponding monovalent vaccine (RUSILAT®, MERIAL GmbH, Germany). Furthermore, these vaccines were used in different vaccination schemes (Table 1). The field trial was carried out on 109 gilts, located in three closed farms. A group of 12 gilts was housed separately for the challenge experiments. A challenge test was carried out four weeks after each of the revaccination, in eight vaccinated and four non-vaccinated gilts. An intradermal challenge with current isolates of serotypes 1 and 2 of *Erysipelothrix (E.) rhusiopathiae* was applied (1). Blood samples were collected before the first and second vaccination, before the revaccination and four weeks after the revaccination. The titres were measured in an ELISA (2,3,4) and the results were transformed into –log10 values for statistical calculations.

Table 1: Vaccination schedules.

Group	Basic immun. (1st)	Basic immun. (2nd)	Revacc. 4 months after 2nd vacc.	Revacc. 6 months after 2nd vacc.
1	Combined	Combined		Combined
2	Mono	Mono		Mono
3	Combined	Combined	Combined	
4	Mono	Mono	Mono	

Results

The gilts vaccinated in the field trial with the monovalent vaccines exhibited higher antibody titres against *E. rhusiopathiae*, than did the gilts vaccinated with the combined vaccine. The gilts revaccinated with the monovalent vaccines, six months after the first vaccination, exhibited significantly higher (at least $P < 0.05$) antibody titres, than did the remaining three vaccination groups (Table 2). No significant differences in the production of antibodies against swine erysipelas were observed in the other vaccination groups.

Table 2: Antibody titres in the field trial.

Group	Before 1st vacc.	Before 2nd vacc.	Before revacc.	After revacc.
1	2,28	2,59	$2,72^{b}$	$3,09^{d}$
2	2,21	2,72	$2,98^{a}$	$3,42^{c,a}$
3	2,18	2,57	$2,77^{b}$	$3,17^{b}$
4	2,22	2,63	$2,79^{b}$	$3,21^{b}$

^{a,b} $P < 0.05$; ^{c,d} $P < 0.01$

During a nine day post-challenge observation period, no typical clinical symptoms of swine erysipelas were observed in the vaccinated gilts. The body temperature of the vaccinated gilts varied from 38.0°C - 38.5°C during the observation time. The non-vaccinated gilts (controls) developed apathy, anorexia, typical skin reactions and a body temperature above 40.5°C within two days post challenge. After a treatment with penicillin, the body temperature fell below 39.0°C within 12 hours.

The vaccinated animals showed an increase of the antibody titres after each vaccination, as well as a minor rise after the challenge infection (Table 3). The antibody titres of the non-vaccinated animals stayed relatively constantly low until the infection. After the infection the titres increased distinctly (Table 3).

Table 3: Antibody titres in the challenge test.

Group	Before 1st vacc.	Before 2nd vacc.	Before revacc.	Before challenge	9 days after chall.
1	2,22	2,22	2,36	2,86	3,23
2	2,14	2,41	2,56	3,04	3,54
3	1,86	2,01	2,32	3,04	3,19
4	2,16	2,30	2,67	2,95	3,07
Non vacc.	1,91	1,84	2,01	2,14	2,71

Conclusion

In this study, all gilts treated with the combined vaccine and re-vaccinated six months after the basic immunization, showed sufficient protection against the disease. Comparing the combined vaccine and the monovalent vaccine against erysipelas, both vaccine types reached approximately the same efficacy. The vaccinated gilts were also protected against infection with serotypes 1 and 2 of *E. rhusiopathiae*.

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