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Evaluation of Duration of Immunity for *Erysipelothrix Rhusiopathiae*

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Introduction

Erysipelothrix rhusiopathiae is a gram-positive bacteria isolated from a wide variety of hosts. In pigs, the acute form of the disease causes death but the greatest economic loss is due to a mild, chronic form of the disease. Immunization has been used successfully as an aid in the prevention of the disease. However, there have been outbreaks of disease that have been attributed to vaccination failure. The vaccines that were used earlier provided short-term efficacy but failed to provide protection through the growing period. The purpose of this study was to evaluate the duration of immunity for the *E. rhusiopathiae* vaccine through 22 weeks of age.

Materials and Methods

A group of 20 pigs, 21-22 days of age were vaccinated intramuscularly with 2 mL of the bacterin. A similar booster dose was given 21 days following the initial vaccination. A second group of 9 pigs was maintained as placebo vaccinated controls. Blood samples were collected prior to vaccination, 3 weeks following the second vaccination, and just prior to challenge. The serum antibody titers against partially purified 65 kD protein were determined by ELISA. The pigs were challenged with *E. rhusiopathiae* challenge strain E 1-6 obtained from CVB-L at 22 weeks of age. The pigs were monitored daily for 7 days following challenge and the clinical signs and death recorded as specified in 9CFR 113.67. The pigs were observed for elevated rectal temperatures and clinical signs consistent with erysipelas infection.

Results and Discussion

A total of 78 % (7/9) of the control pigs died following challenge compared to 10% (2/20) of pigs in the vaccinated group. (Fig 1) The incidence of mortality in the control group was significantly higher ($p = 0.0007$) than the vaccinated group. The results indicated that the vaccine provided 87% protection against mortality. A total of 89% of the control pigs and 20% of the vaccinated pigs showed

elevated body temperature for 2 consecutive days and/or clinical signs including death. The vaccinated pigs showed a significantly lower ($p \leq 0.0048$) clinical signs including appetite, depression, labored breathing, lameness and hyperemia of body. (Table 1) The vaccinated pigs showed significantly higher serum antibody titer to partially purified 65 kD protective antigen in samples collected on study day 42 and study day 132 compared to the controls. (Table 2) These results support that the vaccine provides protection against *E. rhusiopathiae* infection through the growing period.

Figure 1: Percent Mortality

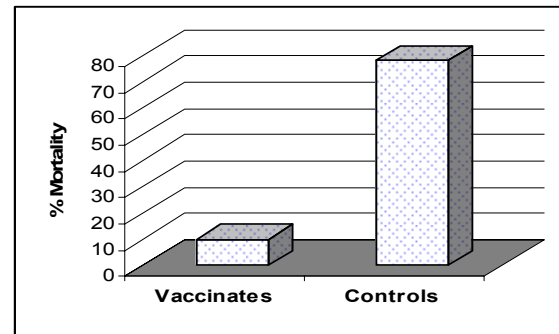


Table 1: Incidence of Clinical Signs

Clinical Signs	Vaccinates	Controls
Inappetance	15% (3/20)	78% (7/9)
Depression	15% (3/20)	89% (8/9)
Labored breathing	0% (0/20)	89% (8/9)
Lameness	15% (3/20)	89% (8/9)
Hyperemia	15% (3/20)	67% (6/9)

Table 2: GMT Serum IgG titers to 65 kD protein

	Study Day		
	Day -1	Day 42	Day 132
Vaccinates	4	49	19
Controls	3	4	6