

Bivalent and polyvalent clostridial vaccines induce a similar serological response against C and D botulinic toxoids in cattle.

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INTRODUCTION

Botulism is one of the most important clostridial diseases causing mortality in bovine herds in tropical and subtropical regions of South America.

Botulism caused by *Clostridium* (C.) *botulinum* type C or D toxins in extensive cattle breeding is associated with osteophagy.

Vaccination with C. *botulinum* type C and D toxoids is one of the main preventive measures.

OBJECTIVE

To compare the humoral response observed with two Brazilian commercial vaccines produced by MSD Animal Health (Vallée, Brazil):

- ▶ one bivalent vaccine containing only C and D botulinic toxoids (Botulina).
- ▶ another polyvalent vaccine containing bacterins and classical clostridial toxoids (symptomatic carbuncle, gaseous gangrene, malign edema, necrotic hepatitis, and enterotoxaemia), and C and D botulinic toxoids (Poli-Star).

MATERIALS AND METHODS

- ▶ Brazilian commercial herd.
- ▶ Longitudinal study with 60 multiparous cows.
- ▶ 3 groups (n=20 for each), receiving 2 injections with 42 days interval in 2 treatment groups:
 - > bivalent containing only C and D botulinic toxoids (Botulina).
 - > polyvalent containing bacterins and classical clostridia toxoids (symptomatic carbuncle, gaseous gangrene, malign edema, necrotic hepatitis, and enterotoxaemia), and C and D botulinic toxoids (Poli-Star).
 - > negative control group.
- ▶ Monitored at six different moments over approximately one year (day 0, 42, 75, 160, 250 and 342).
- ▶ Serological responses were determined by measuring the specific antibodies (Ig G) against C and D botulinic toxins through Elisa.

The use of a polyvalent clostridial vaccine containing C and D botulinic toxoids, in addition to other clostridial antigens, offers an equal or better protection than a bivalent vaccine containing C and D botulinic toxins only. Therefore, the polyvalent vaccine provides a broader protection. This is important for production systems with potential exposure to botulism and other clostridial pathogens.



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RESULTS

The antibody response against C and D botulinic toxoids demonstrated a good immune response against the vaccines.

There was no significant difference between the two vaccinated groups ($p > 0.05$).

The antibody response to C and D botulinic toxoids was significantly higher at day 75 in the vaccinated groups compared to the control group ($p < 0.05$): Fig. 1,2,3,4.

From day 160 onwards, serological levels in vaccinated animals remained higher than control animals (except for C. toxoids at day 342 for the bivalent vaccine) but were no longer significantly different.

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FIGURE 1. Humoral response to botulinum toxin type C in cattle vaccinated with bivalent vaccine C and D, when monitored for 342 days in a longitudinal study and evaluated by the Elisa test (Curci 2008).

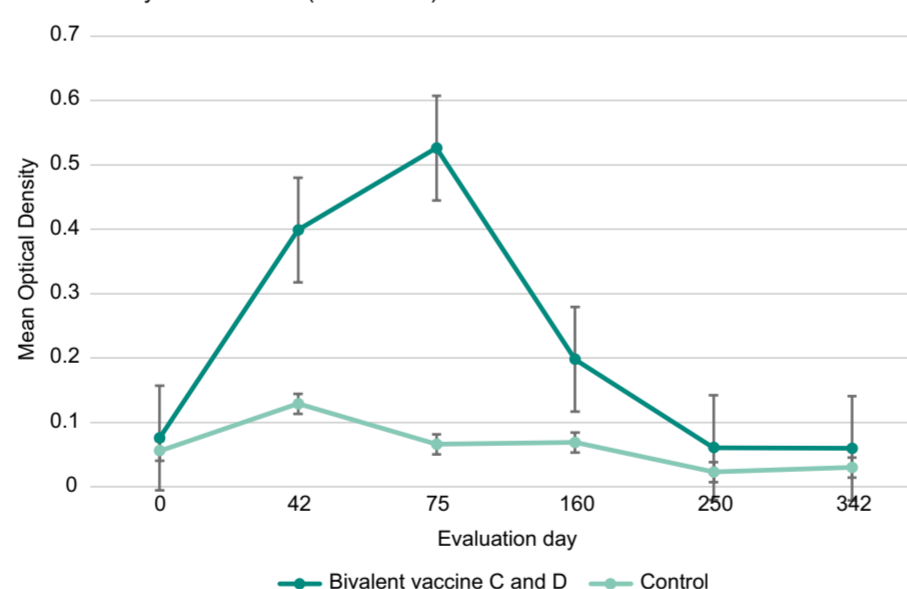


FIGURE 2. Humoral immune response to botulinum toxin type D in cattle vaccinated with bivalent vaccine C and D, when monitored for 342 days in a longitudinal study and evaluated by the Elisa test.

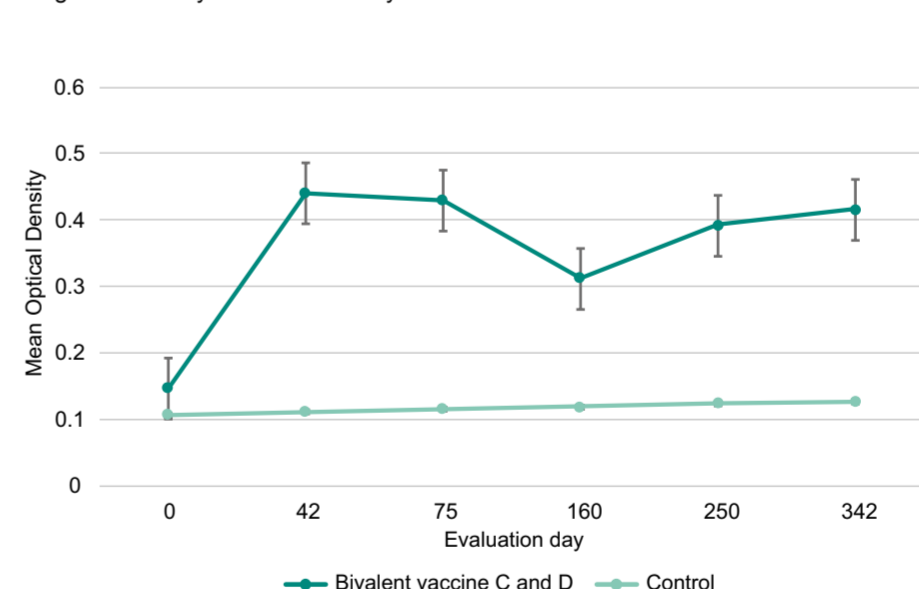


FIGURE 3. Humoral immune response to botulinum toxin type C in cattle vaccinated with polyvalent conjugate vaccine, when monitored for 342 days in a longitudinal study and evaluated by the Elisa test.

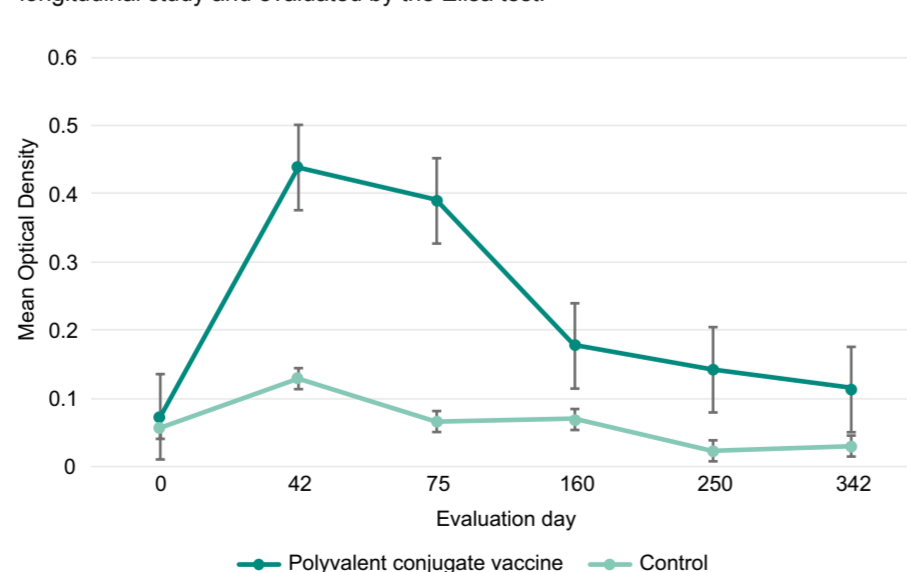


FIGURE 4. Humoral immune response to botulinum toxin type D in cattle vaccinated with polyvalent conjugate vaccine, when monitored for 342 days in a longitudinal study and evaluated by the Elisa test.

