

EFFICACY OF A COMMERCIAL *NEOSPORA* VACCINE IN REDUCING VERTICAL TRANSMISSION IN DAIRY CATTLE

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Vertical transmission is the major mode of infection by *Neospora caninum* in most dairy herds where the disease is endemic. Cows seropositive for *Neospora caninum* are considered to be at significantly greater risk of abortion (odds ratio = 5.7) than seronegative cows.

In this study, we evaluated the effectiveness of a commercial *Neospora* vaccine at reducing the rate of vertical transmission in a dairy herd. Vaccinations were administered according to manufacturer's recommendation; two doses, administered sc, 4 weeks apart during the first trimester of gestation. The study herd consisted of 250 head of registered Holsteins. As each animal was diagnosed pregnant at 40–70 days gestation, individual cows were alternately assigned to either control or vaccinated groups and blood was collected to determine *Neospora* serologic status by ELISA. Animals in the vaccinated group received their first dose of vaccine at this time. A second blood sample was obtained 30 days later from all animals and the second dose of vaccine was administered to animals in the vaccinated group. A third blood sample was obtained from vaccinated and control animals 30 days after the second sampling date. All cows were followed until gestation ended. Precolostral blood was obtained from neonatal calves to determine whether fetal anti-*Neospora* antibodies were present. At 6–8 months of age calves were re-tested to determine if serological status had changed since birth.

Based on ELISA, the overall herd prevalence of *Neospora*-positive cows was 33.2%. A total of 74 calves were born to cows identified as *Neospora*-positive during the trial period. Of these 74 calves, 32 were born to control cows and 42 were born to vaccinated cows. Of the 32 calves born to control cows, 18 (56%) were serologically *Neospora*-positive at birth while 14 (44%) were negative. Of calves born to vaccinated dams, 28 (67%) were *Neospora*-positive and 14 (33%) were negative. Overall, there was no significant effect ($p = 0.24$) of vaccination on the rate of vertical transmission of *Neospora*. Of calves available for re-testing at 6–8 months of age, there were no instances of calves positive at birth later reverting to negative status. There was one calf born serologically negative to *Neospora* to a negative, non-vaccinated dam which later seroconverted indicating the strong possibility of horizontal transmission.

This study indicates that commercially available *Neospora caninum* vaccine, when administered according to manufacturer's recommendations, does not reduce the rate of vertical transmission in dairy cattle.

Keywords: *Neospora*; Abortion; Dairy cattle; Vaccine; Vertical transmission