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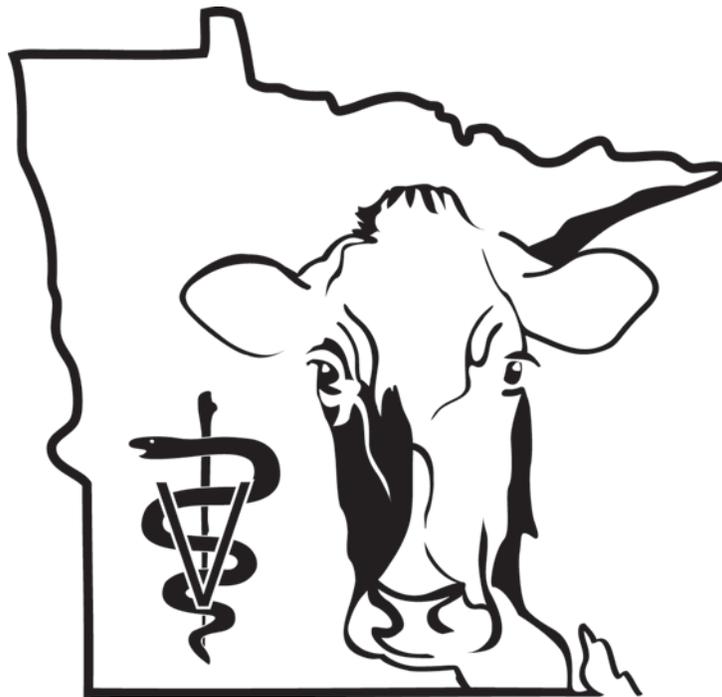


UNIVERSITY OF MINNESOTA

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College of Veterinary Medicine

VETERINARY CONTINUING EDUCATION



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## **Effect of Vaccinating Pre-Weaned Dairy Calves on Cell Mediated Immune Function**

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The common held belief is that vaccination of calves in the presence of maternal antibody inhibits the generation of endogenous active immune responses. In this study, pre-weaned dairy calves with maternally derived immunity were vaccinated with a modified-live strain of bovine herpes virus (BHV-1) to determine if calves mount cell-mediated and humoral immune responses in the presence of maternal antibodies. Calves were randomly assigned to one of four treatment groups of 14-16 animals that varied based on age at vaccination. The treatment groups were as follows: (1) vaccination at 15-21 days of age, (2) vaccination at 36-42 days, (3) vaccination at both 15-21 days and 36-42 days, and (4) unvaccinated controls. At 54-66 days of age, blood was collected from all calves. Cell-mediated immune responses were assessed using a BHV-1 specific CD25 expression assay by flow cytometry. Serum neutralizing antibodies specific for BHV-1 were also measured at 54-66 days. Statistically significant cellular immune responses were seen in calves vaccinated at 15-21 days of age, as well as in calves that were vaccinated at both 15-21 days and 36-42 days of age. However, calves across groups did not demonstrate any significant differences in serum neutralization antibodies. Based on this study, pre-weaned dairy calves immunized with a modified-live BHV-1 vaccine mounted a BHV-1 specific cell-mediated immune response in the face of maternal immunity. These results should prompt further research on this subject, and subsequent reevaluation of standard dairy industry protocols concerning the timing and frequency of vaccination. These findings trigger exciting possibilities for future improvement of the health of dairy calves.