

# Influence of Time of Day of Vaccination on Immune Response in Miniature Horses

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Studies in multiple species have shown that serum antibody concentrations were higher when antigen exposure occurs in the evening. Increasing antibody response to vaccination by changing the time of day of vaccination may translate into increased vaccine efficacy and improved horse health. In this study, six Miniature Horse geldings ( $7.0 \pm 2.6$  yr) were used to evaluate the time of day of vaccination on IgA, IgM, IgG, IgGa, IgGb, and IgG(T) concentrations in response to vaccination. Horses were randomly assigned to one of two vaccination groups: AM or PM. All horses received mixed grass hay and water ad libitum and were housed in outdoor paddocks with access to shelter. Horses in the AM and PM groups were vaccinated at 0700 and 1900 hr, respectively. All horses were vaccinated against Eastern and Western equine encephalomyelitis, equine rhinopneumonitis (EHV-1 and EHV-4), equine influenza (type A2), tetanus and West Nile virus. Blood samples were taken via jugular venipuncture at 1300 hr immediately prior to vaccination (d 0) and on d 7, 14, 21 and 28 post-vaccination. Sera samples were measured for immunoglobulin concentrations using commercial ELISA kits. Data were analyzed using PROC MIXED of SAS with d 0 as a covariate. A p-value of  $\leq 0.05$  was considered statistically significant. IgA concentrations increased in response to vaccination and tended to be higher in the PM group ( $P = 0.07$ ). There were no differences in IgG or IgM concentrations between the AM and PM groups. Further research is needed to determine optimum time for vaccination of horses.