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Persistence of Anti-Rabies Antibody Response in Horses Following Vaccination

Abstract: Rabies is a fatal zoonotic disease that affects all mammalian species, including horses. Although horses are rarely infected, vaccination is recommended to minimize the risk of transmission to humans. However, the persistence of immunity and the need for booster doses are not well defined in horses. This study aimed to evaluate the duration of immunity following rabies vaccination in horses.

A total of 126 serum samples were collected from 93 horses, vaccinated 6 to 91 months before sampling. Rabies-virus-neutralizing antibody (RVNA) levels were evaluated using the Rabies Fluorescent Focus Inhibition Test (RFFIT). A protective RVNA titer of above 0.5 IU/mL was found in 112 (88.9%) of the samples and 84 (90.3%) of the horses. Antibody titers declined over time ($\rho = -0.271$, $p = 0.002$); however, there was no significant difference in antibody titers or the prevalence of unprotected horses between the time intervals following vaccination. Purebred horses had lower antibody titers ($p = 0.024$). The response to booster vaccination was inspected in ten horses, and increased antibody titers were found in eight of them. The results of this study demonstrate the prolonged persistence of protective immunity in horses following rabies vaccination, in some cases, for up to eight years. Therefore, the current annual vaccination strategy should be re-evaluated. A rate of 9.7% of poor responders should be considered from an epidemiological perspective in order to minimize the risk of emergence of the disease.

Keywords: Rabies, Vaccination, Horses, Antibodies, Long-term Immunity

Biography: Dr. Marina Eyngor is the Head of the Rabies laboratory of Kimron Veterinary Institute (KVI) with over 30 years of experience. She specializes in the microbiology and diagnosis of infectious diseases. She has contributed extensively to veterinary diagnostics, mainly focusing on zoonotic diseases and developing optimized vaccination protocols for domestic animals. Diagnosing and preventing infectious diseases is crucial in safeguarding animal and public health.