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SEROPREVALENCE OF EQUINE HERPESVIRUSES TYPE 1 AND 9 (EHV-1 AND EHV-9) ANTIBODIES AMONG CAPTIVE AND WILDLIFE ANIMALS USING SPECIFIC PEPTIDE-BASED ELISA

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In *Equidae*, nine herpesviruses have been identified to date. Six of them belong to the subfamily *Alpha-herpesvirinae* and three to the subfamily *Gammaherpesvirinae*. Equine herpesvirus type 1 (EHV-1) and EHV-9 are associated with respiratory disorders and abortion in equids as well as neurological manifestations and death in equids and unnatural hosts such as polar bears. However, the host range for EHV-1 and the definitive reservoir for EHV-9 remain unknown. A novel sensitive and specific diagnostic tool, a specific peptide-based ELISA using two sets of peptides, 18 amino acids of EHV-1-glycoprotein E (gE) and 15 amino acids of EHV-9-gG, were applied to multiple species of captive and wild animals to determine the seroprevalence of EHV-1 and EHV-9. The EHV-1-gE peptide was used for discrimination between EHV-1 and EHV-4 as described previously. EHV-9-gG peptide has a 37 % similarity with EHV-1-gG and was used to differentiate between EHV-9 and EHV-1. To test the reactivity and specificity of the selected EHV-9-gG peptide, EHV-9 and EHV-1-positive and negative sera controls were used. The peptide produced high OD values (1.26) with an EHV-9-positive control and no reaction with EHV-1-positive (OD = 0.06) or EHV-9-negative (OD = 0.04) serum controls (Mann Whitney test, $P = 0.002$). Twelve families (*Equidae*, *Rhinocerotidae*, *Bovidae*, *Giraffidae*, *Cervidae*, *Hippopotamidae*, *Ursidae*, *Felidae*, *Canidae*, *Hyaenidae*, *Elephantidae*, *Cercopithecidae*) of animals from five orders represented by 428 serum samples collected from different zoos and wildlife were tested. Individual samples from the *Equidae*, *Rhinocerotidae* and *Bovidae*, were serologically positive for EHV-1 and EHV-9. The prevalence of EHV-1 was significantly higher in wildlife than in zoo zebras suggesting captivity may reduce overall viral exposure rates. EHV-1 infection was far more prevalent in zebras than EHV-9. Unexpectedly, EHV-9-prevalence was significantly high in rhinoceroses both in captivity and the wild, which may indicate they are an EHV-9 reservoir species. EHV-1 and EHV-9 have a broad host range among African mammals including distantly related perissodactyls, which should be considered in captive management of animals from Africa.