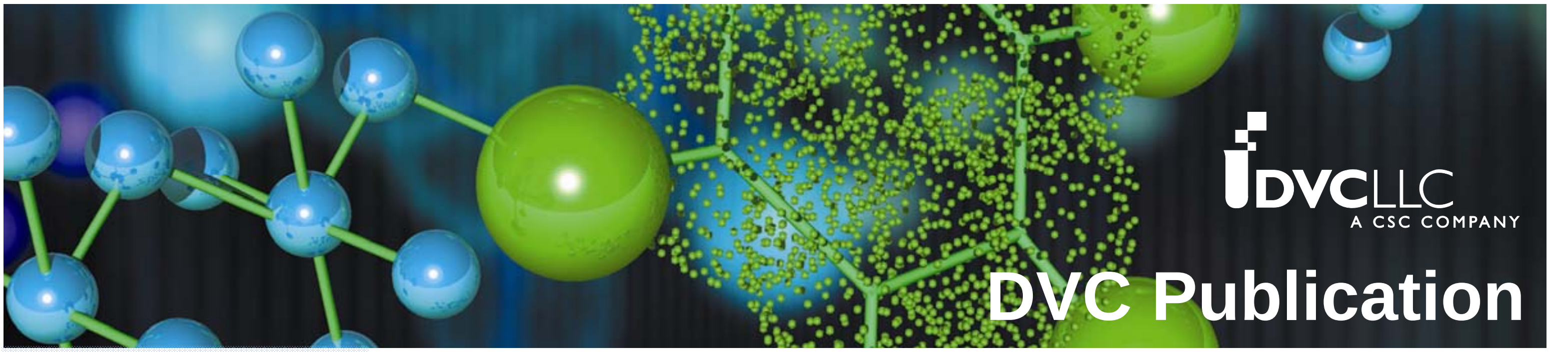

Venezuelan equine encephalitis virus vaccine candidate (V3526) safety, immunogenicity and efficacy in horses

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A new vaccine, V3256, is intended for human use in protection against Venezuelan equine encephalitis (VEE).

Abstract

A new vaccine, V3526, is a live-attenuated virus derived by site-directed mutagenesis from a virulent clone of the Venezuelan equine encephalitis virus (VEEV) IA/B Trinidad donkey (TrD) strain, intended for human use in protection against Venezuelan equine encephalitis (VEE). Two studies were conducted in horses to evaluate the safety, immunogenicity, ability to boost and protective efficacy of V3526 against challenges of TrD and VEEV IE 64A99. Horses were vaccinated subcutaneously (SC) with 10^7, 10^5, 10^3 or 10^2 plaque-forming units (pfu) of V3526. Control horses were sham immunized. In the first study, challenge viruses (TrD or 64A99) were administered SC 28 days post-vaccination (PV). No viremia and only mild fluctuation in white blood cell counts were observed PV. None of the V3526 vaccinated horses showed clinical signs of disease or pathology of VEE post-challenge (PC). In contrast, control horses challenged SC with 10^4 pfu TrD became viremic and showed classical signs of VEE beginning on Day 3 PC, including elevated body temperature, anorexia, leukopenia and malaise. Moderate to severe encephalitis was found in three of five control horses challenged with TrD. Control horses challenged with 64A99 failed to develop detectable viremia, but did exhibit a brief febrile episode at 1–3 days PC. None of the 10 immunized horses challenged with 64A99 became pyrexic. Twenty four of 25 horses immunized with V3526 in the first study developed serum neutralizing antibody to TrD and 64A99 within 14 days PV. Vaccinations with V3526, at doses as low as 10^2 pfu, were safe and efficacious in protecting horses against a virulent TrD virus challenge. The second study supported that repeat dosing resulted in an increase in serum neutralizing antibody to TrD.

Journal Link

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Updated July 10, 2008