

Verification of Commercial AGID Kits for Equine Infectious Anemia Antibody Detection

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Abstract

Background: The Agar gel immunodiffusion (AGID) test is the gold standard for the serological detection of Equine Infectious Anemia (EIA). However, the discontinuation of the previous kit requires a switch to new commercial alternatives. These alternatives must be verified to ensure that diagnostic standards are maintained for consistent and accurate disease surveillance.

Objectives: This study aimed to verify and compare the diagnostic performance of two commercial AGID test kits to determine their suitability for routine laboratory diagnosis.

Materials and Methods: The verification process evaluated the diagnostic sensitivity (DSe), diagnostic specificity (DSp), analytical specificity (ASp), and repeatability of the two kits. A total of 118 serum samples were used, consisting of 81 known positive samples (including reference materials from the National Veterinary Services Laboratories, USA) and 37 known negative samples. Analytical specificity was assessed by testing for cross-reactivity with antibodies against other pathogens, such as African Horse Sickness (AHS), Equine Influenza (EI), and Foot-and-Mouth Disease (FMD). Repeatability was determined through 20 testing replicates of samples.

Results: The results indicated that kit A achieved a DSe of 92.59%, while kit B demonstrated a higher DSe of 96.30%. Both kits exhibited a DSp of 100% and an ASp of 100%, showing no cross-reactivity with the other tested pathogens. Additionally, repeatability testing for both commercial kits showed 100% agreement across all replicates and sample concentrations.

Conclusion: The verification study confirmed that both commercial AGID test kits exceed the established performance criteria ($DSe \geq 90\%$ and $DSp = 100\%$). These findings support the implementation of these kits as reliable replacements for discontinued diagnostic tools, ensuring the continued accuracy and continuity of EIA surveillance programs.

Keywords: Equine infectious anemia (EIA), Agar gel immunodiffusion (AGID), Verification, Diagnostic sensitivity, Diagnostic specificity

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