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Precise Diagnostics for Improved Care

Bionote Study: Comparison of an in-clinic point-of-care assay to the reference method for the detection of equine serum amyloid A

Introduction

Serum amyloid A (SAA) is the major acute phase protein (APP) primarily produced by the liver during the acute phase response (inflammatory process). As a sensitive marker of inflammation, SAA concentration increases rapidly in response to inflammatory stimuli such as infection, trauma, or surgery. SAA measurements aid in the diagnosis, prognosis, and general assessment of health in horses.

Purpose

The aim of this study was to compare equine SAA results obtained using the Vcheck assay with those obtained using the Eiken VET-SAA assay, which had previously been validated for measurement of equine SAA.

Materials and Methods

A total of 170 fresh equine serum and plasma samples with varying SAA concentrations were received and used for the purpose of this study, conducted by the BIONOTE laboratory. No samples were used that exhibited heavy hemolysis, lipemia, or other serum clots. The samples were analyzed using a Vcheck Equine SAA test kit (BIONOTE) according to the manufacturer's instructions. The remaining samples were immediately frozen and shipped to the Animal Health Diagnostic Center (AHDC) at Cornell University on dry ice for the VET-SAA assay (Eiken Chemical Co., Tokyo, Japan).

Results

The test results for the correlation of equine SAA measurements between Vcheck and Eiken VET-SAA are shown in Figures 1-3. Samples outside the measurement range (10-1,000 mg/L) of the Vcheck Equine SAA test kit were excluded from the analysis. A strong correlation (slope 1.06, $R^2 = 0.98$) was found between the two test methods when analyzing 170 plasma and serum samples (Figure 1). When measuring plasma (heparin) samples (N = 141) and serum samples (N = 29) separately, a very high correlation of $R^2 = 0.98$ (Figure 2) and $R^2 = 0.97$ (Figure 3) was observed, respectively.

Conclusion

This paper presents a validation of a point-of-care (POC) SAA immunoassay in comparison to a turbidimetric immunoassay, which has already been validated for the measurement of SAA in equine samples. The performance of the Vcheck Equine SAA immunoassay was similar to that of the turbidimetric immunoassay (Eiken VET-SAA). Our study supports the conclusion that SAA results generated by the POC immunoassay can be used interchangeably with turbidimetric immunoassay results for clinical purposes.

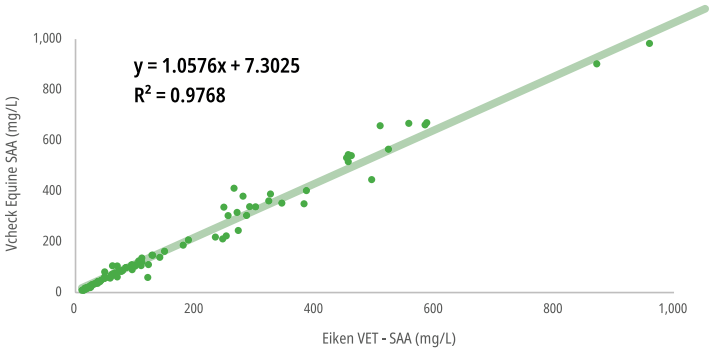

Fig. 1: Comparison between two methods for SAA concentration using 170 serum and plasma samples.

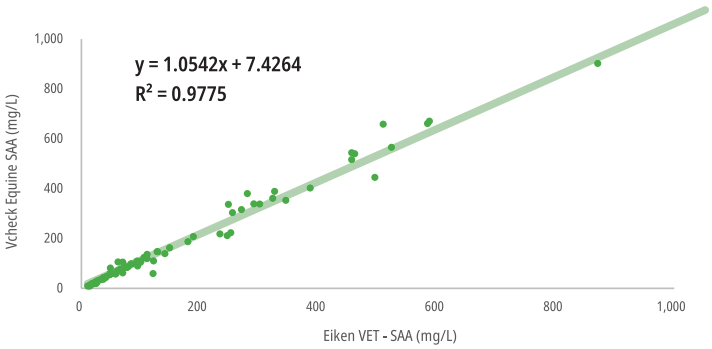

Fig. 2: Comparison between two methods for SAA concentration using 141 plasma samples.

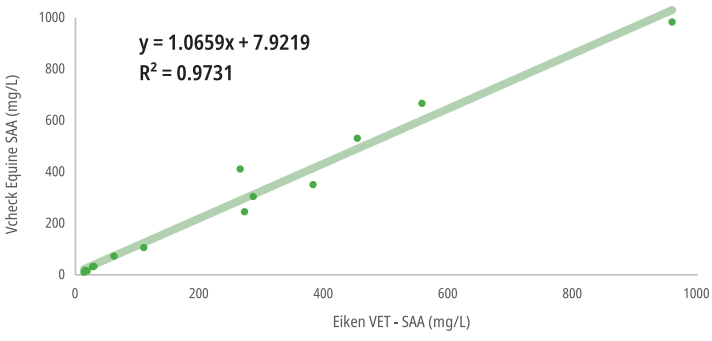

Fig. 3: Comparison between two methods for SAA concentration using 29 serum samples.

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