Comparison of an in-clinic point-of-care assay to the reference method for the detection of equine progesterone

Key Words : Vcheck, Equine, Progesterone, Comparison, IMMULITE

BIONOTE study

Introduction

Progesterone is responsible for the suppression of behavioral estrus, closure of the cervix, alterations in endometrial glandular function, and other physiological events. It is also the most important hormone for the maintenance of early pregnancy to day 45 in the mare[1),2)]. Progesterone is required for early embryo survival[3)].

Purpose

The aim of this study was to compare equine progesterone results obtained using the Vcheck assay with those obtained using the IMMULITE® 2000 Progesterone, which has previously been validated for measurement of equine progesterone.

Materials and Methods

A total of 150 fresh equine serum and plasma samples with varying progesterone 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. Samples were analyzed using a Vcheck eProgesterone test kit (BIONOTE) according to the manufacturer's instructions. The remaining samples were measured with IMMULITE® 2000 Progesterone run on an IMMULITE 2000 at the BIONOTE laboratory by laboratory technicians.

Results

The test results for the correlation of equine progesterone measurements between Vcheck and IMMULITE 2000 are shown in Figures 1-3. Samples outside the measurement range (1-30 ng/ml) of the Vcheck eProgesterone test kit were excluded from the analysis. A strong correlation (slope 0.95, **R^2 = 0.96**) was found between the two test methods when analyzing 150 plasma and serum samples (Figure 1). When measuring plasma (heparin) samples (N = 33) and serum samples (N = 117) separately, a very high correlation of R^2 = 0.9 (Figure 2) and R^2 = 0.97 (Figure 3) was observed, respectively.

Conclusion

This paper presents a validation of point-of-care (POC) progesterone immunoassay in comparison to chemiluminescent immunoassay (CLIA), which has already been validated for the measurement of progesterone in equine samples. The performance of the Vcheck eProgesterone immunoassay was similar to the CLIA (IMMULITE 2000). Our study supports the conclusion that progesterone results generated by the POC immunoassay can be used interchangeably with CLIA results for clinical purposes.

Reference
1) Equine Pregnancy and Clinical Applied Physiology. 2013, vol. 59, AAEP proceedings 2) Dr. Dave Scofield. Progesterone Therapy for Broodmares: Part 1. https://info.selectbreeders.com/blog/progesterone-therapy-for-broodmares-part-1 3) Canisso IF, Beltaire KA, Bedford-Guaus SJ. Premature luteal regression in a pregnant mare and subsequent pregnancy maintenance with the use of oral altrenogest. Equine Vet J 2013;45:97–100.

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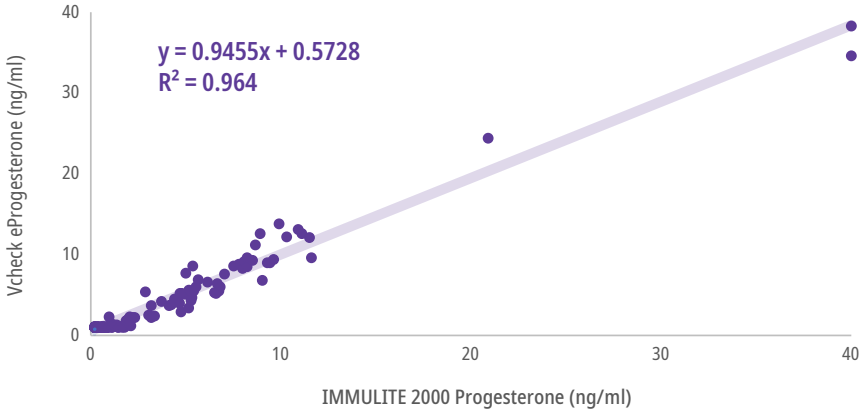

Fig. 1. Comparison between two methods for progesterone concentration using 150 serum and plasma samples

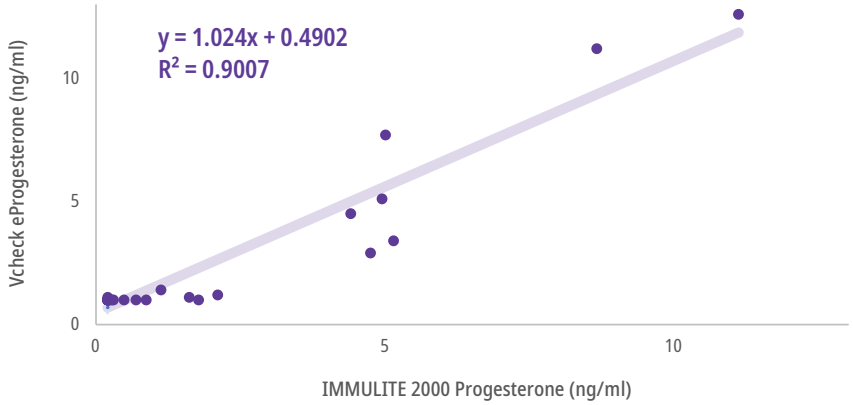

Fig. 2. Comparison between two methods for progesterone concentration using 33 plasma samples

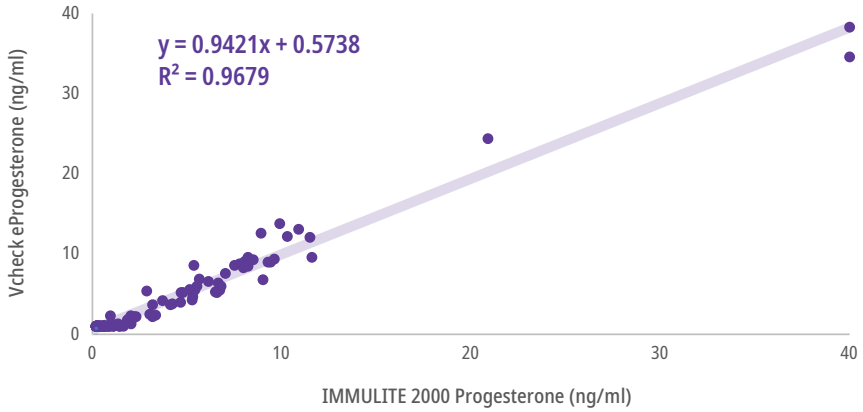

Fig. 3. Comparison between two methods for progesterone concentration using 117 serum samples