Comparison of the Vcheck and IMMULITE 2000 methods for cortisol measurement in canine serum

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Introduction

Canine hyperadrenocorticism is an endocrine disease routinely encountered in primary care veterinary practices, with an estimated prevalence of 0.28%. Hypoadrenocorticism is an endocrinopathy in dogs, with prevalence ranging from 0.06% to 0.28%. In dogs, serum cortisol concentration can be useful for the diagnosis of adrenal and pituitary disorders. Interpretation of serum cortisol concentration is crucial in the diagnosis and management of dogs with both endocrine diseases.

Purpose

The aim of this study was to compare canine cortisol results obtained by the Vcheck analyzer with those obtained by the IMMULITE 2000 immunoassay, which had previously been validated for the measurement of serum cortisol concentration in dogs.

Materials and Methods

Non-fasting blood samples were obtained from all 44 dogs. Cortisol concentration was measured with the IMMULITE 2000 (Siemens Healthcare Diagnostics, Deerfield, IL, USA) as a reference method, which uses a solid-phase competitive enzyme-amplified chemiluminescent immunoassay. They were concurrently determined using the Vcheck assay – an automated test for the quantitative determination of cortisol in canine serum – on the Vcheck analyzer. Cortisol values were compared using Pearson's Correlation analysis and simple regression analysis. Agreement between the two methods was calculated with a Bland-Altman plot.

Results

Pearson's Correlation analysis shows a very high consistency with the results obtained by the two analyzers (r=0.94, **Fig.1**). The Bland-Altman test of agreement demonstrated that the Vcheck produced results close to those obtained by the reference method (**Fig.2**). The cortisol concentrations obtained by the Vcheck and IMMULITE 2000 methods were highly comparable in this range of values, which includes the cortisol concentrations obtained after the ACTH administration.

Conclusion

The Vcheck analyzer was fast and simple to operate. The rapidity of measurement (20 minutes), the small sample required (50 µl), and the wide measurement range of the Vcheck method, together with its precision, linearity, and comparability to the reference method, make it suitable for canine serum cortisol analysis in samples obtained as part of dynamic endocrine function testing.
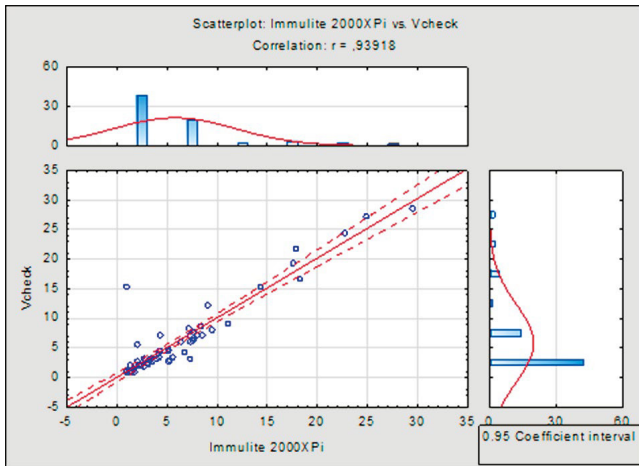
Fig. 1. Pearson's Correlation analysis (r=0.94)
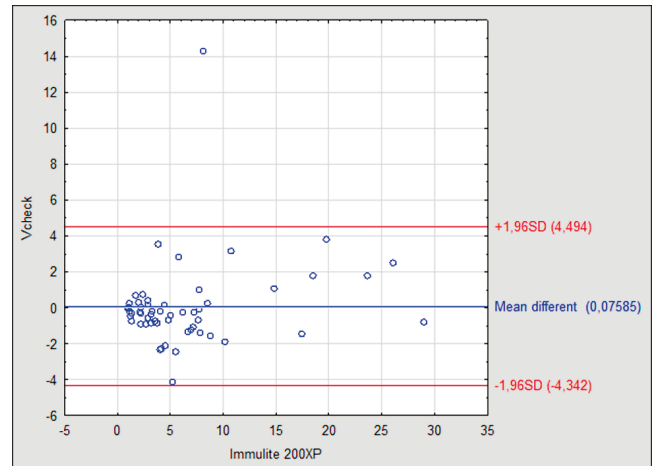
Fig. 2. Bland-Altman's plot (mean ± 1.96 SD)