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Preliminary evaluation of an ELISA kit for the detection of aldosterone concentration in dog's urine.

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Aldosterone is a corticosteroid hormone that plays a pivotal role in homeostatic regulation of water and salt reabsorption, blood volume and pressure. Aldosterone levels tent to rise in humans in hypertension, chronic and acute congestive heart failure (CHF); detrimental effects are opposed by drugs like ACE inhibitors and anti-mineralocorticoid. Aldosterone has a pulsatile secretion, so measurement in serum is less indicative than in urine, where concentration can be indexed to creatinine ratio for estimation of the 24-h aldosterone excretion.

Few studies have evaluated aldosterone in canine urine patients, and none by ELISA. Aim of the study was to evaluate a commercial ELISA kit for measuring aldosterone in dog's urine.

Urine was collected by free catch from four dogs. Two were healthy, one was affected by CHF and prescribed anti-mineralocorticoid daily, one was affected by chronic kidney disease (CKD). Urine was centrifuged (1250g/5 min) and supernatant frozen (-20°C). Aldosterone was measured by a competitive ELISA previously validated for dogs. Twenty-four hours acid hydrolysis was performed on urinary samples before assay.

The ELISA standard curve in a semi-log plot was linear between 2.5 and 3.9 ng/mL. Spike-and-recovery, linearity-of-dilution and parallelism experiments showed accuracy in measuring aldosterone in dog urine samples (Syme et al., 2007). Concentrations of urine aldosterone are reported in Table 1. The intra-assay coefficient of variation showed good reproducibility of the assay.

Urinary samples are easy to collect, and the ELISA used in this preliminary study seems promising in determining aldosterone in dog urine. Its levels can be of great diagnostic and prognostic value for dogs affected by acute and chronic CHF, in order to assess the best therapeutic strategy (Gardner et al., 2007). This preliminary analysis will be followed by further studies in patients affected by acute and chronic CHF.

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Table 1: Concentrations of urine aldosterone measured in four dogs. Values are mean ± SD of three determinations. In parenthesis the intra-assay coefficient of variation (CV%).

PATIENT	ALDOSTERONE CONCENTRATIONS (ng/mL)
Healthy 1	2.593 ± 0.890 (CV 14.9%)
Healthy 2	2.737 ± 0.39 (CV 14.3%)
CHF	3.620 ± 0.44 (CV 12.2%)
CKD	2.399 ± 0.42 (CV 17.5%)

References

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