A comparison of two different Enzyme-Linked Fluorescent Assay Instruments for canine progesterone assay in the clinical practice

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Introduction

Progesterone (P4) concentration in peripheral blood is considered the best method to detect the best fertile period, to predict the whelping day, to control luteal insufficiency, to verify luteolysis prior to parturition in the bitch (1).
Mini Vidas (Biomerieux, Marcy-L'Etoile, France) system allows to obtain rapid and reliable results for determination of P4 by the enzyme-linked fluorescent assay (ELFA) with high agreement (mean deviation 15%, correlation coefficient 0.989) if compared to a radioimmunoassay (RIA) validated in the dog (2).
Moreover, in our clinics we processed 1500 progesterone analyses yearly by MiniVidas:
90% of bitches monitored during estrus whelped 63 days (+/-1) after the estimated ovulation day, as in the literature (1)

Aim

To determine the correlation between two different Enzyme Immuno Assay analyzers for P4 measurement:
Tosoh AIA360 - fluorescent enzyme immunoassay method (FEIA) (3) and MiniVidas - ELFA method)
and to calibrate the FEIA system to the ELFA one, in order to obtain results interchangeable in everyday clinical practice

M & M

Collection
(Group A)

106 samples
(0.35-58.3 ng/ml)
from 75 bitches
stored frozen -20°C
until second
measurement

Testing

Correlation & Calibration

Pearson's correlation coefficient (r) test to correlate

Regression analysis to calibrate FEIA to the ELFA

Collection
(Group B)

103 samples
(0.3-50.0 ng/ml)
from 53 bitches

Testing

Both groups included different breeds, size and age bitches:
1) for the detection of ovulation (98/106:92.46% and 87/103:84.47%)
2) with normal pregnancy (5/106:4.7% and 11/103 bitches:10.68%)
3) pregnant with hypoluteinism (3/106:2.84% and 5/103:4.85%)

Results

Group A
High correlation between techniques (r^2=0.967), but mean value difference between results: [4.36±5.52 (mean±SD)]

Group B (after regression analysis and calibration)
High correlation (r^2=0.98) and lower mean value difference between results: [1.1±1.27 (mean±SD)]

Conclusions

Very high accordance level between the 2 different Enzyme Immuno Assay analyzers for P4 measurement after calibration.
Measurements of progesterone for the detection of ovulation as well as in pregnant bitches with normal pregnancy or suffering from hypoluteinism obtained by both systems provided meaningful results.
Correlating results on serum P4 concentration obtained by the 2 techniques indicate that they are interchangeable leading to the same clinical decision

References

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