Evaluation of three veterinary point-of-care instruments for the detection of SAA in feline serum

Introduction

The measurement of Serum Amyloid A (SAA) concentration in 16 feline patient serum samples was performed with three veterinary point-of-care instruments: TurboReader (EURIS AB, SE), SOLO (EuroLyzer Gmbh, AU) and VetReader (LifeAssays AB, SE). All serum samples were analyzed with a Konelab PRIME 30 Clinical Chemistry Analyzer (Eiken human SAA assay) as reference method. Measurements were performed at four locations (two animal hospitals, veterinary central laboratory & EURIS laboratory).

Results

Correlation with reference method:

The observed correlation (see graphs) with the reference method was: R^2=0.9023 (TurboReader), R^2=0.8514 (SOLO), and R^2=0.1811 (VetReader).
The slopes of the correlation curves were: 0.8318 (SOLO), 0.7463 (TurboReader), and 0.1998 (VetReader). The y axis intercepts of the correlation curves were: 2.7617 (TurboReader), 16.508 (SOLO), and 21.958 (VetReader).

False positive results:

Number of false positive results (see graphs) obtained for samples below the method's clinical cut-off were: 0 (TurboReader), 4 (SOLO), and 4 (VetReader). In these cases, presence of systemic inflammation was incorrectly indicated by the instrument.

Conclusions

The TurboReader correlated the best with the veterinary central laboratory. It also had no false positive results, suggesting strong diagnostic confidence in SAA measurements within the clinically healthy range. False positive results could lead to the misuse of antibiotics in cats.

Regarding slope correlation, the reference method is calibrated with a human SAA calibrator, whereas the TurboReader is calibrated with a feline SAA calibrator. Thus, the TurboReader is a species specific method. The observed slope correlation between the TurboReader and the reference method was expected due to differences in calibration material.

$y = 0.7463x - 2.7617$
$R^2 = 0.9023$

TurboReader [fSAA] / mg/l vs Clinical Chemistry Analyzer [fSAA] / mg/l

$y = 0.8318x + 16.508$
$R^2 = 0.8514$

SOLO [fSAA] / mg/l vs Clinical Chemistry Analyzer [fSAA] / mg/l

$y = 0.1998x + 21.958$
$R^2 = 0.1811$

VetReader [fSAA] / mg/l vs Clinical Chemistry Analyzer [fSAA] / mg/l