P75 - A NEW HETEROLOGUS TURBIDIMETRIC IMMUNOASSAY FOR THE MEASUREMENT OF C-REACTIVE PROTEIN IN THE DOG

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C-reactive protein (CRP) is one of the major acute phase proteins produced by the liver following many pro-inflammatory stimuli. In dogs, as well as in humans, CRP is the most sensitive biomarker to quantitatively assess the presence of an inflammatory status [1]. For years, the lack of adequate laboratory methods to detect CRP has limited its clinical use. Because human and canine CRP (cCRP) shares a similar molecular structure [2], the same assay used for human CRP detection has been equally applied for measuring cCRP concentrations. The aim of this study was to evaluate a new and cheaper heterologous immunoturbidimetric method for determining the serum concentration of CRP in dogs and to compare this method with an already validated cCRP assay. A total of 91 canine serum samples, obtained from clinically healthy and dogs with different diseases, were analysed using the standard cCRP test (Canine CRP randox) and the new heterologous method (CRP Biotecnica) in the same analytic run with the analyser BT 1500 (Biotecnica Instruments spa). Serial dilution with NaCl 0.9% were obtained from canine serum pool with a level of CRP of 60.1 mg/L to achieve a final concentration that was 1.0, 0.5, 0.25, 0.125 and 0.0625 parts of the original solution, then each point was measured five times. The descriptive statistics reported intra-assay coefficient of variation (CV), recovery rate (%) and bias (%). Accuracy was assessed by evaluation of linearity under dilution. Normal distribution of the data was tested using the Shapiro-Wilk's test. Differences between methods were studied using the Mann Whitney test and ROC curve analysis. A Bland-Altman plot was used to detect percentile bias. A value of $P<0.05$ was considered to be statistically significant. Statistical analyses were carried out using statistical software (SAS version 9.3, SAS Institute Inc., Cary, NC, USA; MedCalc® version 12.6.1.0, MedCalc Software, Ostend, Belgium). Recovery rate and CVs varied between 87.1 and 109.2% and between 3.3% and 7.6%, respectively. Bias ranged from -12.9 to 9.2%. Linearity study revealed that the assay measured proportionally in the analytic range up to 60 mg/L. There were no statistically significant differences between the two methods. ROC curve analysis of cCRP measured with the tested method resulted in an AUC of 0.994 (95% confidence interval, 0.948-1). At the cut-off value of 4.63 mg/L for cCRP, the sensitivity and specificity were 100% and 93.75%, respectively. Bland-Altman analysis revealed a mean constant bias of -0.6%. with the 95% limits of agreement ranging from -3.7% to 2.5%. In conclusion, the new turbidimetric immunoassay shows good agreement with the validated method and may represent an alternative assay for routine analysis of the cCRP with BT 1500 analyser.

[1] Eckersall PD, Bell R. Acute phase proteins: Biomarkers of infection and inflammation in veterinary medicine. Vet J, 185:23-27, 2010. [2] Jasensky AK et al. Characterization of the native C-reactive protein (cCRP) and the corresponding liver mRNA in dogs. Biochem Biophys Res, 452*:462-7, 20*14