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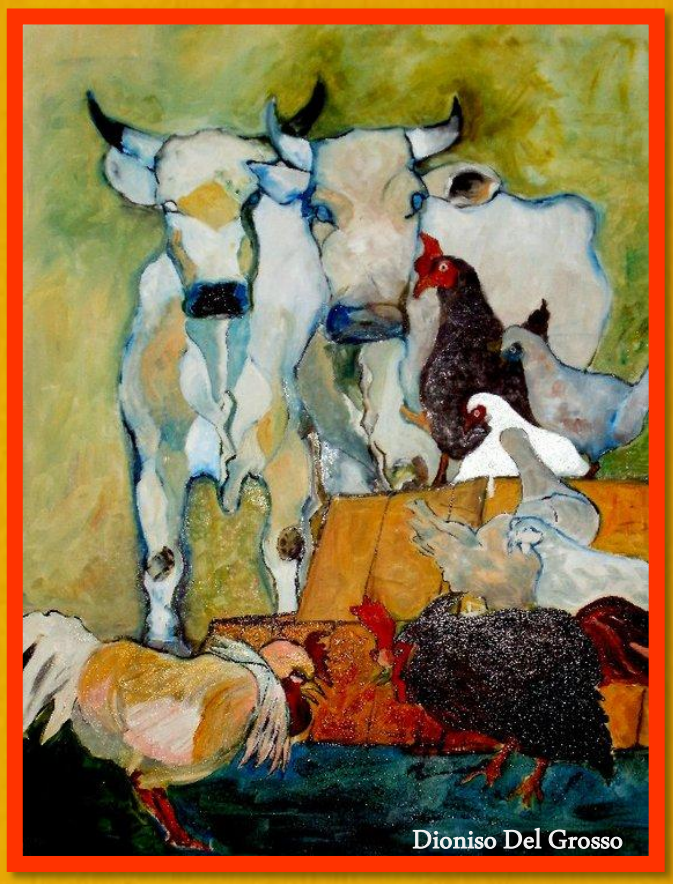

20-22 Giugno 2018

XVIII Convegno SICV

XVI Convegno SIRA

XV Convegno AIPVET

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72° CONVEGNO SISVET

EVALUATION OF MINI-CUBE ESR (ERYTHROCYTE SEDIMENTATION RATE) IN DOGS AND CATS: PRELIMINARY RESULTS

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ESR (Erythrocyte Sedimentation Rate) in veterinary medicine has been replaced by the evaluation of some specific and sensitive markers of the acute phase of inflammation (i.e. C-Reactive Protein in dogs and Serum Amyloid A in cats) [1]. The aim of the study was to evaluate the ESR using MINI-CUBE equipment (ESR-MC) in dogs and cats. Blood samples from dogs (n=120) and cats (n=60) collected in 1 mL K3-EDTA tubes used primarily for blood counts were randomly selected. Each sample was assayed using ESR-MC (within 2 hours from sampling) and the gold standard Westergreen method (ESR-W) (within 4 hours from sampling) [2,3]. The ESR-MC was carried-out with the MINI-CUBE (DIESSE, Diagnostica Senese S.p.A., Monteriggioni, SI, Italy), an automatic continuous loading instrument analyzing up to 4 samples simultaneously, directly on the K3-EDTA tubes. Results (mm/h) were available in 20 minutes. Reference Intervals (RI) were assessed using the percentile method (2.5-97.5th) [4]. Accuracy was evaluated by Correlation test, R and Cohen Concordance test, K. Intra-assay precision (same sample measured 8 times) and inter-assay precision of ESR-MC (double reading of 80 canine and 25 feline samples) were performed and the Coefficient of Variation (CV) was calculated. Finally, the analytical Sensitivity (Se), Specificity (Sp), Positive Predictive (PPV) and Negative Predictive (NPV) values were calculated. Ten canine samples (8.4%) were ruled-out because of a flag (ERR) by the MINI-CUBE instrument (4.2%) or a diphasic pattern in ESR-W (4,2%). The canine RI of ESR-MC was ranging from 0 to 10 mm/h. Accuracy of the method was good (R=0.81, K=0.77). The agreement between the two methods slightly decreased in anemic subjects (Hct <37%) (K=0.69). Precision was excellent in intra-assay (CV=0.02) and inter-assay (CV=0.32). The analytical characteristics of ESR-MC in dogs were: Se=0.91, Sp=0.89, PPV=0.85 and NPV=0.96. Five feline samples (8.3%) were ruled-out because an ERR flag was issued by the MINI-CUBE instrument. The feline RI of ESR-MC was ranging from 0 to 11 mm/h. Accuracy was good, (R=0.85, K=0.83). Precision was excellent in intra-assay (CV=0.04) and inter-assay (CV=0.49). The analytical characteristics of ESR-MC in cats were: Se=1.00; Sp=0.83; PPV=0.87; NPV=1.00. The ESR-MC results can be obtained with the same K3-EDTA tubes used for the blood count, in short time, and at reduced costs. The accuracy is good enough to be applied in clinical settings. Further studies should investigate the ESR-MC in relation to clinical and laboratory inflammatory markers. Besides, it would be interesting to investigate if in canine and feline medicine, as in humans, ESR still has a diagnostic and prognostic value during infectious, immune and neoplastic diseases.

[1] Eckersall et al, Acute phase proteins: Biomarkers of infection and inflammation in veterinary medicine, Veterinary Journal 185(1):23-7, 2010. [2] Happe et al, Validation of the Diesse Mini-Ves Erythrocyte Sedimentation Rate (ESR) Analyzer Using the Westergren ESR Method in Patients with Systemic Inflammatory Conditions, American Journal of Clinical Pathology, 118:14-17, 2002. [3] Westergren A. The technique of the red cell sedimentation reaction, American Review of Tubercolosis 14:94-101, 1926. [4] Friedrichs et al, ASVCP reference interval guidelines: determination of de novo reference intervals in veterinary species and other related topics, Veterinary Clinical Pathology 41(4):441–453, 2012.