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SERUM PROTEIN ELECTROPHORESIS IN THE CAT. REFERENCE INTERVALS USING AGAROSE OR ACETATE CELLULOSE GELS AND THEIR CLINICAL APPLICATION

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Serum protein electrophoresis (SPE) uses different gels to separate proteins. It is mainly indicated to study modifications in protidemia, albuminemia, and globulinemia. Literature suggests variability in the reference intervals (RI) in the different fraction values, using various SPE gels (1, 2). This study was aimed to calculate the RI of SPE using agarose (AGE) and acetate cellulose (ACE) techniques, to compare the two RIs obtained, and to investigate the causes of hyper-gamma-globulinemia in some samples. Five hundred and fifteen blood samples from European short or long-haired cats (>1 year old and <10 years old), from both genders, were collected; 291 samples were tested on ACE (2010-2013; MICROTECH 648 ISO, Interlab®, Rome, Italy) and 224 on AGE (2013-2014; Pretty, Interlab®, Rome, Italy). One hundred and seventy-nine runs (ACE, 105; AGE, 74) were selected based on the following criteria: total protein, albumin and globulin values in RIs; no alterations both in CBC and serum biochemical profile; no alteration at visual inspection of the SPE run. RIs (median and 90% CI of absolute and relative values) were calculated using non-parametric Robust method (Medcalc® software). The Mann-Whitney test was used for the comparison between the two RIs. Finally, the SPE on AGE in 28 runs with hyper- γ -globulinemia were studied using the clinical records. The following SPE fractions were observed in ACE and AGE: albumin, α_1 , α_2 , β_1 , β_2 , and γ globulins. RIs for ACE were (values: absolute g/dL; relative %): albumin (3.0-3.9; 43-57), globulins (2.7-4.3; 43-57), α_1 (0.1-0.4; 1-5), α_2 (0.4-1.5; 6-20), β_1 (0.3-0.9; 4-14), β_2 (0.4-0.7; 5-10) and γ (0.4-1.9; 7-27). RIs for AGE were: albumin (2.9-3.9; 42-57), globulins (2.8-4.6; 43-58), α_1 (0.04-0.4; 1-5), α_2 (0.8-1.7; 13-22), β_1 (0.2-0.7; 2-9), β_2 (0.1-0.8; 3-10), and γ (0.6-2; 9-27). Some sub-fractions were observed (# runs): ACE α_2A and α_2B (12), γ_1 and γ_2 (13); AGE α_2A and α_2B (62), γ_1 and γ_2 (38). For all fractions (except albumin and γ -globulins) statistically significant differences were observed between ACE and AGE ($P < 0.05$). Cats with hyper- γ -globulinemia ($n=28$) were

diagnosed with: Renal failure (17) staged by IRIS; Feline Infectious Peritonitis (1); Squamous cell carcinoma (3); FIV Positive (2); FeLV Positive (1); Mandibular abscess (1); Multicentric and Gastrointestinal lymphoma (2) and one suspected of *Toxoplasma* spp infection. Literature about feline RIs in SPE is inadequate, regardless the type of gel employed. In AGE runs we detected more frequently α_2 and γ -globulin sub-fractions that should be further investigated for their clinical significance. Statistically differences between ACE and AGE in European cats were observed and AGE showed a better electrophoretic resolution. The SPE is a semi-quantitative method for protein fractions differentiation, but it can provide a diagnostic orientation.

- 1) Bresciani F., Thesis Veterinary Medicine, Pisa University, pp 191, 2015.
- 2) Giordano A., Paltrinieri S., Vet Clin Path 39: 464-473, 2010.