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Scuola di Agraria e Medicina Veterinaria- Dipartimento di Scienze Mediche Veterinarie
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CANINE DIABETES MELLITUS: TREATMENT AND MONITORING

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Diabetes mellitus is one of the most common endocrine diseases in the dog. After diagnosis, it is necessary to start an insulin treatment and an appropriate dietetic management, in order to control blood glucose levels and consequently the clinical signs. The insulin requirements are affected by several factors. It is recommended to start insulin therapy with a low dose that has to be subsequently gradually increased on the basis of frequent re-evaluations. In the present review we illustrate the main therapeutic aspects and monitoring methods of canine diabetes mellitus.

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COMPARISON OF LENTE INSULIN AND NPH INSULIN THERAPY FOR THE TREATMENT OF NEWLY DIAGNOSED DIABETIC DOGS

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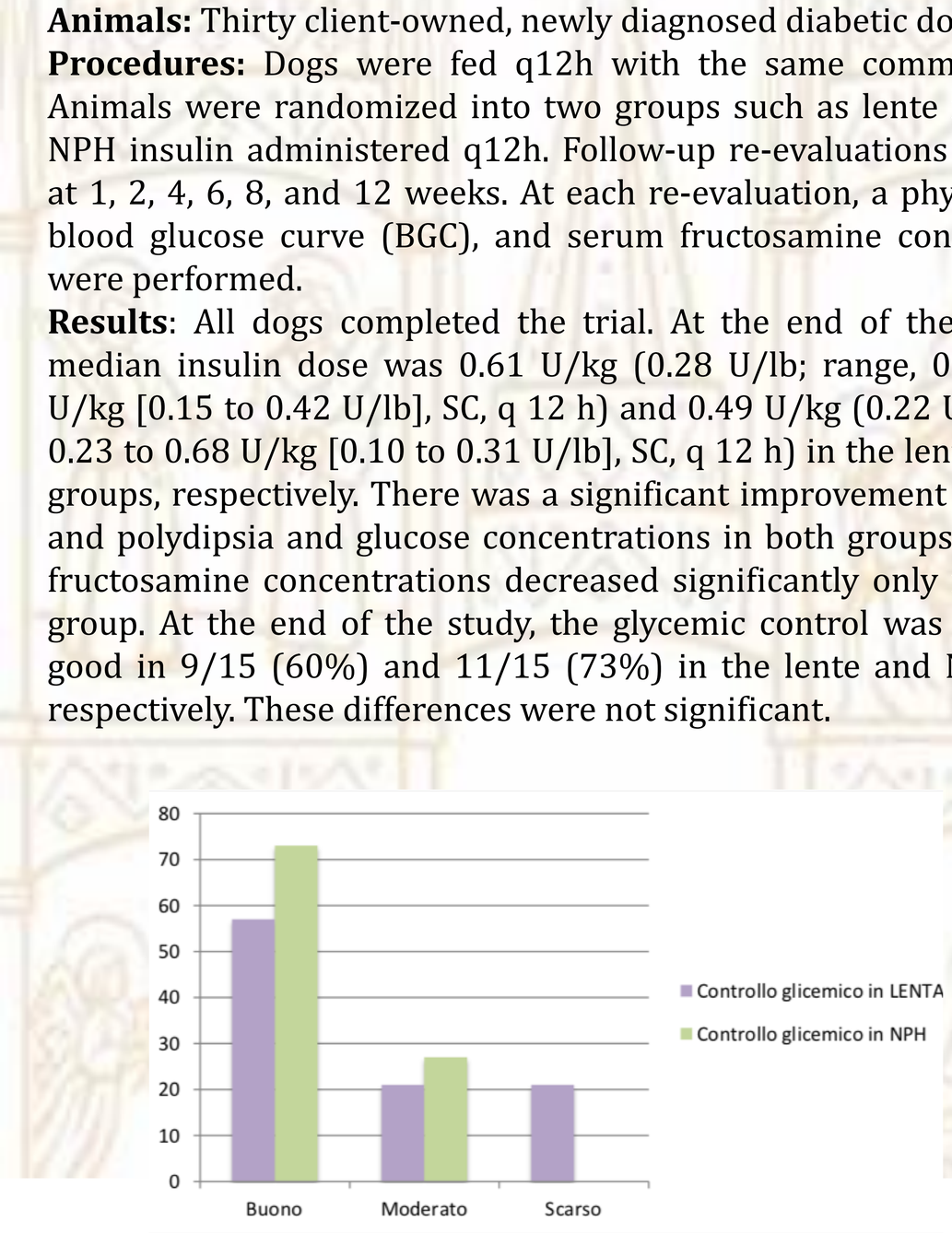
Objective: To compare the efficacy and safety of lente insulin and NPH insulin in newly diagnosed diabetic dogs.
Design: Prospective, randomized, controlled clinical study.
Animals: Thirty client-owned, newly diagnosed diabetic dogs.
Procedures: Dogs were fed q12h with the same commercial diet. Animals were randomized into two groups such as lente insulin and NPH insulin administered q12h. Follow-up re-evaluations were done at 1, 2, 4, 6, 8, and 12 weeks. At each re-evaluation, a physical exam, blood glucose curve (BGC), and serum fructosamine concentrations were performed.
Results: All dogs completed the trial. At the end of the study, the median insulin dose was 0.61 U/kg (0.28 U/lb; range, 0.34 to 0.92 U/kg [0.15 to 0.42 U/lb], SC, q 12 h) and 0.49 U/kg (0.22 U/lb; range, 0.23 to 0.68 U/kg [0.10 to 0.31 U/lb], SC, q 12 h) in the lente and NPH groups, respectively. There was a significant improvement of polyuria and polydipsia and glucose concentrations in both groups but serum fructosamine concentrations decreased significantly only in the NPH group. At the end of the study, the glycemic control was considered good in 9/15 (60%) and 11/15 (73%) in the lente and NPH group, respectively. These differences were not significant.



Conclusions and Clinical Relevance: Lente insulin and NPH insulin are effective in the treatment of dogs with DM. The success rate with NPH insulin seems somewhat higher than with lente insulin.

In fase di revisione (minor revision): Veterinary Record

VALIDATION OF HUMAN IMMUNOTURBIDIMETRIC ASSAYS FOR THE MEASUREMENT OF GLYCATED HEMOGLOBIN (HBA1C) AND SERUM FRUCTOSAMINE IN DOGS AND COMPARISON OF THE TWO VARIABLES FOR THE ASSESSMENT OF GLYCEMIC CONTROL IN DOGS WITH DIABETES MELLITUS

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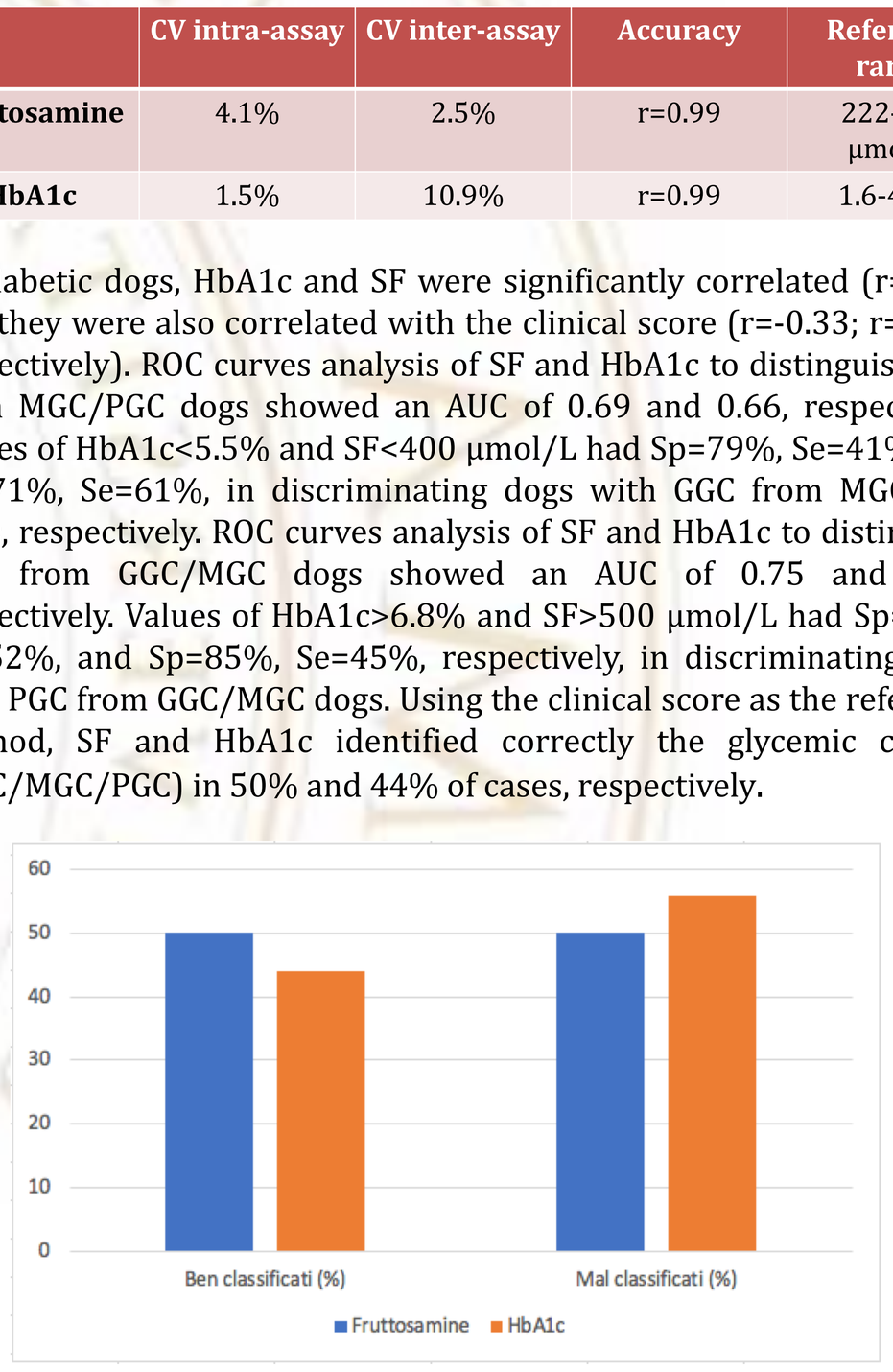
The aims of this study were the validation of human assays for serum fructosamine (SF) and glycated hemoglobin (HbA1c) in dogs and the comparison of the ability of the HbA1c and SF in reflecting the glycemic control in dogs with diabetes mellitus. SF (nitrotetrazole blue method, Fructosamine 17350H, Sentinel Diagnostics) and blood HbA1c (HbA1c, OSR6192 Beckman-Coulter) were analyzed on an automated chemistry analyzer (Beckman-Coulter AU 480). Linearity, precision and accuracy were determined; a reference interval for HbA1c and SF was established from 40 healthy dogs, using the percentile method. Performances of HbA1c and SF in assessing the glycemic control were evaluated; correlation between the two variables and a clinical score was studied in 200 re-evaluations of 47 diabetic dogs treated with insulin q12h.The clinical score used to classify diabetic dogs in good (GGC), moderate (MGC) or poor (PGC) glycemic control was set on the basis of stability of body weight, presence of poliuria/polydipsia, median glucose of the blood glucose curves (BGCs), blood glucose nadir and overall evaluation of BGC.
The average intra and inter-assay coefficient of variation, accuracy and reference range of the two assays are reported in the table below.

	CV intra-assay	CV inter-assay	Accuracy	Reference range
Fruttosamine	4.1%	2.5%	r=0.99	222-382 µmol/L
HbA1c	1.5%	10.9%	r=0.99	1.6-4.5%

In diabetic dogs, HbA1c and SF were significantly correlated (r=0.48) and they were also correlated with the clinical score (r=-0.33; r=-0.39, respectively). ROC curves analysis of SF and HbA1c to distinguish GGC from MGC/PGC dogs showed an AUC of 0.69 and 0.66, respectively. Values of HbA1c<5.5% and SF<400 µmol/L had Sp=79%, Se=41%, and Sp=71%, Se=61%, in discriminating dogs with GGC from MGC/PGC dogs, respectively. ROC curves analysis of SF and HbA1c to distinguish PGC from GGC/MGC dogs showed an AUC of 0.75 and 0.69, respectively. Values of HbA1c>6.8% and SF>500 µmol/L had Sp=79%, Se=52%, and Sp=85%, Se=45%, respectively, in discriminating dogs with PGC from GGC/MGC dogs. Using the clinical score as the reference method, SF and HbA1c identified correctly the glycemic control (GGC/MGC/PGC) in 50% and 44% of cases, respectively.



In conclusion, SF and HbA1c have similar performances in classifying the glicemic control. Neither of the two parameters should be used as the sole indicator of glycemic control, and must always be evaluated in association with history, physical findings and BGC results.

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