Blood Glucose Monitoring in Ferrets

A blood glucose (BG) concentration of <70 mg/dL is suggestive of insulinoma, which represents ~25% of all neoplasms in ferrets. Signs of hypoglycemia in ferrets include stargazing posture, hindlimb weakness, ataxia, lethargy, and ptyalism secondary to nausea. Unlike in other species, seizures are uncommon. Because hypoglycemia signs are nonspecific, measurement of BG concentrations is necessary for diagnosis.

The agreement of BG measurements were compared among 4 portable BG meters (PBGMs): 2 human and 2 separate meters of the same veterinary model (1 coded for dogs, 1 for cats). Whole blood samples were collected from 52 ferrets. Nine had a previous diagnosis of insulinoma and were undergoing treatment. One drop of blood was placed on each PBGM; plasma was obtained from the remainder of the sample and processed by laboratory analyzer. Plasma BG concentrations ranged from 41–160 mg/dL. The PBGM coded to test a canine blood sample had the greatest agreement with the laboratory analyzer. All other PBGM underestimated BG concentrations. *Supported in part by Antech Diagnostics, Gulf Coast Veterinary Specialists, and Abbott Laboratories.*

Commentary

PBGMs should be used cautiously in ferret medicine. Although PBGMs remain useful for emergency situations, glucose measurement must be confirmed on a validated machine. Treatment should be initiated in symptomatic patients if PBGM suggests hypoglycemia, while cautioning clients that other diagnostics may be recommended if confirmatory tests suggest euglycemia. To prevent misdiagnosis, asymptomatic patients should only be tested with validated analyzers. PBGMs may help monitor response to therapy if the same unit is used serially for a patient.—*Sarah Churgin, DVM*

Source

Evaluation of portable blood glucose meters for measurement of blood glucose concentration in ferrets (*Mustela putorius furo*). Petritz OA, Antinoff N, Chen S, et al. *JAVMA* 242:350-354, 2013.

Research Note: ELISA Test for Measuring Insulin

Feline insulin levels are not reliably measurable. Prior methods for measuring levels were assays developed for measuring human insulin. Feline insulin differs from human insulin by 4 amino acids; therefore, an assay that can distinguish between human and feline insulin may be useful. Insulin was measured in 36 healthy, fasted cats and in 22 diabetic cats to investigate the ability of a commercially available ELISA to measure feline insulin and evaluate its stability. The authors were able to support the use of the feline insulin ELISA. Serum insulin was relatively unstable after 24 hours at 20°C, but samples kept at 2°C–8°C were stable for 4 days. Recovery after spiking and dilution of samples was deemed acceptable, although insulin concentrations in the study cats varied. Position of the samples on the microplate significantly affected results and should be assessed in future ELISA validation studies.

Source

Validation of an enzyme-linked immunosorbent assay for measurement of feline serum insulin. Strage EM, Holst BS, Nilsson G, et al. *VET CLIN PATHOL* 41:518-528, 2012.

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