

IDEXX Catalyst Dx® Chemistry Analyzer



Fructosamine test performance and reliability

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Introduction

Fructosamines are stable complexes of serum carbohydrates and proteins that are produced by an irreversible, nonenzymatic glycosylation of proteins, and they are also related to circulating glucose concentrations. A fructosamine level assesses the average blood glucose concentration over the previous 2–3 weeks in canines and felines. The Catalyst® Fructosamine Test provides veterinary practices with an in-house option for measuring fructosamine concentration. The fructosamine test, in addition to blood glucose curves, is an effective component of diabetes diagnosis and also enables real-time monitoring for the practice, clients and patients.

Method comparison

Materials and methods: Canine and feline serum samples were collected and analyzed for fructosamine concentrations using the following clinical chemistry analyzers: Olympus AU400 Chemistry Analyzer (using Catachem reagents) and Catalyst Dx® Chemistry Analyzer. The Olympus AU400 Chemistry Analyzer (Catachem reagents) is the reference analyzer used by IDEXX Reference Laboratories in North America. All assays were performed according to the manufacturer's specifications. Data was plotted to determine regression statistics.

Results: Least squares linear regression and calculation of Pearson's coefficient of regression, r^2 , were used to compare the overall agreement of fructosamine concentrations between the two methods. Figures 1 and 2 are correlation graphs for fructosamine results using the Catalyst Dx versus the Olympus AU400 showing correlation coefficient (r^2), slope, intercept, and number of samples (n).

The results for the canine and feline samples are summarized in figures 1 and 2. The regression analysis shows that the fructosamine results with Catalyst Dx analyzer correlate well to the Olympus AU400 analyzer.

Precision

Materials and methods: Precision was assessed according to Clinical and Laboratory Standards Institute (CLSI) EP5-A method guidelines. Two fluids at different concentration levels, Roche Precipath and Bioreclamation Serum, were assayed on the Catalyst Dx® Chemistry Analyzer. There were 2 replicates run on 3 Catalyst Dx instruments in the morning and afternoon for 5 days, for a total of 20 replicates of each fluid per instrument. Total precision was calculated per CLSI EP5-A method guidelines.

Results: CLSI EP5-A method was used to compare the total percent coefficient of variation for each of 3 analyzers. Table 1 is the summary of the results, including mean concentration and percent coefficient of variation (%CV).

Conclusion

The Catalyst Fructosamine Test produces accurate results when used to quantify fructosamine concentrations in canine and feline samples. The test demonstrates excellent correlation with the Olympus AU400 analyzer and great total precision compared to standard fructosamine testing.

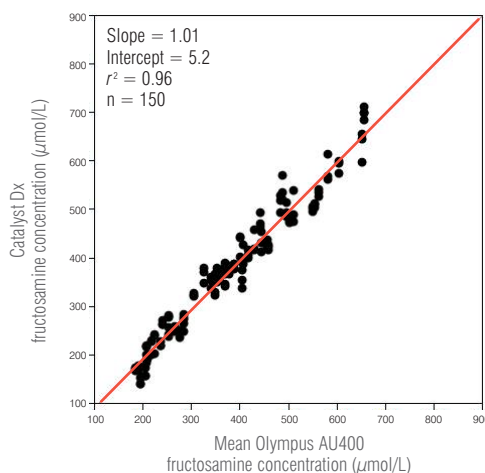


Figure 1. Canine serum samples—Catalyst Dx vs. Olympus AU400
Red line = regression line

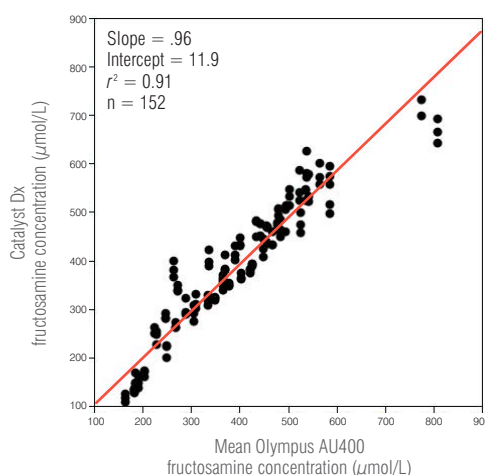


Figure 2. Feline serum samples—Catalyst Dx vs. Olympus AU400
Red line = regression Line

Catalyst Dx (instrument ID)	Mean concentration ($\mu\text{mol/L}$)	%CV
1	202	3.8
2	199	3.1
3	199	3.3
1	425	3.6
2	424	2.9
3	428	3.0

Table 1.