

COMPARISON OF SERUM DIGOXIN CONCENTRATIONS FROM BLOOD COLLECTED IN VACUTAINER® TUBES WITH OR WITHOUT GEL.



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Introduction

Therapeutic monitoring of serum digoxin levels to avoid digoxin intoxication is performed at least 3 to 5 days after beginning therapy. Some labs discourage the use of blood collection tubes containing gel because of potential absorption of digoxin by the gel resulting in an underestimation of the serum digoxin concentration.

Objectives

The aim of this study was to compare serum digoxin concentrations in canine blood collected in serum tubes with and without gel.

Materials and methods

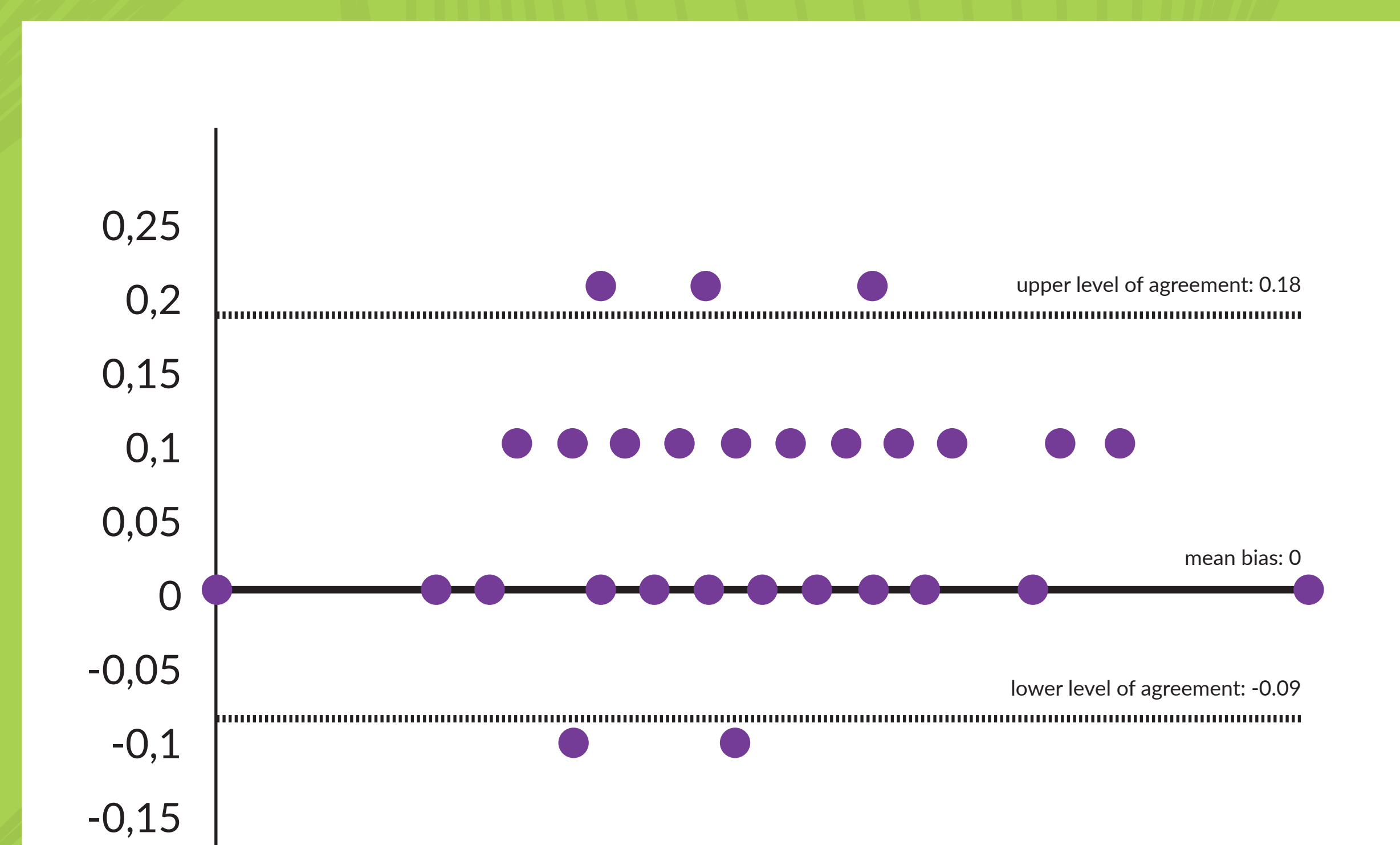
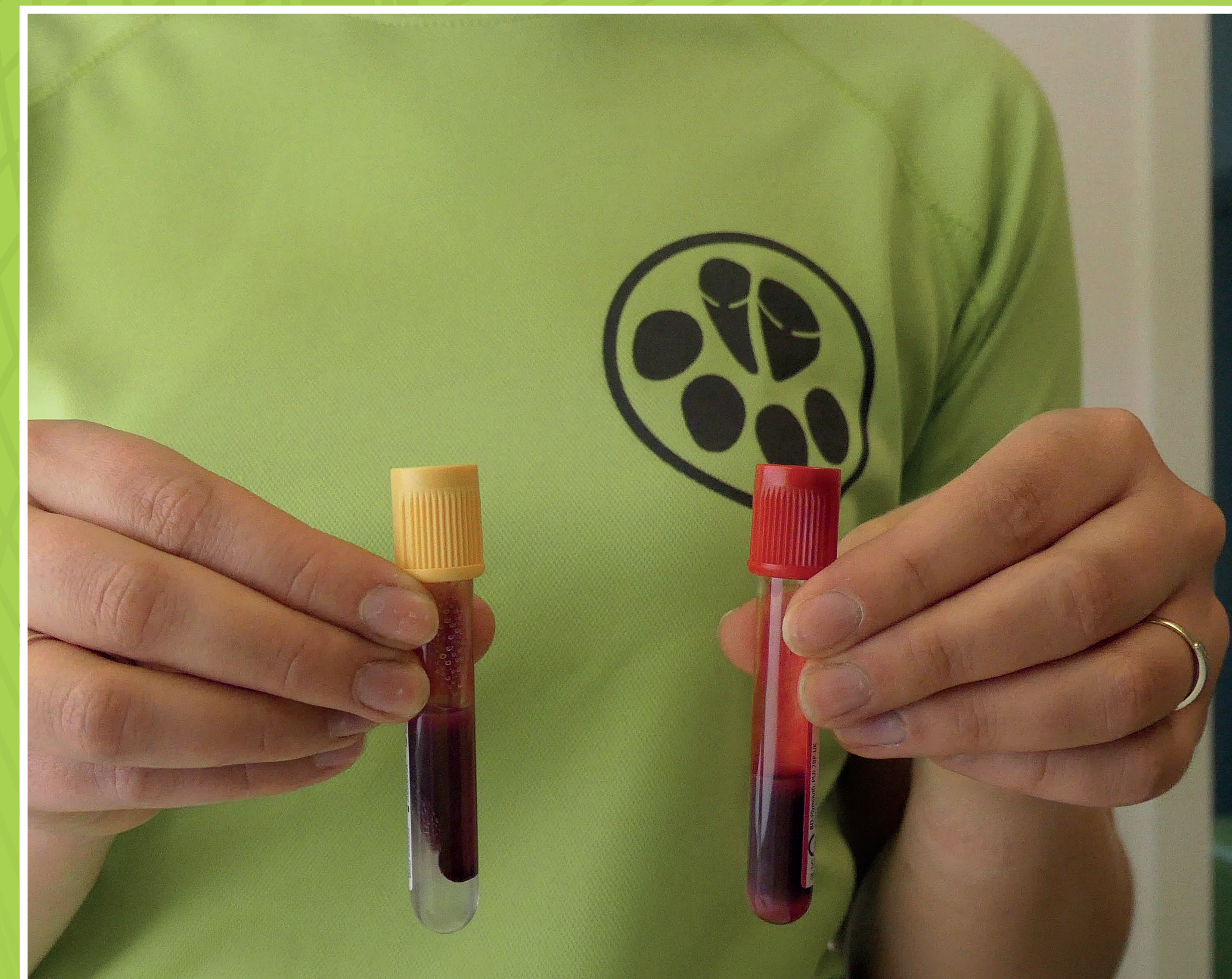
Blood samples were taken with a syringe and needle from the jugular vein of 48 dogs treated with digoxin (Lanoxin®). For each dog, half of the blood sample was put in a tube containing no gel (NGC) (Vacutainer® Z) while the other half of the sample was put in a gel containing (GC) tube (BD Vacutainer® STT II Advance). NGC tubes were sent to the referral lab (Synlab, Belgium) for immediate analysis. GC tubes were kept uncentrifuged and refrigerated for 5 days before analysis was performed. All analyses were carried out by the same lab using the ARCHITECT ci System (Abbott Diagnostics, US).

Results

Median digoxin concentration (quartile 1-3) was 0.90 µg/L (0.70-1.10) for the NGC tubes and 1 µg/L (0.80-1.10) for the GC tubes. Agreement between the two methods was shown by a mean bias of 0 and a narrow range of agreement (lower level of agreement: -0.09; upper level of agreement: 0.18). Mean bias (%) was 5.1% and did not exceed the method quality specifications for total allowable error (14%). Bland-Altman plot of data did not show significant differences in data sets.

Conclusion

Serum digoxin concentrations do not decrease when collected in tubes containing gel and kept refrigerated for 5 days before analysis. Blood collection serum tubes containing gel can be used for therapeutic monitoring of serum digoxin levels in dogs.



Bland-Altman plot represents scatter diagram of the differences between serum digoxin concentrations from blood collected in tubes with or without gel (Y-axis) in relation to their mean values (X-axis)

References:

Comparison of digoxin concentration in plastic serum tubes with clot activator and heparinized plasma tubes. Lora Dukić, Ana-Maria Šimundić, Davorin Malogorski. *Biochemia Medica* 2014;24(1):146-50.
Statistical methods for assessing agreement between two methods of clinical measurement. Bland JM, Altman DG. *Lancet*. 1986 Feb 8;1(8476):307-10.