

# Case Study 03: Comparison of two rapid point-of-care readers for blood concentration of total haemoglobin for veterinary use.



## Background

Measuring total haemoglobin (THb) in fresh whole blood samples is undoubtedly an accurate way of determining the oxygen carrying capacity of an anaemic animal. However, THb is seldom ever measured as a standalone parameter because most central laboratories offer THb measurement as one test in a haematology panel or primary practices simply opt to measure Packed Cell Volume (PCV). There are, however, a number of haemoglobinometers on the market but they are seldom seen in veterinary clinics. This case study evaluates two standalone point-of-care (POC) tests for THb; the HemoCue Hb201 and the AniPOC Ani Hb/Hct POC device. They were compared for performance against each other and a laboratory haematology analyser.

## Aim of the Study

To determine the degree of correlation of the THb results between two POC haemoglobinometers.

## Study Design

EDTA venous blood samples (n=38) from canine and feline donors were analysed using the HemoCue Hb201 and the Ani Hct/Hb POC haemoglobinometers as instructed by the manufacturer's instructions. A limited number of feline test sample results were also compared against a laboratory haematology analyser.

## Data Analysis

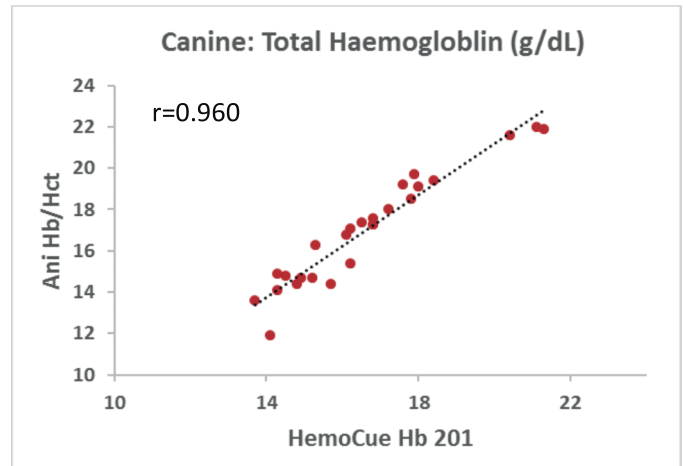
The results observed in this study were analysed using the regression best-fit plot (Pearson Correlation Coefficient, r), the Bland-Altman Plot and the Two Sample t-test, to examine the correlation between the POC tests.

## Conclusion

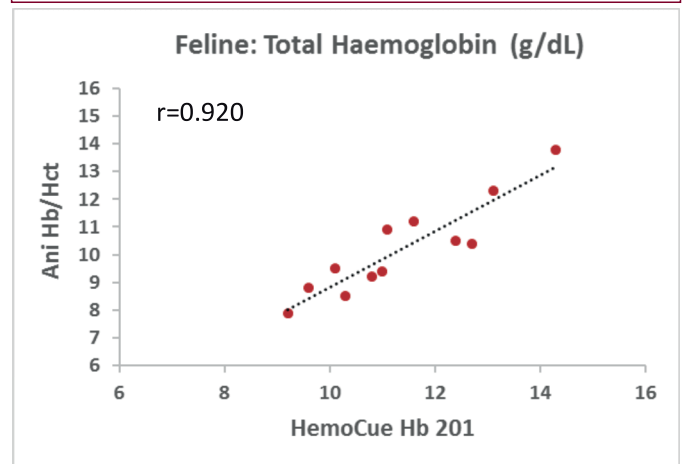
The degree of correlation between the POC tests was high (canine r=0.96, feline r=0.92). The two sample t-test for n=38 samples gave a t-value of 0.115 and p<0.05 of 0.454 indicating there to be no significant difference between the results generated by the two POC test methods, despite the fact one measures azide-methaemoglobin (HemoCue) in lysed blood and the other haemoglobin (AniPOC) in an intact blood. Both haemoglobinometers were shown to perform well against a validated haematology analysers, however, in this study the Ani Hb/Hct POC device was found to require a smaller volume of blood sample ( $\leq 2\mu\text{L}$ ), generate results much quicker (10 secs) and was easier to handle than the HemoCue Hb201. It also converted the THb result to haematocrit.

A total of 38 blood samples were analysed at a laboratory in a veterinary college in UK; Canine n=26 and Feline n=12.

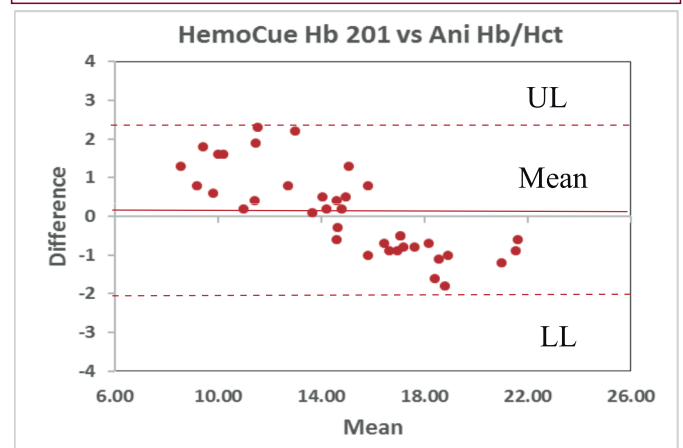
**Figure 1 : Comparison of Ani Hb/Hct POC device with HemoCue Hb201 using canine venous blood as test sample**



**Figure 2 : Comparison of Ani Hb/Hct POC device with HemoCue Hb201 using feline venous blood as test sample**



**Figure 3 : Bland-Altman Plot comparing measurement of THb using two different haemoglobinometers**



Mean	Upper Limit (UL) +1.96 SD	Lower Limit (LL) -1.96 SD
0.09	2.25	-2.06