Oral presentations

Does the colour intensity of a blood spot image obtained by smartphone accurately correlate with canine packed cell volume (PCV)

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OBJECTIVES

To evaluate the utility of smartphone images in extrapolating a patient's PCV.

METHODS

Samples were obtained using canine EDTA blood surplus after clinical testing. A single drop was placed on filter

paper, using a standard plastic pipette, and left for 30 seconds. The paper was then placed in a box with a standardized light source, and photographed with an iPhone 6S. Four images were taken. Each sample also had concurrent manual PCV measurement performed according to WHO guidelines. Colour intensity was measured using Image J in the largest homogenous area of the drop, the mean value from the four images was recorded. A scatter plot was generated using the obtained data, plotting the actual PCV against the average colour intensity. An additional ten samples were then evaluated with their colour intensity value inserted into the equation of the line generated, using the line of best fit.

RESULTS

Sixty samples were used to generate the plot. This yielded a R^2 value of 0.9037. For the 10 samples, the mean difference between the predicted and actual PCV was -3.6%. When these 10 samples were added to the data set the R^2 remained at 0.9037.

STATEMENT

This technique showed an excellent correlation with the patient's PCV. If this technique can be further automated to be performed all within the smartphone, this would be of great use, particularly in low resource settings.

Whole blood manganese concentrations in anaemic dogs with inflammatory bowel disease or confirmed iron-deficiency anaemia

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OBJECTIVES

Manganese is an essential trace element, however excess manganese leads to neurotoxicity in many species.

Dietary Mn is efficiently adsorbed through the gastrointestinal tract via divalent metal transporter 1 (DMT1) which is also responsible for iron transport. DMT1 is upregulated in iron deficiency and iron-deficiency anaemia has been associated with increased manganese concentrations in humans with reports of resultant neurotoxicity. The goal of this study was to evaluate if manganese concentrations in anaemic dogs with inflammatory bowel disease or confirmed iron-deficiency, were elevated compared to non-anaemic ill or healthy controls.

METHODS

Manganese concentrations were determined by graphite furnace atomic absorption spectrometry in whole blood anticoagulated with ethylenediaminetetraacetic acid, from 36 dogs: 11 anaemic with inflammatory bowel disease, 4 anaemic with iron-deficiency, 9 non-anaemic ill controls, and 12 healthy controls. Mann-Whitney U test and Kruskal-Wallis test with post-test Dunn's multiple comparisons tests were performed, with $P < 0.05$ considered significant.

RESULTS

Manganese levels were significantly different between the four groups ($P = 0.0005$) and overall higher in non-anaemic than anaemic dogs ($P = 0.0078$). Manganese concentrations were also higher in healthy compared to