Comparative interpretation of lactate measurement by point of care spectrophotometric and ELISA methods in transition cows

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Abstract

Early recognition of altered lactate levels is considered a useful prognostic indicator in disease detection for both human beings and animals. It is reasonable therefore to hypothesize that a portable, point of care (POC) spectrophotometric device for analysis of lactate levels, may have an application for field veterinarians across a range of conditions and diagnostic procedures. In this study, a total of 72 cattle in the transition period underwent POC spectrophotometric lactate measurement with a portable device (The Vet Photometer) in the field, with a small portion of blood used for comparative ELISA evaluation. Lactate measurements were compared using a of Passing-Bablok regression analysis and Bland-Altman plots. The Vet Photometer lactate measurement results were in agreement with those generated by the ELISA method. Values for the agreement were derived, in a 95% CI between -1.3 and 0.99, and a positive correlation (r=0.71) between the two measurements. The equation y= 0.68x + 0.60 was achieved using a Passing-Bablok regression analysis. There were no statistical differences in mean values between the measurement methods. In conclusion, a novel veterinary POC spectrophotometric device “Vet Photometer” is an accurate device for evaluation of lactate levels in healthy transition cows.

Key words: accuracy, bovine, portable lactate meter, transition period