EVALUATION OF A HAND-HELD DEVICE FOR MEASUREMENT OF WHOLE BLOOD LACTATE CONCENTRATION IN CATTLE

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Blood lactate concentration is often used to assess disease severity in human, equine and canine patients. Lactatemia has been shown to be a good prognostic indicator for gastro-intestinal disorders in bovine, equine and canine species treated in a hospital setting. The use of a hand-held device to measure whole blood lactate concentration (Lactate Pro™, Arkray KDK Corporation, Kyoto, Japan) has been validated in canine and equine patients. The objective of the study was to validate the use of the Lactate Pro™ in cattle.

Cattle presented to the veterinary teaching hospital of the Université de Montréal with a condition with systemic involvement (gastro-intestinal disorders, downer cows, respiratory diseases…) were included in the study. Heparinized blood samples were collected from the jugular vein before any treatment was administered and analysed within 15 minutes. Analysed was done with the StatProfile® Critical Care Xpress (Nova Biomedical Corporation, Waltham, MA, USA) and the Lactate Pro™. Blood samples were analysed in duplicate. The Bland-Altman test was used to assess accuracy of the StatProfile® and the Lactate Pro™ and also to compare the StatProfile® and the Lactate Pro™ lactate values.

All cattle were female (22 Holstein, 1 Jersey) and their age range from 48 hours to 10 years. Whole blood lactate concentration ranged from 0.8 to 12.6 mmol/L for the Lactate Pro™ and from 0.6 to 15.9 mmol/L for the StatProfile®. Twenty-three samples were analysed in duplicate. For the Lactate Pro™ there was no systematic bias between the 2 lactate measurements. More heterogeneity between the duplicate values was noted for higher lactate values. An error of up to 15% between successive measurements is expected 95% of the time. For the StatProfile® there was a systematic bias between the 2 lactate measurements. For higher lactate values, the second measurement was lower and more heterogeneity between the duplicate values was noted. An error of up to 9% between successive measurements is expected 95% of the time.

At higher lactate values, the Lactate Pro™ provided lower values than the StatProfile® and there was more variation between the 2 measurements thus leading to lesser repeatability.

The conclusion of this study is that the portative lactate-meter can be used in cattle.