1. Utility of the IDEXX ProCyte Dx Analyser for the Measurement of Total Cell Counts in Bronchoalveolar Lavage Fluid From Dogs With Lower Airway Disease

H. Machiels[1]; A. Fastres[1]; A. Lyssens[1]; T. Bienes[2]; K. Phan[3]; E. Roels[1]; F. Billen[1]; C. Clercx[1]

Author(s): H. Machiels1; A. Fastres1; A. Lyssens1; T. Bienes2; K. Phan3; E. Roels1; F. Billen1; C. Clercx1
Address (URL):

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H. Machiels[1]; A. Fastres[1]; A. Lyssens[1]; T. Bienes[2]; K. Phan[3]; E. Roels[1]; F. Billen[1]; C. Clercx[1]
[1]Internal Medicine, Université de Liège, Liège, Belgium; [2]Internal Medicine, Clinique Veterinaire Occitanie, Toulouse, France; [3]Université de Liège, Liège, Belgium

Bronchoalveolar lavage fluid (BALF) analysis is routinely used in veterinary respiratory medicine. Total and differential cell counts (TCC and DCC, respectively) in BALF are carried out manually, but this is time-consuming and requires training and expertise. In a preliminary study, we investigated the utility of the IDEXX ProCyte Dx analyser for BALF TCC and DCC measurement in healthy dogs, demonstrating its reliability for TCC assessment, but not for DCC. Prior to measuring the TCC, we pre-treated the BALF samples with either a mucolytic agent or with filtration, to prevent the potential for machine dysfunction caused by interference.

The aim of the present study was to test the performance of the IDEXX ProCyte Dx analyser in evaluating TCC in BALF samples collected from dogs with lower airway diseases.

BALF samples were obtained under endoscopic guidance following a standard procedure, from a cohort of 15 dogs (median age 6.5 years, range 0.7–12.0) undergoing investigation for lower airway disease. The samples were included in the study if the quantity of BALF remaining after the analyses necessary for diagnosis was adequate. Definitive diagnoses included chronic bronchitis (6/15), infectious bronchopneumonia (4/15), eosinophilic bronchopneumopathy (2/15), neoplasia (1/15), foreign body (1/15) and thromboembolism (1/15). Manual TCC was calculated using a Thoma haemocytometer counting chamber from naïve BALF, BALF pre-treated with dithiothreitol 0.15% (DTT) solution (a mucolytic agent) and BALF filtered through a 70 µm Cell Strainer. Automated TCC was calculated using the IDEXX ProCyte Dx analyser on DTT pre-treated and filtered BALF samples. TCC results were compared between the different methods using the Friedman non-parametric statistical test, considering dog as a random factor (paired samples), and the Spearman correlation test. Statistical significance was set at a p-value <0.05.

Automated TCC results obtained with the IDEXX ProCyte Dx analyser on BALF either pre-treated with DTT (median 675 cells/µL, range 150/µL–18960/µL) or filtered (median 1200 cells/µL, range 65–29375/µL), did not significantly differ from manual TCC results on naïve BALF (median 1100 cells/µL, range 140–52700/µL), BALF pre-treated with DTT (median 1420 cells/µL, range 150–50300/µL) or filtered BALF (median 1060 cells/µL, range 130–47400/µL) (P=0.19). The correlation between manual TCC obtained from naïve BALF and all other TCC measurement were high, with correlation coefficients ranging from 0.7 to 0.8 (p<0.005).

In conclusion, the results of the present study indicate that automated TCC measurements on filtered or pre-treated BALF samples using the IDEXX ProCyte Dx analyser is reliable, providing a time-saving alternative in clinical settings.

DISCLOSURES

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