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**Evaluation of the LaserCyte®: an in-house haematology analyzer for dogs  
and cats**

Inaugural-Dissertation

zur Erlangung der Doktorwürde der  
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vorgelegt von

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## Abstract:

In the present study, the LaserCyte®<sup>1</sup> instrument, an automated flow cytometer for use in veterinary practice, was evaluated for dogs and cats. Precision (coefficient of variation, CV) for red blood cell (RBC) parameters was  $\leq 3.9\%$ , for reticulocytes between 14.9% and 102%, for white blood cells (WBC) between 3% and 9.5%, for neutrophils between 3.9% and 6.5%, for lymphocytes between 7% and 17.9%, for monocytes between 4.9% and 13.1%, for eosinophils between 10.4% and 32.1%, for basophils between 7.8% and 32%, for platelets between 3.1% and 13.2%, and for platelet indices between 0% and 28.2%. The range of linearity extended the reference ranges. The agreement with reference methods (coefficient of correlation,  $r$ ) were  $\geq 0.96$  (RBC),  $\geq 0.94$  (haematocrit),  $\geq 0.96$  (haemoglobin),  $\geq 0.95$  (mean corpuscular volume),  $\geq 0.94$  (WBC),  $\geq 0.93$  (neutrophils),  $\geq 0.77$  (lymphocytes),  $\geq 0.77$  (monocytes),  $\geq 0.29$  (eosinophils),  $\geq 0.03$  (basophils),  $\geq 0.13$  (reticulocytes), and  $\geq 0.86$  (platelets). The LaserCyte® allowed the correct assessment of RBC and WBC parameters with respect to clinical relevance in the majority of samples. Lymphocytopenia was detected in only 51 out of 89 cases and monocytopenia in 1 out of 11 cases. The reticulocyte counts were correctly estimated in 85 out of 149 cases. It was concluded that the LaserCyte® allowed reliable determination of the RBC parameters, WBCs, neutrophils in both species and platelets in dogs. Based on its capability to reliably determine feline platelets and of the parameters mentioned above, this instrument is considered a useful analyzer for the veterinary practice. Qualitative microscopic assessment of blood smears is still necessary for detecting abnormal cell morphologies, cell precursors and blood parasites.