

Heinz Bodies & Automated Hematology Results in Cats

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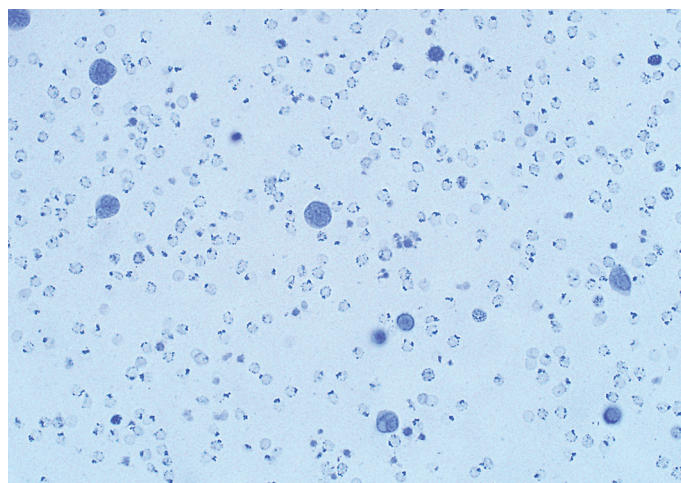
In the Literature

Dondi F, Vasilyeva K, Serafini F, et al. Heinz body-related interference with leukocyte and erythrocyte variables obtained by an automated hematology analyzer in cats. *J Vet Diagn Invest.* 2019;31(5):704-713.

FROM THE PAGE ...

Heinz bodies can occur at low levels in RBCs in clinically healthy cats.¹ Exposure to oxidizing agents (eg, acetaminophen, onion-containing foods) or presence of certain underlying diseases (eg, diabetes mellitus, hyperthyroidism) can increase the frequency of Heinz body occurrence, sometimes affecting >50% of cells (**Figure**). The presence of these structures on erythrocytes can interfere with automated CBC analysis, resulting in erroneous interpretations without careful inspection.

This retrospective study sought to determine whether examination of hematology analyzer graphs and data raised suspicion for presence of Heinz bodies and to document changes over time in patients with Heinz bodies. Data from 32 cats were obtained through a flow-cytometry-based automated hematology analyzer and results of microscopic examination of blood smears. Results showed that the presence of Heinz bodies on >36% of erythrocytes resulted in artifacts that impacted the ability of the automated analyzer to accurately determine WBC count. This was detected as an abnormality on the graphs



▲ **FIGURE** Blood smear from a cat with Heinz body hemolytic anemia. The sample was stained with new methylene blue to highlight the inclusions, which are present in the majority of erythrocytes. The larger blue structures are leukocytes. *Magnification 400×*

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produced by the analyzer and confirmed on blood smear examination. As cats recovered and the percentage of inclusion-containing erythrocytes declined, the interference with obtaining a proper WBC count became minimal.

The effect of Heinz bodies on the measurement of hemoglobin variables has been described.² Inclusions result in increased optical density of the affected erythrocytes, which increases mean corpuscular hemoglobin and mean corpuscular hemoglobin concentration as detected by a laser. RBCs cannot contain additional hemoglobin above physiologic amounts, so increases in these variables should always raise suspicion for artifacts.

Although the hematology instrument used in this study is not commonly used in general practice, other hematology analyzers could also produce interference, as reported in this study. Any clinic that maintains hematology laboratory equipment should have procedures in place to assure quality and accuracy of results to prevent erroneous interpretation of data when interferences such as Heinz bodies are present in a blood sample. Blood smear examination is crucial in any ill patient that has hematologic abnormalities.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** Feline blood samples in which >36% of erythrocytes contain Heinz bodies may cause analytic errors with certain hematology instruments.
- 2** Heinz body interferences most commonly impact certain hemoglobin measurements and may also result in overestimation of WBC count.
- 3** If laboratory results do not correlate with clinical signs or make physiologic sense, the possibility of analytic error should be pursued.

References

1. Harvey JW. Evaluation of erythrocytes. In: Harvey JW. *Veterinary Hematology: A Diagnostic Color Guide and Atlas*. St. Louis, MO: Elsevier Saunders; 2012:79-81.
2. Tvedten H, Moritz A. Reticulocyte and Heinz body staining and enumeration. In: Weiss DJ, Wardrop KJ, eds. *Schalm's Veterinary Hematology*. 6th ed. Ames, IA: Wiley-Blackwell; 2010:1067-1073.

Research Note: Oxyclozanide as Treatment for Small Animal Bacterial Pathogens

Repurposing existing drugs and using a topical antimicrobial as a first-line treatment option for superficial pyoderma can help promote good antimicrobial stewardship, protect the efficacy of newer systemic antimicrobial classes, and limit use of newer antimicrobial classes. The aim of this study was to provide proof-of-concept for repurposing the drug oxyclozanide, a salicylanilide anthelmintic used primarily in humans and ruminants, as a topical treatment option for superficial pyoderma in small animals. Results showed promising in vitro activity against both methicillin-sensitive and methicillin-resistant *Staphylococcus pseudintermedius* canine isolates. Pilot data from this study may help guide clinical studies of topical application of oxyclozanide.

Source

Levinson MR, Blondeau JM, Rosenkrantz WS, Plowgian CB. The in vitro antibacterial activity of the anthelmintic drug oxyclozanide against common small animal bacterial pathogens. *Vet Dermatol*. 2019;30(4):314-e87.

Results showed promising in vitro activity against both methicillin-sensitive and methicillin-resistant *Staphylococcus pseudintermedius* canine isolates.