

Title: Evaluation of the peripheral blood neutrophils in dog infected with *Hepatozoon canis*

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Abstract:

Hepatozoonosis is a tick-borne disease that affects dogs and other members of the Canidae family. The animal becomes infected by ingesting blood-feeding ticks that contain oocysts. The primary vector of the disease is *Rhipicephalus sanguineus* (the brown dog tick). Overall, the results of this study suggest that following *Hepatozoon canis* infection, the phagocytic ability of neutrophils does not decrease, which may lead to continued parasite uptake and increased intracellular infection. On the other hand, due to a reduction in respiratory burst activity and absolute killing power of neutrophils, this intracellular infection with *Hepatozoon canis* persists and becomes stable. This issue raises another alarm in that even in cases of mild parasitemia, prominent symptoms of hepatozoonosis may not manifest. The animal may be predisposed to various secondary infections due to weakened immune function, so screening and controlling animals for this aspect should be considered. Lastly, the results of this study also observed no change in the viability of neutrophils. Therefore, it seems that *Hepatozoon canis* infection does not directly inhibit neutrophils but instead causes a polarization shift from N1 to N2 neutrophils. N2 neutrophils, while having appropriate phagocytic ability, more effectively uptake the parasite but are inefficient in eliminating the pathogen. In other words, the parasite has cleverly recruited neutrophils as a sanctuary rather than destroying them, although this is a preliminary theory and further research is needed in the future.

Keywords: *Hepatozoon Canis*, Dog, Neutrophils