Responses to parasitic infections in farmed deer (*Cervidae*)

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In farmed red deer (*Cervus elaphus*) in New Zealand, lungworms (*Dictyocaulus viviparus*) and gastrointestinal nematodiasis (primarily ostertagiid species) rarely cause clinical disease in adult animals. However heavy burdens in young animals cause clinical problems and even death. Anthelmintic treatment can be used to prevent mortality, but chronic clinical or subclinical disease can reduce liveweight gains. There is also increasing evidence that subclinical abomasal parasitism is involved in chronic ill thrift in wapiti ("fading elk syndrome"). While the effects of general parasitism have been shown in red deer, a trial at Invermay showed a more pronounced effect in red deer x wapiti hybrid (F1) deer.

This grazing trial at Invermay was conducted with groups either receiving Albendazole on a 35-day programme or Ivermectin pour-on on a 21-day programme. The Albendazole treatment allowed for the development of moderate parasite burdens which significantly reduced the liveweight gains of these F1 deer. Further studies from that trial compared the total serum protein values of weaner red deer and weaner F1 hybrid deer which were allowed to accumulate moderate parasite burdens. The total serum protein of the red deer increased significantly from week 2 to week 9 post-weaning while the total serum protein of the F1 hybrid deer did not. Both types of deer demonstrated a similar degree of hypoalbuminemia.

Elevated levels of haptoglobin, an acute-phase inflammatory protein, have often been detected in blood samples from New Zealand wapiti submitted for routine parentage testing and were suspected to be due to parasitism. To test this hypothesis a trial was established with red deer, wapiti and F1 hybrid deer to examine the blood inflammatory protein response of each type of deer to general parasitic infection (lungworms and gastrointestinal worms). Comparisons were made between groups, which were periodically treated with Albendazole in a manner which allowed moderate to heavy parasitism, and groups which were treated with transdermal (pour-on) Moxidectin in a manner which kept the parasitic infections to a very low level. The parasitized groups of each type of deer exhibited a slightly increased plasma viscosity as compared with the respective Moxidectin-treated groups. The parasitized red deer group showed a more significantly increased fibrinogen response compared to the Moxidectin-treated red deer than did the comparative F1 or wapiti groups. By contrast, the parasitized F1 and wapiti groups showed a more significantly increased haptoglobin response compared to the Moxidectin-treated F1 and wapiti groups than did the comparative red deer groups. This indicates that wapiti and wapiti hybrid deer have a different qualitative and quantitative response to general parasitism than red deer. The red deer inflammatory response to general parasitism is predominantly fibrinogen while the inflammatory response of wapiti and wapiti hybrid deer to general parasitism is predominantly haptoglobin.