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# ***Wolbachia*, doxycycline and macrocyclic lactones: new prospects in the treatment of canine heartworm disease**

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## **Highlights**

- *Wolbachia* is a bacterial endosymbiont essential for heartworm (*Dirofilaria immitis*) development, reproduction and adult worm survival
- Doxycycline alone is adulticidal for heartworm, but when combined with macrocyclic lactones, efficacy increases markedly

## **Abstract**

Melarsomine dihydrochloride (Immiticide®, Merial) is the only approved adulticidal drug for the treatment of canine heartworm disease (HWD). However, in cases where arsenical therapy is not possible or is contraindicated, a monthly heartworm preventive along with doxycycline for a 4-week period, which targets the bacterial endosymbiont *Wolbachia*, might be considered. There are published reports on the efficacy of ivermectin and doxycycline in both experimentally and naturally infected dogs, but no data on the use of other macrocyclic lactones (MLs) with a similar treatment regime. Preliminary results of studies in dogs show that a topical formulation of

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