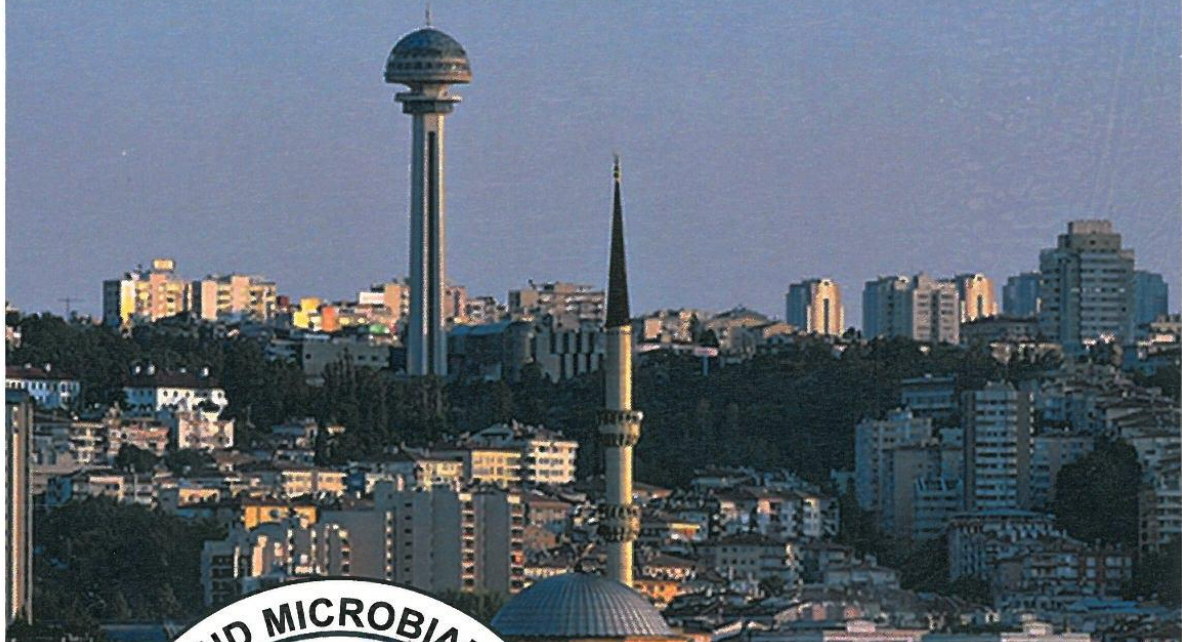




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Biocontrol potential of the entomopathogenic nematodes *Heterorhabditis bacteriophora* and *Steinernema carpocapsae* on pistachio root beetle larvae, *Capnodis cariosa hauseri* (Coleoptera: Buprestidae), under laboratory conditions

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The pistachio root beetle, *Capnodis cariosa hauseri* causes general weakness in the pistachio trees and may even kill the infected trees. This insect was distributed in many pistachio growing regions of Iran and causes heavy damage to pistachio trees, particularly when the infection is accompanied by gummosis. Cryptic behavior of the larvae reduce efficacy of common control methods. Due to hidden habitat of pest and penetration ability of entomopathogenic nematodes (EPNs) to hidden habitat of some insects, we investigated efficacy of EPN species, *Heterorhabditis bacteriophora* and *Steinernema carpocapsae* against last instars larvae of the pest in laboratory. Pathogenicity test in petri dish were performed with five concentrations: 5, 10, 25, 50 and 100 infective juveniles (IJs) per larva. The LC_{50} values indicated that *S. carpocapsae* (12.6 IJs larva⁻¹) was comparatively more virulent than *H. bacteriophora* (17.1 IJs larva⁻¹) against *C. cariosa* larvae after 72 h. Larval mortality was significantly influenced by species and concentration. The highest mortality was recorded at the concentration of 50 IJs larva⁻¹ for *S. carpocapsae* (97.1%). Both EPNs successfully penetrated and reproduced in the *C. cariosa* larvae at the concentrations of 5 and 25 IJs larva⁻¹. The highest reproduction was recorded for *H. bacteriophora* at 5 IJs larva⁻¹ in *C. cariosa* (562881±7773 IJs) and the highest penetration in *C. cariosa* was observed for *S. carpocapsae* at 25 IJs larva⁻¹ (19 IJs). The current study demonstrated susceptibility of *C. cariosa* to both nematode species as well as their reproduction capability and penetration on the pest larva.

Keywords: Pistachio root beetle, entomopathogenic nematode, biological control, insect pathology