

Summary of the Ph.D thesis No., 12040 . Mechanical engineering, Faculty of Technology and Engineering, Urmia University.

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Title: Morphometric, molecular and phylogenic analysis of *Linguatula serrata* isolated from wild animals and evaluation of the effects of silver and zinc nanoparticles on parasite larvae.

Abstract:

*Pentastomids* are arthropod parasites that primarily infect canids and vulpids as definitive hosts, along with various herbivores serving as intermediate hosts. Understanding the prevalence of these infections is crucial for wildlife management and public health. This study aimed to investigate the prevalence of *Linguatula serrata* in various wild animal populations in the protected areas of northwestern Iran. A total of 42 samples were collected from carnivores (canids and vulpids as definitive hosts) and herbivores (as intermediate hosts) that had died due to road accidents, mating conflicts, or diseases. The study included several potential definitive hosts such as Golden Jackals (n=5), Common Foxes (n=5), Jungle Cats (n=2), Eurasian Lynx (n=3), Brown Bears (n=2), and Honey Badgers (n=3), and intermediate hosts like Red Deer (n=2), Persian Gazelles (n=3), Wild Goats (n=4), and Armenian Wild Sheep (n=13). Results showed no evidence of infection with immature or adult stages of the parasite in any of the examined samples. Given the importance of this parasite in human and animal health, further studies are recommended. Due to the zoonotic nature of this disease, a subsequent study evaluated the larvicidal effects of silver (Ag) and zinc oxide (ZnO) nanoparticles on *L. serrata* larvae isolated from the mesenteric lymph nodes of domestic ruminants in Tabriz, Iran. Results indicated that Ag nanoparticles exhibited a concentration- and time-dependent larvicidal effect, with 100% mortality at 1000 ppm after 240 minutes. ZnO nanoparticles also demonstrated significant larvicidal activity, with 100% mortality at 1000 ppm after 480 minutes. These findings suggest that both Ag and ZnO nanoparticles hold promise as potential new agents for the treatment and control of this parasitic infection.

Key words: *Linguatula serrata*, Wildlife animals, Nanoparticle, Silver, Zinc oxide