

Thesis Abstract

Role of crayfish in transmission of fish diseases

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The aim of this study is to investigate most common bacterial and fungal pathogens that infect red swamp crayfish, *Procambarus clarkii*, in Egypt and make it a source of infection to fish, other aquatic animals and also to human.

Red swamp crayfish, *Procambarus clarkii* was introduced to River Nile, Egypt through a commercial aquaculture in Giza (Manial-Sheiha), in the early 1980's (Fishar, 2006). They greatly spread all over the River Nile and its tributaries. Data available about these conditions and pathogens that infect this newly introduced species are scanty.

Forty eight crayfish were collected from River Nile and its tributaries in Assiut governorate subjected to clinical, postmortem and bacteriological and mycological examinations. Bacteriological examination revealed the following; *Enterobacteriaceae* (63.4%), *Vibrio mimicus* (4.95%), *pseudomonas fluorescens* (3.96%) and *Aeromonas hydrophila* (1.98%) were isolated from hemolymph and digestive gland of crayfish. The Fungal isolates obtained from gills and uropods of collected samples were *Rhizopus spp.* (51.3%), *Aspergillus niger* (25%), *Penicillium spp.* (7.9%), *Fusarium oxysporum* (6.6%), *Humicola*

spp.(5.3%), *Aspergillus flavus* (1.3%), *Aspergillus fumigatus* (1.3%) and *Fusarium proliferatum* (1.3%). Identification was done according to microscopical and biochemical characters.

Experimental infection was carried out to investigate the pathogenicity of *Aeromonas hydrophila* isolate. A dose of (1.6×10^8 CFU/ml) was injected in the hemocoel and hemolymph of red swamp crayfish. Hemocoel injection resulted in mortality of 100% within 9 hours post injection, while hemolymph resulted in 80% mortality within 12 hours.

Clinical signs and postmortem lesions of crayfish injected with *Aeromonas hydrophila* included weakness, lethargy, loss of tail reflexes, greenish coloration of digestive gland with translucent gelatinous material covering and congestion of the tail musculature. While no obvious clinical signs were observed in naturally infected crayfish. This demonstrated the harmful and the dangerous role that red swamp crayfish can play in transmission of pathogenic bacteria and fungi to wild and farmed fishes.

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