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Abstract

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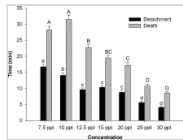
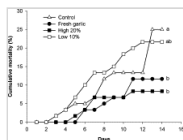


Table 1

Table 2



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Efficacy of garlic based treatments against monogenean parasites infecting the guppy (*Poecilia reticulata* (Peters))

S. Fridman, T. Sinai, D. Zilberg

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Abstract

Monogenean infections of commercially farmed fishes are responsible for significant economic losses. Garlic (*Allium sativum*) is a well-known spice which also possesses anti-microbial and anti-parasitological properties. The current work aimed to test the efficacy of garlic-based treatments against infection with monogenean sp. in the guppy (*Poecilia reticulata*). Clipped sections of tail fins of guppies heavily infected with *Gyrodactylus turnbulli* were exposed to aqueous garlic extract (7.5 to 30 mL L⁻¹) and visually observed under a dissecting microscope. Results revealed that exposure to garlic caused detachment of parasite and cessation of movement indicating death. A positive correlation was seen between garlic concentration and time to detachment and death of parasites, which, at the highest concentration of 30 mL L⁻¹, occurred at 4.1 and 8.6 min,

respectively. Bathing in aqueous garlic extract (7.5 and 12.5 mL L⁻¹) was tested in guppies infected with *G. turnbulli*. Prior acute toxicity tests revealed the maximum tolerance levels of guppies to garlic extract to be 12.5 mL L⁻¹ for 1 h. Bathing of infected fish in garlic extract (7.5 and 12.5 mL L⁻¹) significantly ($p < 0.05$) reduced infection prevalence and intensity as compared to the control. Oral treatments using dry garlic powder-supplemented diet were tested on guppies infected with *G. turnbulli* and *Dactylogyrus* sp. Fish were fed with food containing 10% and 20% dry garlic powder for 14 days. Groups fed with garlic supplemented diets showed significantly reduced ($p < 0.05$) mean prevalence and mean intensity of parasites as compared to the control. Dietary application of garlic did not appear to affect palatability. Fresh crushed garlic was added at a level of 1 g L⁻¹ and applied as an indefinite bath for 14 days. This treatment was seen to significantly reduce ($p < 0.05$) parasite prevalence and mean intensity as compared to the control. Histopathology revealed elevated muscular dystrophy in the 20% garlic-fed group, as compared to control. These findings demonstrate the potential of garlic as a natural alternative to currently used chemical treatments for *monogenean* sp. infection in the guppy.

Keywords

Natural treatments; Garlic; Ornamental fishes; Monogenean

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