

Tanthip Napaumpaiporn 2011: Acute Toxicity of Niclosamide on Pond Snail (*Filopaludina marlensi*), Creeper Shell (*Cerithidea cingulata*), Nile Tilapia (*Oreochromis niloticus*), Giant Seaperch (*Lates calcarifer*) and Pacific White Shrimp Postlarvae (*Litopenaeus vannamei*). Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Associate Professor Chalor Limsuwan, Ph.D. 200 pages.

This study was undertaken to find the median lethal concentration of niclosamide needed to kill pond snail (*Filopaludina marlensi*), creeper shell (*Cerithidea cingulata*), Nile tilapia (*Oreochromis niloticus*) and giant seaperch (*Lates calcarifer*) by using static bioassays. The median lethal concentration of niclosamide needed to kill pond snail in 48 hours (48-hr LC₅₀) at water with pH 7.0, 7.5, 8.0 and 8.5 was 0.25, 0.20, 0.21 and 0.24 ppm, respectively. The median lethal concentration of niclosamide needed to kill creeper shell in 96 hours (96-hr LC₅₀) at different salinity, pH and alkalinity levels. In water with salinity of 25 and 30 ppt the 96-hr LC₅₀ was 0.48 and 0.29 ppm, respectively. In water with pH 7.0, 7.5, 8.0 and 8.5 the 96-hr LC₅₀ was 0.22, 0.33, 0.34 and 0.48 ppm, respectively. In water with alkalinity of 60-80, 120-140 and 180-200 ppm the 96-hr LC₅₀ was 0.37, 0.48 and 0.48 ppm, respectively. The median lethal concentration of niclosamide needed to kill Nile tilapia in 48 hours at different salinity and pH levels were studied. In water with salinity of 0, 5 and 15 ppt, the 48-hr LC₅₀ was 0.5, 0.93 and 1.07 ppm, respectively. In water with pH 7.0, 7.5, 8.0 and 8.5 the 48-hr LC₅₀ was 0.42, 0.52, 0.83 and 0.98 ppm, respectively. The 48-hr LC₅₀ of niclosamide on giant seaperch at salinity of 0, 5, 15 and 25 ppt was 0.32, 0.5, 0.57 and 0.65 ppm, respectively. In water pH 7.5, 8.0 and 8.5 the 48-hr LC₅₀ was 0.24, 0.36 and 0.49 ppm, respectively. Toxicity of niclosamide to pond snail at different pH levels was thus found to be similar. However, as the salinity pH and alkalinity increased the toxicity of niclosamide decreased. The acute toxicity of niclosamide to Pacific white shrimp postlarvae 12 (PL12) was also tested with static bioassays. In water with salinity of 5, 15 and 25 ppt the 48-hr LC₅₀ was 0.5, 1.01 and 1.36 ppm, respectively. In water with pH 7.5, 8.0 and 8.5 the 48-hr LC₅₀ was 0.47, 0.92 and 1.2 ppm, respectively. When 2.0 ppm niclosamide (the concentration that could kill 100 percent of the Nile tilapia within 48 hours) was used to test the safety period to PL12. After the water at 2.0 ppm niclosamide was left to rest for 6-10 days before stocking PL12, the shrimp remained unaffected. It was concluded that in shrimp raising area that are affected by fishes and creeper shell outbreaks, niclosamide should be used in a concentration of 2.0 ppm to kill the fishes and creeper shell and the water should be left to degrade for at least 7 days before stocking the shrimp.

Student's signature

Thesis Advisor's signature