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Ameliorative Role of Dietary *Spirulina platensis* on Sumithion-Induced Growth Suppression and Intestinal Histopathological Alterations in Striped Catfish (*Pangasianodon hypophthalmus*)

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Abstract

Sumithion is commonly used pesticides to eradicate tiger bugs from aquaculture ponds; nevertheless, it adversely affects non-target species, particularly fish. The microalga (*Spirulina platensis*) could mitigate the sumithion-induced adverse effects in fish. Regarding this, the investigation was executed to mitigate the adverse effects of sumithion by Spirulina supplementation in diet to striped catfish (*Pangasianodon hypophthalmus*). During the 42-days experimental period, a total 240 of striped catfish fingerlings (10.82±1.34 g) were reared to four different treatments, including control, sumithion (0.6 mg/L), Spirulina (50g/kg feed at 3-5% body weight) and combined treatment (Spirulina + sumithion) with three replicates each. Sumithion treatment resulted in considerably decreased ($p<0.05$) the levels of FBW, GW and SGR (%/day) as well as increased FCR. In contrast to the sumithion treatment, the Spirulina treatment resulted in significantly ($p<0.05$) higher FBW, WG, and SGR (%/day), along with a lower FCR value. However, sumithion treated fish exhibited impaired structure of intestine and decreased the goblet cells and enterocyte number. In contrast, Spirulina either alone or with sumithion, significantly ($p<0.05$) improved intestinal structure, growth and feed efficiency. The present study unveiled the implementation of dietary Spirulina to be an effective approach to mitigate sumithion-induced stress and optimize health condition in striped catfish by improving histological index of intestine and growth indices.

Keywords: pesticides, toxicity, bioremediation, Spirulina, striped catfish