



## Histopathological Studies on Common Carp (*Cyprinus carpio* L.) Infected with *Saprolegnia* sp. and Treated With Virkon® S

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### Abstract

**Fungal** infections are the most common critical diseases responsible for mortality and several economic losses in fish aquarium culture industries. This study intends to investigate the effect of Virkon® S against *Saprolegnia* infection on commercially valuable freshwater fish (*Cyprinus carpio* L.). A total number of 100 fishes infected with skin white-grayish patches of cottony fungal growth, were

collected from aquaculture in Babel/Iraq. The fungal isolation was done from different parts of the body using the routine technique. *Saprolegneous* fungi (*Saprolegnia* sp.) was isolated from all collected specimens. Pathogenicity of the isolated fungi was tested on host fish with a concentration of  $2 \times 10^4$  zoospores L-1 and the fishes were got the infection. Virkon® S (LC50=537.03mg/mL) at varying concentrations (75, 175, 375 mg/L and control) was used to control the experimental fungal infection in fish. In addition, formalin (0.15 ml/L) was used as a reference agent to test their potency in controlling the fungal infection. Tissue samples were collected from different treatment groups for histopathological studies. Varying degree of destruction in the tissue were seen in the treated and infected fishes. The skin of the infected fish showed loss of epidermis, necrotized hypodermis and penetration of hyphae in the underlying musculature. However, the treated fish with Virkon® S. Gills showed less severe changes in compare to control group. These changes were including degeneration of lamellae, telangiectasis, epithelial lifting, epithelial hyperplasia, hypertrophy, a fusion of the secondary lamellae, vasodilation with blood congestion of blood vessels and cellular necrosis with epithelium rupture. Quantitative analysis of Gill revealed that histopathological changes were significantly increased ( $P < 0.05$ ) in fish treated with Virkon® S and formalin in compare with control and with infected fish group. In conclusion, this study approved the potency of the Virkon® S in controlling and preventing saprolegniasis in fish. The authors recommend a further future investigation to develop new alternative control strategies against *Saprolegnia* sp. in Iraq.

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