

***Saprolegnia parasitica* in fish (Review)**Mona S. Zaki¹ and Olfat M. Fawazi²¹Hydrobiology Department, National Research Centre, Dokki, Giza, Egypt²Biochemistry Department, National Research Centre, Dokki, Giza, Egyptdr_mona_zaki@yahoo.co.uk

Abstract: *Saprolegnia parasitica* infections induced marked tissue alterations as well as some hematological and serum biochemical changes. Although potassium permanganate malachite green treated the infected cases and allowed the regenerative processes but it does not progress the hematological and serum biochemical parameters.

[Mona S. Zaki and Olfat M. Fawazi ***Saprolegnia parasitica* in fish (Review)**. *Life Sci J* 2015;12(2):156-157]. (ISSN:1097-8135). <http://www.lifesciencesite.com>. 23

Keyword: *saprolegnia*, fish

Introduction

Saprolegnia is in fish usually starts as a cotton wool like, white to dark gray or brownish growth over the head region or dorsal fin and then spread all over the body.

The infection may be associated with pathological and hematological alterations as well as biochemical changes. Potassium permanganate is used in protection of fish from ectoparasites and it is reported to be a strong antifungal⁽¹⁾.

Saprolegnia species are opportunistic facultative parasite either ecrophs or saprotrophs. It causes substantial mortality among fresh water fish and mostly associated with environmental stresses such as overcrowding, rough handling, transport, low dissolved oxygen, temperature fluctuation, osmotic shock and water pollution⁽²⁾. Moreover, *Saprolegnia* may be secondary invader to bacterial infection or parasitic agents⁽³⁾. However, the importance of *Saprolegnia* as a primary pathogen is still debatable where some outbreaks with mass mortalities may occur the absence of other pathogens⁽⁴⁾.

Saprolegniosis is a continuing problem for aquatic animal culturist causing severe losses of fingerlings fish in earthen ponds and considered as single largest cause of economic losses where it is generally restricted to chronic, steady losses and affected on fingerlings stages⁽⁵⁾. The control of fungi of the genus *Saprolegnia* has long been a major objective of aquaculturists. Once a fungal infection starts, it can spread rapidly from infected to healthy fish⁽⁶⁾. Antifungal are essential for the maintenance of healthy stocks of fish. However, chemical treatment is costly and can itself cause mortality⁽⁷⁾. For these reasons many researchers have been investigating the use of safer compounds that have no harmful effect on fish and their ecosystem. Malachite green treated 0.5 mg/l and Formalin (0.1 ml/l) were superior in vitro tests in controlling *Saprolegnia* in tilapia and mullet fingerlings fish ponds⁽⁸⁾. Malachite green and

Formalin are the most potent fungicides that have been prohibited due to their toxicity and persistence in the environment. Some medicinal plants have a powerful biological effect against fungi, bacteria and even some harmful insects. On the other hand, Humates is considered a potential natural compound used for external fish diseases, fungicide and parasiticide on fish⁽⁹⁾.

Grossly, massive fungal growth appeared on the fins, gills and skin. It is associated with focal areas of hemorrhage, necrosis and ulceration. The internal organs revealed a mild congestion. Small grayish white foci on the liver surface was seen.

Saprolegnia infection causes a significant increase of cortisol level which may be due to the activation of hypothalamus pituitary internal axis. These results coincide with those observed by Jauncey and Ross⁽¹⁰⁾ and Zaki et al.⁽¹¹⁾. Who stated that, hyphae of *Saprolegnia* may invade deep tissues of the fish and penetrate the vital organs as kidney, liver and even the central nervous system and eye.

As primary pathogen for stressed fish, this is in agreed with Zaki et al.⁽¹²⁾ and Badran et al.⁽¹³⁾. Who stated that hyphae of *Saprolegnia* may invade deep tissues of fish and penetrate the vital organs even the central nervous system.

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2/11/2015