



INTERNATIONAL JOURNAL OF PHARMACY & LIFE SCIENCES (Int. J. of Pharm. Life Sci.)

Fungal Infections in Fishes: A Brief Review

Subha Ganguly^{1*}, Rajesh Wakchaure², Praveen Kumar Praveen³ and Parveez Ahmad Para⁴

¹Associate Professor, Department of Veterinary Microbiology, ²Associate Professor, Department of Animal Genetics & Breeding, ³Assistant Professor, Department of Veterinary Public Health & Epidemiology, ⁴Assistant Professor, Department of Livestock Products Technology, ARAWALI VETERINARY COLLEGE (Affiliated with Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Sikar – 332001, (Rajasthan) - India

Abstract

Fungal infections generally occur in fishes as a result of some predisposing bacterial infection in fishes. Fungi like *Saprolegnia*, *Aphanomyces* and *Fusarium* cause generalized systemic infections whereas, *Ichthyophonus hoferi* causes chronic infection in fishes. Control of fungal diseases is very difficult and only prevention strategies can be employed to combat against them.

Key words: Fish, Fungus, Prevention

Introduction

The fishes can become exposed to fungal infections under predisposing conditions of stress, malnutrition and contaminated water environment. The fungal spores are generally responsible for the spread of diseases in fishes. Fungal diseases are liable to affect freshwater, brackish water, cold water and marine fisheries. The three most important mycotic infections of fishes are Saprolegniasis, Branchiomycosis, and Ichthyophonus disease respectively.^[1-3]

Saprolegniasis:

It is generally referred to as the 'Cotton wool fungus'. Saprolegnia is generally referred to as water molds and can affect both adult fishes and their eggs. They prefer the water temperature ranging from 59 – 86°F. Proper cleanliness and management of the aquatic habitat is necessary for curbing out this fungal infection in fishes.^[1-6]

Treatment:

Common treatment of the water baths with NaOH (10-25 g/l for 10-20min), KmNO₄ (1 g in 100 l of water for 30-90 min), CuSO₄ (5-10 g in 100 l water for 10-30min) is generally advocated including applications of potassium permanganate, formalin, and povidone iodine solutions.^[1-4]

* Corresponding Author

Hony. Sr. Editorial Board member/ Reviewer/ Regular Author [IJPLS Online]; Email: ganguly38@gmail.com

Branchiomycosis:

It causes gill rot in fishes and the etiology is known as *Branchiomyces sanguinis* affecting the carps and *Branchiomyces demigrans* affecting the Pike and Tench. Environmental stress factors including lowered water pH and temperature of 77° and 90°F are preferred by the fungus for its growth in ponds.^[1-4]

Clinical signs:

The gill tissues become damaged and fall off in water thereby leading to the transmission of the infection to other healthy fishes. Sometimes, it may also lead to increased mortality rates. The fishes become pale and lethargic with the gill assuming a marbled appearance.^[1-4]

Treatment:

The ponds and aquarium systems should be applied with formalin and CuSO₄ solution including the pond treatment with quicklime (calcium oxide) solution.^[1-3]

Ichthyophonus disease

Ichthyophonus hoferi is the fungus responsible to cause this infection in fishes. Cool water temperatures ranging from 36° to 68°F is generally preferable for the growth of this fungus.^[1,7,9]

Clinical signs:

The affected fishes apparently look healthy with no clinical signs and symptoms of the disease. The disease spreads through the consumption of infected spores. Some viscera of the affected fishes may become swollen. The diseased fishes show swinging movements.^[4-6, 8,9]

Treatment:

The cooking temperature is lethal to the life cycle of the spores and the infecting fungus. Disinfection of ponds, aquaria and water bodies is advocated. Provision of hygienic water environment along with optimum balanced nutrition is advised.^[4,5]

Exophiala sp.^[7,9]

The etiologies are *Exophiala salmonis* and *E. psychrophila*. The fish becomes lethargic and darker in color with altered swimming behavior. It gradually infects all the visceral organs and cause renal enlargement. Sometimes, granulomatous lesions are also formed on the viscera.

References

1. Singh, P., Maqsood, S., Samoon, M.H., Danish Mohd., Verman, N., Rana, K.S., Singh. S. and Ingole, N. Common fungal diseases of fish and their control measures. Aquaculture Gut Health. *Aquafind*, <http://aquafind.com/articles/Fungal-Diseases-Of-Fish.php>
2. Meyer, F.P., and Robinson, J.A. (1973). Branchiomycosis: a new fungal disease of North American fishes.
3. Klinger, R.E and Floyd, R.F. (1996). *Fungal diseases of fish*. Fact sheet VM 97, FAIRS, Florida.
4. Howe, George E., Rach, Jeff J. and Olson Jeff J. (1998). *Journal of Aquatic Animal Health*, **10**: 62- 68.
5. Gustafson, P.V. and Rucker, R.R. (1956). Studies on an *Ichthyosporidium* infection in fish: transmission and host specificity. U.S. Dept. Interior, Fish and Wildlife Service, Special Scientific Report series No. 166, 8 pp. 3.
6. Robert, R.J. (1989). *Fish Pathology*. Bailliere Tindall, London, **2nd edition**.
7. Verma, V. (Feb. 2008). Fungus disease in fish, diagnosis and treatment: A Review. *Veterinary World*, **1**(2): pp. 62.
8. Aquarium fish diseases and treatments. *Animal-World Pet and Animal Information*, <http://animal-world.com/encyclo/fresh/information/Diseases.htm>
9. Yanong, R.P. (2003). Fungal diseases of fish. *Vet. Clin. North Am. Exot. Anim. Pract.*, **6**(2):377-400.

How to cite this article

Ganguly S., Wakchaure R., Kumar P. and Para P.A. (2016). Fungal Infections in Fishes: A Brief Review. *Int. J. Pharm. Life Sci.*, 7(9):5245-5246.

Source of Support: Nil; Conflict of Interest: None declared

Received: 15.08.16; Revised: 30.08.16; Accepted: 15.09.16