

hypophthalmus) nevertheless the growth performance. Turkish Journal of Fisheries and Aquatic Sciences, 18(11), 1303-1313.

Gopan, A., Sahu, N.P., Varghese, T., Sardar, P. and Maiti, M.K., 2020. Karanj protein isolate prepared from karanj seed cake: Effect on growth, body composition and physiometabolic responses in *Labeo rohita* fingerlings. Aquaculture Nutrition, 26(3), pp.737-751.

Grasso F.W. and Basil J.A. 2002. How lobsters, crayfishes, and crabs locate sources of odor: current perspectives and future directions. Current Opinion in Neurobiology, 12: 721–727.

Thuy, N.T.B. and Ngoc, N.B., 2004: Current status and exploitation of wild spiny lobsters in Vietnamese waters, in “Spiny Lobster Ecology and Exploitation in the South China Sea Region” (ed. by Williams, K.C.) , ACIAR Proc. No. 120, Australian Centre for International Agricultural Research, Canberra, Australia, pp.13-16

Williams K.C. (ed.) 2009. Spiny lobster aquaculture in the Asia–Pacific region. Proceedings of an international symposium held at Nha Trang, Vietnam, 9–10 December 2008. ACIAR Proceedings No. 132. Australian Centre for International Agricultural Research: Canberra. 162 pp.

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CHAPTER-17

COMMON BACTERIAL DISEASES AFFECTING FRESHWATER FISHES IN INDIA

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Introduction:

Indian fisheries have significant economic activity and are a flourishing sector with varied resources and high potentials. The fish

production potentialities of the sector increase up to 11-fold of India in just past few decades (Biswas, 2018). When fish are cultured in high densities and are stressed by adverse human-made and environmental factors such as handling, hauling, netting, low dissolved oxygen, nutritional deficiencies and overcrowding, their ability to raise immune responses against the pathogens is hampered. As a result, the risk of disease outbreak increases in the fish population. Infectious diseases in aqua sector mainly caused by bacterial pathogens, virus and parasites. Bacterial fish diseases are widespread in India's tropical and subtropical region and cause major losses to the freshwater aquaculture (Biswas *et al.*, 2020). Bacterial diseases have been frequently encountered in eggs, fry, and fish fingerlings, causing a high degree of mortality. However, the review article, based on different research paper, addresses some common bacterial diseases in freshwater fishes.

1. Motile Aeromonas Septicaemia (MAS):

Motile aeromonas septicaemia is otherwise known as bacterial haemorrhagic septicaemia (BHS). *Aeromonas hydrophila* including other motile aeromonads, are the most common bacteria of freshwater and are frequently associated with severe disease conditions (Soltani, 2002). Motile aeromonas septicemia (MAS) is mainly caused by any of three genus *Aeromonas*, namely *A. hydrophila*, *A. caviae* and *A. veronii* biovar *sobria*. These species are commonly termed as motile

aeromonads. *A. hydrophila* contains thermo-stable O, thermo-labile K and flagellar antigen (H-antigen) (Lowry *et al.*, 2014). It is an opportunistic pathogen causing disease when the fish under stress condition (Stratev & Odeyemi., 2017).

Causative agent: *A. hydrophila*, *A. caviae* and *A. veronii* biovar *sobria*

Host range: Different freshwater species like rohu (*Labeo rohita*), catla (*Catla catla*), mrigal (*Cirrhinus mrigala*), common carp (*Cyprinus carpio*), tilapia (*Oreochromis sp.*) goldfish (*Carassius auratus*) etc.

Clinical Signs:

- Necrosis of skin base.
- Petechial haemorrhages in the skin.
- Reddening of skin and fluid accumulation in the scale pockets and abdominal cavity.

Diagnosis techniques:

- Histopathological study of kidney.
- PCR-based diagnosis.

Prevention and control:

Maintain proper soil-water quality and environmental condition of the pond. Though *Aeromonas hydrophila* is an opportunistic pathogen, it