

Haliphthoros milfordensis isolated from eggs and larvae of mud crab (*Scylla tranquebarica*) in Sabah, Malaysia

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Abstract

Fungal infection occurred during mud crab spawning in a hatchery and caused almost 100% mortality in mud crab larvae after 5 days post-hatching. A fungus was isolated from eggs and larvae using PYGS agar and named IPMB 1603. During morphological identification, the strain IPMB 1603 was observed to produce a fragment inside the hyphae and the zoospores swam away from the tips of the discharge tube on several occasions, this closely resembling the genus *Haliphthoros*. Following comparisons made on the nucleotide sequence of the ITS1 region, the strain IPMB 1603 was identified belonging to a cluster of *Haliphthoros milfordensis* sharing 97-100% similarity. In this study, the strain IPMB 1603 was found to be an euryhaline fungus as the strain was able to grow on PYG agar containing NaCl. Strain IPMB 1603 only grew at certain salinity ranges, in which on PYGS agar contained seawater higher than 10 ppt. The optimum temperature range for fungal growth of strain IPMB 1603 was 30-35°C. Different growth rates were demonstrated at pH ranging from 4 to 9, but optimum growth was observed at pH 6 to 8. This is the first record of *Haliphthoros milfordensis* infection in Malaysia.

Introduction

Mud crabs belonging to the genus *Scylla* spp. are known as an important fisheries species in Southeast Asia. The production of mud crab mainly relies on wild caught seed stock but currently market demand is higher than supply. Increasing global aquaculture production of mud crab is an alternative approach to support high market demand. Lately, China and Vietnam have become main contributors for crab production (Shelley, 2008). Consequently, disease outbreaks such as bacterial and fungal infections are the major threat in mud crab aquaculture

where each outbreak has caused huge loss in production of mud crab (Jithendran et al., 2010). Previous studies have reported that marine oomycetes infections caused mass mortality in early life stages of mud crab (Lee et al., 2016). *Lagenidium* and *Haliphthoros* have been reported as important fungal pathogens in marine crustaceans and shellfish (Hatai, 2012). *Haliphthoros milfordensis* was reported as an endoparasite of eggs of the oyster, *Urosalpinx cinerea* (Vishniac, 1958). It was also isolated from juveniles of the American lobster, *Homarus americanus* (Fisher et al., 1975), adults of white shrimp, *Penaeus*

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