Microsporidians infecting eel gobies (Gobiidae: Amblyopinae) from Malaysia, with a description of *Microgemma tilanpasiri* n. sp. from the burrowing goby *Trypauchen vagina*

M. A. Freeman[1,2]*, W. W. Chong[1] and K. H. Loh[1]

[1]*Institute of Ocean and Earth Sciences, University of Malaya, Kuala Lumpur, Malaysia;*
[2]*Institute for Experimental Pathology at Keldur, University of Iceland, Reykjavik, Iceland*

Abstract

A new species of microsporidia, *Microgemma tilanpasiri* n. sp., is described infecting the burrowing goby, *Trypauchen vagina*, from Malaysia. The microsporidian forms macroscopic xenomas in the host liver which are packed with mature spores. Mature spores are slightly pyriform to oval in shape measuring 3.92 ± 0.21 μm in length and 2.87 ± 0.16 μm in width. No pre-spore stages were observed during electron microscopy studies and mature spores had a single nucleus and 12-13 turns of an isofilar polar filament, arranged in two rows. Sequencing of the ribosomal DNA indicated a strong phylogenetic relationship within the Tetramicridae and to other members of the genus *Microgemma*. The most similar species in terms of genetic distance is *M. carolinus* with a similarity of 99.23% over 1295 bases of the small subunit of ribosomal DNA. However, differences in the number of turns of the polar filament combined with host and geographical differences, support *M. tilanpasiri* as a novel microsporidian species. This represents the first description of *Microgemma* from the Western Pacific and the first from the Gobiidae family of fishes. Related blackfin eel gobies from the same sampling site were found to be uninfected with *M. tilanpasiri*; however one fish was infected with *Glugea* sp. in the visceral mesentery.

We conclude that in spite of the low genetic distances observed in ribosomal DNA sequences between geographically distant xenoma-forming microsporidians from both *Microgemma* and *Glugea*, that they probably represent a number of different species of parasite that may actually be quite host specific.

Introduction

Microsporidians are common intracellular parasites of fish. Some form large xenoparasitic complexes, characterised by an extensive hypertrophic growth of host cells, referred to as xenomas. Currently there are six species described from the xenoma-forming genus *Microgemma*, all of which infect fishes from the Atlantic (Casal et al., 2012). Infections are typically found as macroscopic xenomas in the liver of the host, but may also occur in the skeletal muscle (Canning et al., 2005). Microsporidians from the genus *Glugea* also form xenomas in

* Corresponding author's e-mail: mf33bitw@gmail.com