Tittle

A First Insight into the Barcodes for African Diplostomids (Digenea: Diplostomidae): Brain Parasites in *Clarias Gariepinus*(Siluriformes: Clariidae)

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Abstract

Diplostomid trematodes comprise a large and diverse group of widespread digeneans whose larval stages are important parasitic pathogens that may exert serious impacts in wild and cultured freshwater fish. However, our understanding of their diversity remains incomplete especially in the tropics. Our study is the first application of a DNA-based approach to diplostomid diversity in the African continent by generating a database linking sequences for the mitochondrial cytochrome *c* oxidase subunit 1 (*cox*1) barcode region and ITS1-5.8S-ITS2 rRNA gene cluster for brain-infecting diplostomid metacercariae from the catfish *Clarias gariepinus*. Analyses of newly-generated partial*cox*1 sequences for 34 larval isolates of *Tylodelphys* spp. from Tanzania and*Diplostomum* spp. from Tanzania and Nigeria revealed three strongly supported reciprocally monophyletic lineages of *Tylodelphys* spp. and one of an unknown species of *Diplostomum*. The average intraspecific divergence for the *cox*1 sequences for each recognised novel lineage was distinctly lower compared with interspecific divergence (0.46–0.75% vs 11.7–14.8%). The phylogenetic hypotheses estimated from Bayesian inference and maximum likelihood analyses of ITS1-5.8S-ITS2 data exhibited congruent strong support for the *cox*1-derived lineages. Our study thus provides molecular-based evidence for the existence of three distinct brain-infecting species co-occurring in natural populations of *C. gariepinus*. Based on phylogenetic analyses, we re-allocated*Diplostomum mashonense* Beverley-Burton (1963) to the genus *Tylodelphys* as a new combination. We also generated *cox*1 and ITS1-5.8S-ITS2 sequences for an unknown species of *Diplostomum* from another African fish host, *Synodontis nigrita.*

Key words:

Tylodelphys spp.;
Diplostomum spp.;
Clarias gariepinus;
Synodontis nigrita;

Tanzania;
Africa