

Genetic differentiation of *Anisakis* species (Nematoda: Anisakidae) in marine fish *Priacanthus tayenus* from Gulf of Thailand

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Received 28 February 2018; received in revised form 23 April 2018; accepted 17 May 2018

Abstract. Members of the genus *Anisakis* are parasitic nematodes of the family Anisakidae. They are potential zoonotic parasites, causing anisakiasis in humans who consume raw or undercooked seafood (fish or squid) infected with the larvae of this nematode. In the present study, anisakid nematodes collected from the marine fish *Priacanthus tayenus* (Purple-spotted big-eye) caught from the Gulf of Thailand were examined morphologically and characterized genetically by DNA sequence analysis. Sequence data from the mitochondrial cytochrome *c* oxidase subunit II (mtDNA *cox2*) gene were used to identify these nematodes to species level and to evaluate the phylogenetic relationship among various taxa. All the 15 third-stage larvae of *Anisakis* nematodes investigated in this study belonged to the same genetic lineage as the *A. typica* species complex (named here as *A. typica* sp. T – T for Thailand). Eight mtDNA *cox2* haplotypes were revealed in the 15 isolates of this *Anisakis* from Thailand. The mtDNA *cox2* haplotypes of *A. typica* sp. T from Thailand were genetically distinct from those of the *A. typica* sensu stricto. Taxonomic description of this *A. typica* sp. T as a distinct species however awaits the availability of adult specimens.

INTRODUCTION

Human anisakiasis is an important fish-borne zoonotic disease caused primarily by nematode larvae of the genus *Anisakis* Dujardin, 1845 and less commonly, of the genus *Pseudoterranova* Mozgovoi, 1951 (Hochberg & Hamer, 2010; Mattiucci *et al.*, 2017). Both genera are included in the family Anisakidae. Members of the genus *Anisakis* are characterized by marked differences in their genetic structure and ecological traits (Mattiucci *et al.*, 2009).

The life cycle of anisakid nematodes involves small crustaceans and various marine fish as intermediate/paratenic hosts, marine mammals as final definitive host, whereas humans are the accidental host

(Klimpel & Palm, 2011; Mattiucci & Nascetti, 2008). In humans, the infective anisakid larvae produce severe gastroenteritis and/or allergic reactions following the consumption of raw or undercooked parasitized fish (Sakanari & McKerrow, 1989; Audicana & Kennedy, 2008; Dorny *et al.*, 2009).

The taxonomy of anisakid fish nematodes has been substantially redefined in recent decades using allozyme and DNA-based methods (D'Amelio *et al.*, 2000; Mattiucci & Nascetti, 2006; Mattiucci *et al.*, 2002, 2004, 2005, 2008, 2009, 2014, 2017; Valentini *et al.*, 2006). Based on the combined nuclear ITS rDNA, mitochondrial *cox2* and *rrnS* sequences, *A. simplex* sensu stricto (s.s.) formed a sister group with *A. pegreffii* in the lineage which also contained the *A.*