Veterinary Parasitology 197 (2013) 221–230

Contents lists available at SciVerse ScienceDirect

Veterinary Parasitology

journal homepage: www.elsevier.com/locate/vetpar

Anisakis species (Nematoda: Anisakidae) of Dwarf Sperm Whale *Kogia sima* (Owen, 1866) stranded off the Pacific coast of southern Philippine archipelago☆

Karl Marx A. Quiazon[a,b,*], Mudjekeewis D. Santos[c], Tomoyoshi Yoshinaga[b]

[a] Freshwater Aquaculture Center and College of Fisheries, Central Luzon State University, Science City of Muñoz, Nueva Ecija 3120, Philippines

[b] Department of Aquatic Bioscience, Graduate School of Agricultural and Life Sciences, The University of Tokyo, Yayoi 1-1-1, Bunkyo-ku, Tokyo 113-8657, Japan

[c] Genetic Fingerprinting Laboratory, National Fisheries Research and Development Institute, 101 Mother Ignacia Street, Quezon City 1103, Philippines

ARTICLE INFO

Article history:
Received 7 January 2013
Received in revised form 21 May 2013
Accepted 23 May 2013

Keywords:
Dwarf Sperm Whale
Philippine archipelago
Anisakis species
ITS region
mtDNA cox2 region

ABSTRACT

Anisakid nematodes in the Pacific region of the Philippine archipelago still remain unexplored. This study was carried out to identify anisakid species from one of their final hosts, the Kogiid whale (Dwarf Sperm Whale, *Kogia sima*) stranded off the southern part (Davao Gulf) of the Philippine archipelago. Anisakid worms were initially identified morphologically using light and scanning electron microscopy, whereas identification to species level was carried out molecularly using PCR-RFLP and sequencing of the ITS (ITS1–5.8s rRNA–ITS2) and mtDNA cox2 regions. Parasitological study revealed new geographical records for the presence of two *Anisakis* species (*A. brevispiculata* and *A. typica*) and two unknown *Anisakis* species that are genetically close, at mtDNA cox2 region, to *A. paggiae* and *A. ziphidarum*. Based on the molecular data on both genes, the current findings suggest possible occurrence of local variations or sibling species of *A. paggiae* and *A. ziphidarum* in the region. Given that *Anisakis* species have not been reported in the Philippine archipelago, their presence in the Dwarf Sperm Whale inhabiting this region indicates high possibility of *Anisakis* infections in the marine fishes, cephalopods and other intermediate hosts within the Philippine waters.

1. Introduction

The Philippines, identified as the center of marine fish biodiversity (Carpenter and Springer, 2005), is an archipelagic country surrounded with vast marine fishery resources. Aside from the marine fishes and cephalopods serving as intermediate hosts of some zoonotic nematodes, marine cetaceans (i.e., whales, dolphins and porpoises) represent part of the marine biodiversity. Cetaceans live in distinct regions of the world oceans, wherein due to different habitat preferences, they inhabit particular depths, temperature ranges (tropical, temperate, polar) or oceanographic regimes (Jefferson et al., 2008).

Whales, such as the baleen, sperm and some other large toothed whales, have extensive and predictable seasonal migrations allowing maximum exploitation of food resources (Jefferson et al., 2008). Sperm whales include two families, i,e., Physeteridae (modern sperm whale) and

☆ The nucleotide sequences of four *Anisakis* species have been deposited in GenBank database with the accession numbers KC342886–KC342901, KC821728–KC821738 and KC852163–KC852171.

* Corresponding author at: Freshwater Aquaculture Center and College of Fisheries, Central Luzon State University, Science City of Muñoz, Nueva Ecija 3120, Philippines. Tel.: +63 44 4560681; fax: +63 44 4560681.
E-mail address: karlmq@yahoo.com (K.M.A. Quiazon).

0304-4017/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.vetpar.2013.05.019