



Steinernema pui sp. n. (Rhabditida, Steinernematidae), a new entomopathogenic nematode from Yunnan, China

LIHONG QIU^{1,3}, JINGXIU ZHAO¹, ZHONGDAO WU², ZHIYUE LV² & YI PANG¹

¹State Key Lab of Biocontrol, School of Life Sciences, Sun Yat-sen University, Guangzhou 510275, People's Republic of China

²Department of Parasitology, Zhongshan School of Medicine, Sun Yat-sen University, 74 Zhongshan 2nd road, Guangzhou 510080, China

³Corresponding author. E-mail: qiuilh@mail.sysu.edu.cn

Abstract

A new species of entomopathogenic nematode, herein described as *Steinernema pui* sp. n. was recovered from a soil sample collected from Xiao-jie town, Jing-hong city, Xi-shuang-ban-na district in Yunnan province, the People's Republic of China in December 2002. Both morphological and molecular evidence show congruently that *S. pui* sp. n. belongs to the *S. glaseri* group. It can be separated from all described *Steinernema* species by a combination of morphological and morphometrical characters of adult and juvenile stages, including spicule and gubernaculum shape of the first generation males (spicule bearing an aperture on the tip and an irregular-shaped concave on ventral side of the lamina close to the tip; gubernaculum with a short needle-shaped cuneus); the tail and vulva shape of the first generation females (tail conoid and pointed with a mucron; vulva with a short double flapped epiptygma) and the body and tail length, distance from anterior end to excretory pore and to the base of pharynx of infective juveniles. The new species can also be distinguished from other *Steinernema* species by DNA sequences of either a partial 28S rDNA or the internal transcribed spacer (ITS) regions of rDNA, and from the closely related species *S. longicaudum* and *S. guangdongense* by cross-breeding tests.

Key words: 28S rDNA sequence, entomopathogenic nematode, identification, rDNA ITS sequence, *Steinernema pui* sp. n., taxonomy

Introduction

Entomopathogenic nematodes (EPN) of the families Steinernematidae Travassos, 1927 and Heterorhabditidae Poinar, 1976 have been used as biopesticides for controlling insect pests in niche markets (Bedding, 1998). The Steinernematidae currently comprise two genera, *Steinernema* Travassos, 1927, with more than 60 recognized species and *Neosteinernema* Nguyen & Smart, 1994 with only one species, *N. longicurvicauda* Nguyen & Smart, 1994 (Adams & Nguyen, 2002). Although diversity of EPN in China has not been done exhaustively, at least thirteen EPN species have been described originally from the nematodes collected from China until now (Shen & Wang, 1991; Xu *et al.*, 1991; Liu 1994; Jian *et al.*, 1997; Cutler & Stock, 2003; Qiu *et al.*, 2004, 2005a, b, c; Nguyen *et al.*, 2006; Chen *et al.*, 2006; Mráček *et al.*, 2006; Mráček *et al.*, 2009). In addition to this, several named species, such as *H. indica* Poinar, Karunakar & David, 1992, *H. bacteriophora* Poinar, 1976, *S. glaseri* (Steiner, 1929) Wouts, Mráček, Gerdin & Bedding, 1982 and *S. carpocapsae* (Weiser, 1955) Wouts, Mráček, Gerdin & Bedding, 1982 have been reported in China (Hominick, 2002), indicating that this country has rich EPN diversity. The State Key Lab of Biocontrol (SKLB) of Zhongshan University has carried out several systematic EPN surveys mainly in Guangdong and Yunnan provinces of China since 2001, which have recovered more than 400 isolates of insect parasitic nematodes. Preliminary examinations show that many of these nematodes are likely to be new EPN species. Herein, we describe an isolate collected from Yunnan province as a new species *Steinernema pui* sp. n. after detailed morphological, molecular and cross breeding studies.