

## [Research Note]

## *Soboliphyme baturini* (Nematoda: Dioctophymatidae) infection in a domestic cat suffering severe diarrhea

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The genus *Soboliphyme* is a group of parasitic nematodes found in the families Soricidae and Mustelidae in the Holarctic Region, including Japan. We isolated a member of the genus, *S. baturini*, from a domestic cat (*Felis catus*), which had suffered from severe diarrhea. This is the first local record in a cat in Japan, and the second one from a cat in the world. *Nematol. Res.* 47(1), 21–22 (2017).

Key words: diarrhea, domestic cat, *Soboliphyme*

The genus *Soboliphyme* (Nematoda: Enoplea: Dorylaimia: Dioctophymatida: Dioctophymatina: Soboliphymatidae) Petrov, 1930 (De Ley and Blaxter, 2002) is a group of parasitic nematodes found in the families Soricidae and Mustelidae in the Holarctic Region, including Japan (Asakawa *et al.*, 1988; Bezdek, 1942; Karpenko *et al.*, 2007; Sato *et al.*, 1999). We isolated a *Soboliphyme* nematode from a domestic cat (*Felis catus*: Felidae) when we dewormed it. This is the first local record of the nematode parasitizing a cat in Japan.

In November 2015, an immature male cat (*ca.* 5 months old, body weight 1.25 kg) kept in Achi Village, Nagano Prefecture (35°26'37.7"N, 20°15'20"E) suffered severe diarrhea with blood and several tapeworm-like substances. The cat was taken to an animal hospital, and administered Droncit<sup>®</sup> (Bayer Yakuhin, Ltd, Tokyo, Japan; 5.7 mg/kg, s.c. praziquantel). About a month later, its symptoms almost disappeared, but some trichurid- or capillarid-like eggs, 97 µm in length and 30 µm in width, were detected in a fecal examination. Thus, Milbemycin<sup>®</sup> A (Novartis Animal Health K. K., Kobe, Japan; 0.5 mg/kg milbemycin oxime p.o.) was given.

However, because the eggs were still present in the feces, Broadline<sup>®</sup> (Nippon Zenyaku Kogyo Co., Ltd, Koriyama, Japan; 0.9 ml, s.c., including 83.0 mg/kg fipronil, 100 mg/kg (S)-methoprene, 83.0 mg/kg praziquantel, 4.0 mg/kg eprinomectin), was administered; soon after, six nematodes were extracted from the patient. No eggs were observed at this time.

The parasitic nematodes were fixed and preserved in 70% ethanol, and examined microscopically in lactophenol solution. Measurements and drawings of the nematodes were made with the aid of a microscope drawing attachment (Olympus Model BH2-DA). The specimens were deposited in the Wild Animal Medical Center, Rakuno Gakuen University, Hokkaido, Japan (WAMC/AS no. 15890).

All the nematodes collected were female. In the five nematodes measured, the body length was 2.5–3.9 cm (mean 3.36 ± 0.56 cm) and the width 1.2–1.6 mm (mean 1.44 ± 0.13 mm). A well-developed sucker was observed in the anterior part of the body, with a diameter of 1.1–3.3 mm (mean 2.47 ± 0.74 mm, Fig. 1). Based on its peculiar morphology and measurements, the nematode was identified as *Soboliphyme baturini* (Bezdek, 1942; Karpenko *et al.*, 2007; Sato *et al.*, 1999).

*Soboliphyme baturini* has mainly been recorded in mustelid mammals, not only in the Japanese endemic species, *Mustela ten*, but also in the North American species *M. vison* (Asakawa *et al.*, 1988, 2009). However, this nematode species has occasionally been found in domestic cats in Europe (Koehler *et al.*, 2007). Therefore, although this is not the first case of detection in a cat, it is

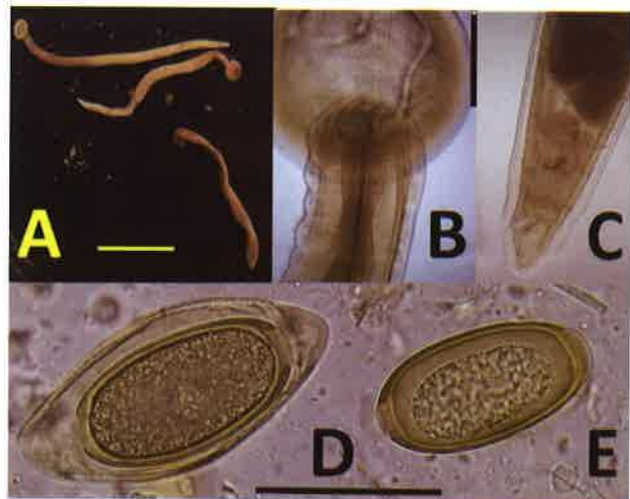


Fig. 1. Females of *Soboliphyme baturini* taken from a domestic cat. A: Whole bodies (bar, 10 mm), B, C: Anterior and posterior ends, respectively (bar, 1 mm), D, E: Eggs with double shells and without the outer shell, respectively (bar, 50 µm)

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only the second case reported in the world, and is the first report of *S. baturini* in a felid in Japan. This infection probably occurred after the accidental intake of an intermediate hosts (e.g., freshwater invertebrate) or a paratenic hosts (e.g., small mammal) during the nematode life cycle (Anderson *et al.*, 2000; Karpenko *et al.*, 2007).

Remarkably, it has been reported that an ulcer was caused when a ferret was sucked by *S. baturini* (Kalpenko *et al.*, 2007). Therefore, it is possible that the symptom of severe diarrhea in the present case was possibly caused by the parasitism of *S. baturini*. It appears that the deworming effect of a single dose of Ivermectin was insufficient to remove the nematodes, which were successfully treated with Broadline. The eggs of the genus *Soboliphyme* have a double-shell structure, consisting of inner and outer shells, which allows the proper diagnosis of this disease in animals parasitized by generic nematodes. However, if the outer shell is absent during a fecal examination (Fig. 1), a misdiagnosis of capillarid nematodiasis is possible.

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## 英文報文（研究資料）の和文摘要

## 5 作物およびカーネーション3品種における日本産クロロバシストセンチュウ3個体群の増殖性

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5 作物およびカーネーション3品種における日本産クロロバシストセンチュウ3個体群の増殖性をポット試験により調査した。その結果、いずれの個体群もシロクロバ、アズキ、ハウレンソウ、カーネーション「バーバラ」、「チェリーテッシノ」、「ピーチマンボ」においてシストを形成したが、テンサイ、ブロッコリーではシストを形成しなかった。長野県産カーネーション由来個体群は、シロクロバを除くいずれの供試植物においても北海道産シロクロバ由来個体群、青森県産シロクロバ由来個体群に比べて有意にシスト数が多かった。また、3個体群のカーネーション「バーバラ」におけるシスト数は、カーネーション「チェリーテッシノ」、「ピーチマンボ」に比べて有意に少なく、「バーバラ」が抵抗性型である可能性が示唆された。ハウレンソウ、カーネーション「チェリーテッシノ」、「ピーチマンボ」における3個体群のシスト数の変異は、日本産クロロバシストセンチュウ個体群の増殖性に変異が存在する可能性を示した。

激しい下痢症状を呈したイエネコにおける線虫 *Soboliphyme baturini* の寄生事例

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腎虫類 *Soboliphyme* 属はおもにトガリネズミ科とイタチ科に寄生する線虫であるが、今回、消化器症状を呈したイエネコを駆虫したところ、本属線虫が排出された。2015年秋、長野県阿智村にて野外で生活していた個体が救護され、一般家庭に飼育された（雄・雑種月齢、来院時推定約5か月齢、体重1.25 kg）。同年11月下旬、扁平な蠕虫をともなった水様下痢便が認められたことから動物病院で受診された。その下痢から猫回虫卵と鞭虫様虫卵が認められたためミルベマイシンを経口的投与した。その結果、多数の猫回虫成虫が排泄されたが、鞭虫様虫卵は消失しなかった。そこで、ブロードラインを皮下投与したところ、体長約3.3 cm、体幅約1.4 mm、直径約2.5 mmの頭胞を有した雌線虫6虫体が糞便とともに排出された。形態を観察したところ *Soboliphyme baturini* と同定された。本種終宿主はイタチ科であるが、ネコは国内初、世界で2例目であった。吸盤状を呈した口腔で胃壁に吸着し、胃粘膜損傷や胃潰瘍が生ずることが知られるので、下痢や血便などを呈した個体では、この線虫による寄生虫病も類症鑑別の対象として念頭に置く必要がある。この種は淡水産ミミズ類を中間宿主とし、時にトガリネズミ類などを待機宿主としているため、特にこのような動物を摂食する傾向のあるネコは注意したい。