

Komunikaty

A new whipworm from arvicolid rodents, *Trichuris arvicolae* Feliu et al., 2000, in the helminth fauna of Poland

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ABSTRACT. During the parasitological examination of wild rodents from the vicinity of Wrocław a single whipworm female was isolated from a field vole *Microtus agrestis*. The nematode was determined as *Trichuris arvicolae*. This is the first report of this parasite in Poland.

Key words: Poland, rodents, *Trichuris arvicolae*.

Introduction

The genus *Trichuris* Roederer, 1761 (Trichuridae) includes ca 60–70 species harboured the large intestine (caecum and colon) of mammals (primates, pigs, sheep, goats, deer, rodents, lagomorphs, African antelopes, opossums, shrews, felids and foxes) [1]. In Europe 20 species of whipworms have so far been confirmed and 12 of which have been recorded from Poland [2].

Trichuris muris has been described as a cosmopolitan parasite of small rodents and reported from 18 host genera (*Apodemus*, *Arvicola*, *Arvicanthis*, *Citellus*, *Clethrionomys*, *Cricetulus*, *Echinomys*, *Epimys*, *Georychus*, *Holochilus*, *Loncheres*, *Meriones*, *Mesocricetus*, *Microtus*, *Mus*, *Opodemus*, *Rattus* and *Trychomys* representing seven rodent families [1]. In Europe, *T. muris* has been reported mainly from murid and arvicolid rodents, therein from 6 hosts in Poland (Table 1) [3–11].

Morphological studies [12, 13] suggest that whipworms parasitizing hosts from the subfamily Arvicolinae constitute a distinct species of *Trichuris*. In 2000 Feliu et al. studied the genetic and morphological variability of whipworms in south-western Europe. The result of this study was a description of a new species, *Trichuris arvicolae*, which parasitizes host species belonging to Arvicolinae [13]. Recent studies of Cutillas et al. [14], using molecular

Table 1. Hosts species of *Trichuris* spp. in Poland

Host	Publication
Apodemus agrarius	Furmaga, 1957 [3]; Guerero, 1979 [4]; Hildebrand et al., 2004 [5]
Apodemus flavicollis	Furmaga, 1957 [3]; Hildebrand et al., 2004 [5]
Clethrionomys glareolus	Kisielewska, 1970 [6]; Kozakiewicz, 1992 [7]; Guerero, 1979 [4]; Behnke et al., 2001[8]
Microtus arvalis	Kisielewska, 1971 [9]; Kisielewska & Zubczewska, 1973 [10]
Mus musculus	Furmaga, 1957 [3]
Rattus norvegicus	Łukasiak, 1939 [11]

Table 2. Comparison of morphometric data (expressed in mm) of *T. arvicolae* female

Characters	*T. arvicolae* (Feliu et al. 2000)	Material from Poland
Total body length	24.31 ± 6.83 (13.35–42.55)	21.55
Anterior body length	15.52 ± 4.39 (8.85–27.5)	13.60
Posterior body length	8.79 ± 2.76 (4.10–15.6)	7.59
Ratio of anterior and posterior body lengths	1.85 ± 0.07 (1.36–2.71)	1.71
Max. posterior body width	0.42 ± 0.07 (0.27–0.52)	0.43
Middle body width in place of esophagointestinal junction	0.18 ± 0.03 (0.12–0.25)	0.20
Vagina length	0.40 ± 0.12 (0.20–0.70)	0.46
Egg length	0.073 ± 0.003 (0.067–0.079)	0.070–0.075
Egg width	0.036 ± 0.002 (0.031–0.043)	0.032–0.035

identification, confirmed that the parasites from the genus *Trichuris* occurring in representatives of arvicoline rodents are different species.

Material and methods

During the parasitological study of wild rodents from the environs of Wrocław one individual of *Microtus agrestis* was found and subjected to standard helminthological section. As a result of the section, a single female nematode belonging to the genus *Trichuris* was found in the caecum. Material was maintained in 70% ethanol, fixed and cleared for morphological examination with lactophenol.

Results and discussion

The morphologic and morphometric character of the female whipworm were examined to determine the species. Based on Feliu et al. [13], the nematode was determined as *Trichuris arvicolae*; this is the first record of this parasite for Poland. The measurements of the most typical structures of *T. arvicolae*, expressed in millimeters, are given in Table 2.

Having at their disposal 145 individuals (males and females) of *Trichuris* spp. collected from murid and arvicolid hosts Feliu et al. [13] analyzed heterogeneity of rodents' whipworms. As all the variables (e.g. total body length, anterior and posterior body length, body width, vagina length, egg size, spicule length and width) were found overlapping, the authors used a stepwise discriminant analysis to establish which of them can serve to distinguish *T. muris* from *T. arvicolae*. The results indicate that the variables which discriminate entirely the females are the vagina length and egg size. When using these variables, a stepwise discriminant analysis yields a 100% accurate classification of females. The most discriminating variables for males are the spicule size and body width but a statistical analysis does not reveal results on the same level of significance as for females. And thus males of *T. muris* and *T. arvicolae* cannot be identified unequivocally.

According to Feliu et al. [13] and Cutillas et al. [14] whipworms from arvicolid hosts are different from those harboured in murids, and therefore the reports of *T. muris* in rodents from the genera *Arvicola*, *Clethrionomys* and *Microtus* should be revised.

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