OXYURIS KARAMOJA BAYLIS, 1939 RECOVERED FROM WHITE RHINOCEROSES

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Introduction

Several species of nematodes have been expelled from white rhinoceroses by an anthelmintic treatment in 1977. These rhinoceroses have been imported from South Africa to a zoological park, Oita Prefecture, Japan, in 1976. Expelled worms were collected and some of them were similar to *Oxyuris equi* in macroscopic features. After a detailed morphological observation, they were identified as *Oxyuris karamoja*. It has not been reported about this *Oxyuris* since the original description by Baylis[1]. Thus, we will describe with some morphological characteristics.

Materials and Methods

These specimens were collected from several feces of rhinoceroses and fixed in 10 % formalin solution, then sent to our laboratory. Though, only two male worms were found among approximately fifty specimens of *Oxyuris*. Two males and 10 females were cleared and mounted in lactophenol, then observed under a light microscope. Some specimens were fixed in 2 % glutaraldehyde in 0.1 M cacodylate buffer and postfixed in 1 % OsO_4 in 0.1 M cacodylate buffer. They were then dehydrated through a graded series of alcohol, coated with Au, and observed by scanning electolon microscope at 10 KV.

Description

Female (10 specimens)

Detailed measurements are summarized in Table 1. The body 26-36×1.2-2.0 mm, gradually tapering behind anus and ending in a spear-like tail (Fig. 1). The cuticle shows coarse transverse striations throughout body (Fig. 12). The intervals between them reaching about 70-120 μm at the middle of the body. On each outer side of the head end there are two submedian papillae radiating from a central point and a lateral papilla (Figs. 4, 10 & 11). The vestibule is almost oblong or elliptical in end-on view with its longer axis latero-lateral (Figs. 9 & 10). The buccal cavity has a depth of about 0.15-0.24 mm (Fig. 5). The esophagus shows a characteristic features. The middle of the esophagus, namely, upper part of the posterior esophagus is of very narrow (Fig. 2). The uterus (Fig. 7) contains fully-formed eggs, symmetrically or slightly asymmetrically elliptical, with polar operculum, 83-88×39-42 μm (Fig. 8).

Male (2 specimens)

Detailed measurements are summarized in Table 1. The body 13.5-14 mm, posterior

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Table 1. Comparison of the measurements in millimeter between *Oxyuris karamoja* and *O. equi*

Author	Present authors		Baylis (1939)		Yamaguti (1943)	
Species	*O. karamoja*		*O. karamoja*		*O. equi*	
	Female	Male	Female	Male	Female	Male
Body length	26.0−36.0	13.5−14.0	25.0−68.0	14.0	28.0−100.0	8.9−11.0
Body width	1.20−2.00	0.75−0.78	1.13−2.60	0.80	1.40−3.50	0.60−0.90
Esophagus						
Total length	2.57−3.21	2.10−2.20	2.50−3.00	1.75	2.10−3.50	1.35−1.50
Anterior length	1.59−1.71	1.05−1.10	1.30−1.55	0.85	ND*	ND
Anterior width	0.44−0.56	0.27−0.32	0.43−0.54	0.32	0.32−0.75	0.26−0.31
Posterior length	0.98−1.50	1.05−1.10	1.20−1.50	0.85	ND	ND
Posterior width	0.46−0.51	0.34	0.44−0.60	0.33	0.47−0.85	0.32−0.40
From head end to						
nerve ring	0.51−0.71	0.29	0.50	0.30	ND	ND
excretory pore	3.54−6.10	3.66−3.78	7.00−8.50	4.50	ND	2.60−3.00
vulva	4.88−7.56	−	8.50−12.00	−	7.80−10.50	−
Spicule length	−	0.24−0.26	−	0.21	−	0.17−0.23
Spicule width	−	0.01	−	ND	−	ND

*ND, not determined

end obliquely truncate immediately behind anus (Figs. 1 & 6). The intervals between the transverse striations reaching 39-48 μm at the middle of the body. The buccal cavity has a depth of 0.1-0.12 mm. The caudal wing is supported by a pair of preanal and three pairs of postanal papillae. The most posterior papillae are large and conical. There is a needle-shaped spicule.

Discussion

O. karamoja was first described in 1939, from a black rhinoceros in the Karamoja district of Uganda by Baylis[1]. However, its macroscopical features are similar to those of *O. equi*, there are some differences between them in microscopical observations.
The most obvious differences between them are the aperture of the mouth and the shape of the esophagus, i. e., the vestibule (Figs. 9 & 10) is almost oblong or elliptical in the present instead of being hexagonal in *O. equi*[2,3]. The submedian papillae (Figs. 4 & 11) lack the regular peripheral circles of rod-like rays which appearing in *O. equi*[3].
The middle of the esophagus (Fig. 2) is very narrow in comparison with that of *O. equi*[2]. These morphological charactristics of the present specimens are quite similar to those of *O. karamoja* Baylis, 1939[1]. Furthermore, as these specimens were collected from African rhinoceroses, they should be identified as *O. karamoja*. Since these host animals were imported directly from South Africa to Japan at the only several months before the collection of the specimens, these parasites would have been harbored at South Africa.
The white rhinoceros, *Ceratotherium simum*, is added as a new host of *O. karamoja*, and South Africa is a new locality of this parasite.

Summary

Oxyuroid nematodes have been collected from the feces of South African white rhinoceroses, *Ceratotherium simum*, imported to a zoological park in Oita Prefecture, Japan. After a morphological observation, it was identified as *Oxyuris karamoja* Baylis 1939. This is the second report of *O. karamoja* since the original description of Baylis (1939). The white rhinoceros is added as a new host of *O. karamoja*, and South Africa is also described as a new locality of this parasite.

Acknowledgment

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References

1) Baylis, H. A. : Ann. Mag. Nat. Hist., 3, 516 (1939).
2) Yamaguti, S. : Jpn. J. Zool., 10, 439 (1943).
3) Kikuchi, S. : Jpn. J. Vet. Med., 641, 628 (1975).

LEGENDS FOR FIGURES

Figs. 1-8 Light microscopy of *Oxyuris karamoja*.

Fig. 1 A female (left) and a male (light) *O. karamoja*. Each scale represents 1 mm.

Fig. 2 Anterior part of female *O. karamoja*. Esophagus shows characteristically narrow at the middle. Bar indicates 0.5 mm.

Fig. 3 Posterior part of female *O. karamoja*. Arrow indicates anus. Bar indicates 0.5 mm.

Fig. 4 Anterior extremity of female *O. karamoja*, en face view. l, lateral papilla; sv, subventral papilla; sd, subdorsal papilla. Bar indicates 0.1 mm.

Fig. 5 Anterior extremity of female *O. karamoja*, dorso-ventral view. Bar indicates 0.2 mm.

Fig. 6 Caudal end of male *O. karamoja*, left lateral view. Bar indicates 0.2 mm.

Fig. 7 Right lateral view of female *O. karamoja*. u, uterus containing eggs. Bar indicates 0.2 mm.

Fig. 8 Egg of *O. karamoja*. Arrow indicates operculum. Bar indicates 0.05 mm.

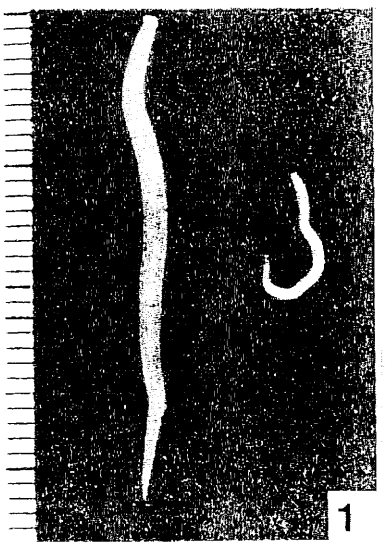
Figs. 9-12 Scanning electron microscopy of *O. karamoja*.

Fig. 9 Anterior extremity of female, en face view. Bar indicates 0.2 mm.

Fig. 10 Anterior extremity of female, en face view. l, lateral papilla; sv, subventral papilla. Bar indicates 0.05 mm.

Fig. 11 Enlargement of the subventral papilla (Fig. 10). Bar indicates 0.01 mm.

Fig. 12 Ventral view of female shows anus and transverse striations. Bar indicates 0.2 mm.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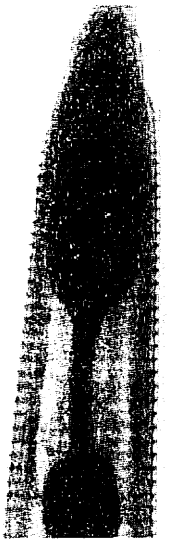
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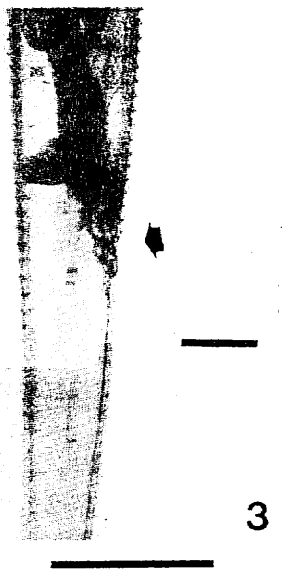
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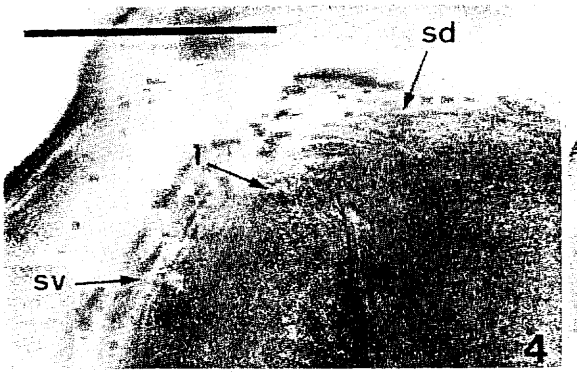

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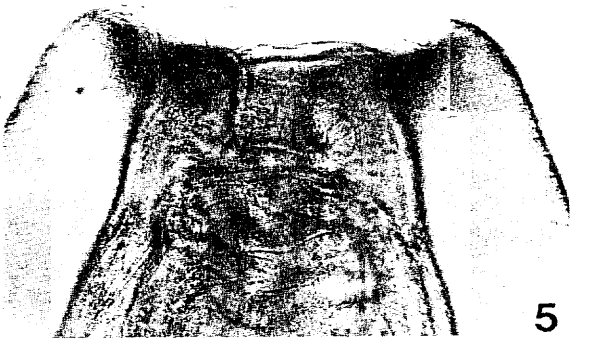
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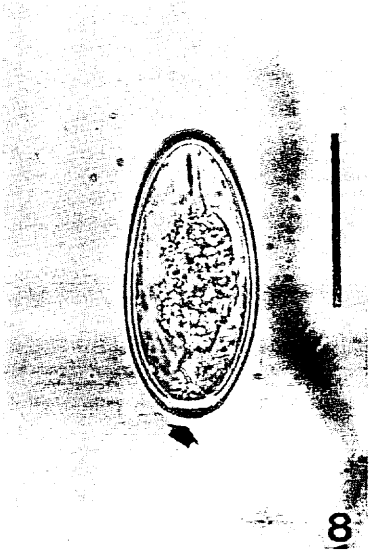
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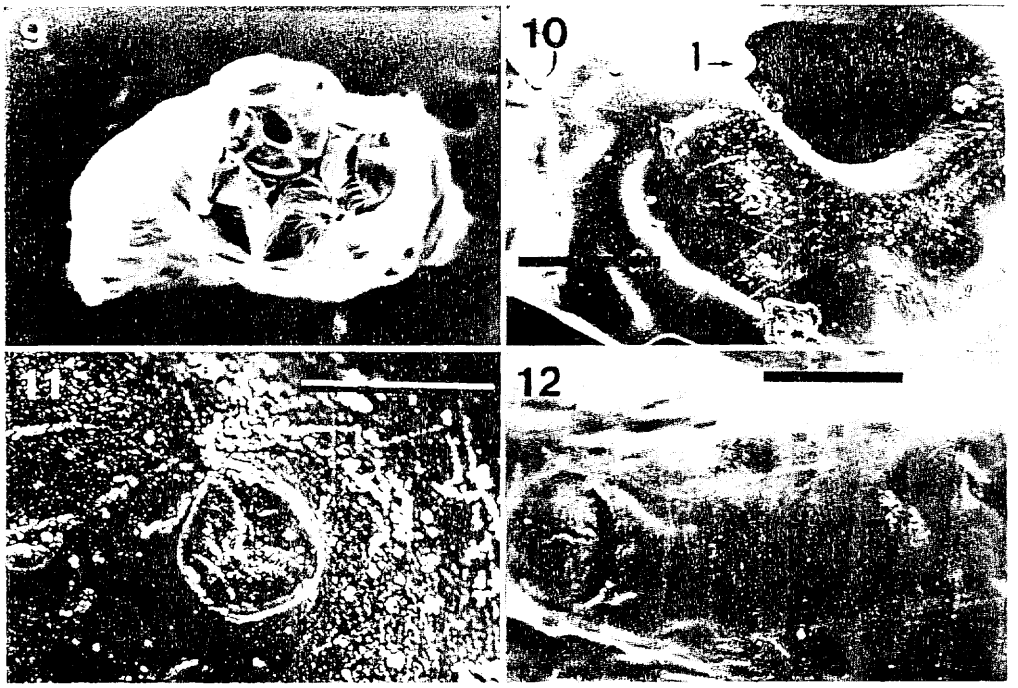
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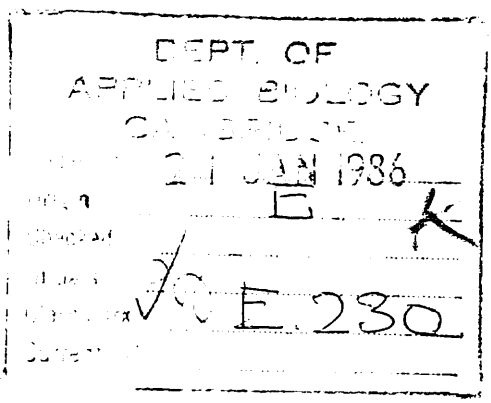

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