

Helminths of the African giant rat (*Cricetomys gambianus* Waterhouse) in Zaria, Nigeria

by M. A. IBRAHIM, R. A. OGUNSUSI, N. NWUDE and Y. ALIU

* Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria, Nigeria.

RÉSUMÉ

IBRAHIM (M. A.), OGUNSUSI (R. A.), NWUDE (N.) et ALIU (Y. O.). — Helminthes du rat de Gambie (*Cricetomys gambianus* Waterhouse) à Zaria, Nigéria. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (3) : 304-307.

L'auteur a étudié les helminthes du rat de Gambie au Nigéria du nord, aucune observation n'ayant été rapportée jusqu'alors.

Les œufs d'helminthes ont été recherchés dans les échantillons de fèces de 29 rats de Gambie capturés à Zaria, et les vers chez 14 autres rats autopsiés. 100 p. 100 des animaux étaient atteints. Des œufs d'*Heligmonina thamnomyi*, *Heterakis spumosa*, *Trichuris muris*, *Aspiculuris tetraptera*, des oocystes de coccidies et un nématode non identifié ont été mis en évidence respectivement dans les fèces de 79,31, 89,66, 10,35, 3,45, 58,62 et 10,35 p. 100 des 29 rats examinés. *H. thamnomyi*, *H. spumosa*, *T. muris*, *Inermicapsifer congolensis* et *Meggittina baeri* ont été trouvés respectivement chez 13, 13, 1, 11 et 4 des 4 rats autopsiés.

Mots clés : Helminthes - Rat de Gambie - Nigéria.

SUMMARY

IBRAHIM (M. A.), OGUNSUSI (R. A.), NWUDE (N.), ALIU (Y. O.). — Helminths of the african giant rat (*Cricetomys gambianus* Waterhouse) in Zaria, Nigeria. *Rev. Elev. vét. Pays trop.*, 1984, 37 (3) : 304-307.

There has been no report on the helminths of the African giant rat in northern Nigeria. Faecal samples from 29 wild giant rats caught in Zaria were examined qualitatively for helminths ova, and 14 other giant rats were autopsied and examined for worms. The incidence of helminthiasis in the giant rat in Zaria was 100 %. The ova of *Heligmonina thamnomyi*, *Heterakis spumosa*, *Trichuris muris*, *Aspiculuris tetraptera*, coccidia oocyst and an unidentified nematode were recovered from the faeces of 79.31, 89.66, 10.35, 3.45, 58.62 and 10.35 percent respectively of the 29 giant rats examined. *H. thamnomyi*, *H. spumosa*, *T. muris*, *Inermicapsifer congolensis* and *Meggittina baeri* were recovered from 13, 13, 1, 11 and 4 respectively out of the 14 autopsied giant rats.

Key words : Helminths - African giant rat - Nigeria.

INTRODUCTION

The African giant rat was successfully domesticated for its meat in Nigeria (1). Since then the Nigeria National Wildlife conservation Committee has recommended its domestication and breeding to supplement meat protein available to the populace (11). The giant rat has also got great potential for use as a laboratory animal (1, 5), and has been shown to be a good host for the laboratory passage of *Schistosoma mansoni* (13) and *Trypanosoma evansi* (5). Extensive study of the diseases and pathologies of the giant rat, both in the wild and in captivity is, however, a necessary pre-

requisite to its domestication in order to determine the veterinary and public health implications (1).

Some work has been done on the parasites of giant rats caught in Ibadan, southern Nigeria. *Hymenolepis diminuta*, *H. nana*, *Heterakis spumosa* and *Aspiculuris tetraptera* were recovered from 14 autopsied giant rats in Ibadan (4). Among 22 necropsied giant rats born in captivity or captured and held in captivity for up to one year in Ibadan, 3 had *H. diminuta*, *H. nana* and enteric coccidiosis while one showed hepatic capillariasis (11).

Hitherto all studies on the helminthoses of the giant rat in Nigeria have been conducted in

the southern part. This paper reports on the gastro-intestinal helminths of wild giant rats in the Zaria area of northern Nigeria.

MATERIAL AND METHODS

Giant rats

The 29 African giant rats used in this study were captured during the rainy season (May to October, 1981) from Bomo village and from the Main Campus of the Ahmadu Bello University, Zaria. They were housed separately in locally constructed wooden cages whose floor and ceiling were made of wire mesh. The cages were raised on wooden legs and were kept in the animal room of the Department of Veterinary Physiology & Pharmacology, Ahmadu Bello University, Zaria. Commercial mice cubes (*) and water were supplied *ad libitum*. They were identified by marks on their tails and cages.

Faecal sampling

Fresh faecal pellets from each of 29 giant rats were obtained by squeezing them out of the rectum into labelled plastic tubes. The samples were collected and examined within 24 hours after capture and once a week subsequently for a month. Recovery of helminth

ova was done by floatation using 33 p. cent zinc sulphate at a specific gravity of 1.180.

Recovery of helminths

Fourteen wild giant rats were sacrificed by severing the jugular vein after mechanical stunning. The stomach, small intestine, caecum and large intestine were removed and placed in separate petri dishes. Worms were collected from the lumen and mucosae using a dissecting microscope (*) at $\times 10$ magnification. Helminth specimens were fixed in either 70 p. 100 alcohol or 3 p. 100 formalin.

RESULTS

Faecal examination

Twenty-three (79.31 p. 100) of the 29 giant rats examined shed thinshelled, ellipsoidal *Heligmonina* eggs, while 26 (89.66 p. 100) shed the eggs of *Heterakis*. One giant rat 3.45 p. 100 shed *Aspicularis* eggs, while 3 (10.35 p. 100) shed *Trichuris* eggs. Three giant rats shed tiny, thinshelled embryonated eggs which were not identified. Seventeen of the giant rat (58.62 p. 100) shed coccidia oocysts.

Worm recovery

The results are presented in table I.

TABLE I-Gastro-intestinal helminths recovered from *Cricetomys gambianus* in Zaria, Nigeria

Serial N°	Nematodes			Cestodes	
	<i>Heligmonina thamnomyisi</i> (Small intestine)	<i>Heterakis spumosa</i> (Cecum and Colon)	<i>Trichuris muris</i> (Cecum)	<i>Inermicapsifer sp.</i> (Small intestine)	<i>Meggittina baeri</i> (Small intestine)
1	+	+	-	+	+
2	+	+	-	+	+
3	+	+	-	+	-
4	+	+	-	+	-
5	-	+	-	+	-
6	+	+	-	-	-
7	+	+	-	-	+
8	+	+	-	-	-
9	+	+	-	+	-
10	+	+	-	+	-
11	+	-	-	+	-
12	+	+	+	+	+
13	+	+	-	+	-
14	+	+	-	+	-
Incidence	92.86 p.100	92.86 p.100	7.14 p.100	78.57 p.100	28.57 p.100

Legend : + = harboured worms ; - = No worms recovered.

(*) Pfizer Livestock Feeds Limited, Kaduna, Nigeria.

(*) American Optical Company, Instruments Division, Buffalo, N.Y. 14215.

Nematodes

Heligmonina thamnomysi were recovered from the anterior 4th of the small intestine of 13 out of 14 giant rats. *Trichuris muris* was recovered from the caecum of one giant rat, while 13 of the giant rats showed *Heterakis spumosa* in their caeca and colon.

Cestodes

Inermicapsifer species, probably *I. congolensis* and *Meggittina baeri* were found in the small intestine of 11 and 4 respectively of the 14 giant rats examined.

DISCUSSION

The results of this study indicate that the incidence of helminthiasis in wild *Cricetomys gambianus* in the rainy season in Zaria is 100 p. 100. The helminths involved are *Heligmonina thamnomysi*, *Heterakis spumosa*, *Trichuris muris*, *Aspiculuris tetraptera*, *Inermicapsifer congolensis*, *Meggittina baeri* and an unidentified nematode, probably a lungworm or a *Strongyloides* species.

Heligmonina thamnomysi was originally reported from *C. gambianus* and from *Thamnomys rutilans* from the Central African Republic (6) and has been reported from *C. gambianus* in Tanzania (12) and from *Thamnomys rutilans* and *Graphiurus hueti* in the Central African Republic (8). Nigeria is a new geographical record for *Heligmonina*.

Meggittina baeri (Syn. *Catenotaenia baeri*, *Skrjabinotaenia baeri*) was originally described from the 'house rat' and from 'native granary rat' in Zimbabwe (14). It has been reported from *Thamnomys rutilans* in the Central African Republic (8). A related cestode, *Skrja-*

binotaenia cricetomydis, was described from *C. gambianus* in Nigeria (10). Nigeria is a new geographical record and *C. gambianus* a new host record for *M. baeri*.

We have come across no reports on the occurrence of *Inermicapsifer* in Nigeria, but the genus occurs widely among rodents in Africa. Human infections with *I. madagascariensis* have been reported from Reunion (3), Zimbabwe (7), South Africa (16), Zambia (19) and Tanzania (2). *Inermicapsifer* sp. was reported from a 2 year old boy in Kenya (18) and *I. cubensis* was reported from a young woman in Cuba (17). The genus is also of veterinary importance. *I. hyracis* was reported from a Guinea-fowl and *Inermicapsifer* sp from a wild dog (15).

Differences appear to exist in the helminths of giant rats and their importance in southern and northern Nigeria. DIPEOLU and AJAYI (4) and IKEDE and AJAYI (11) did not report *Inermicapsifer*, *Meggittina*, *Heligmonina* and *Trichuris* among giant rats in Ibadan, while *Hymenolopis* does not appear to occur in the same host in Zaria. *Heterakis spumosa* is important in both locations while *Aspiculuris* occurs more in giant rats in Ibadan.

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RESUMEN

IBRAHIM (M. A.), OGUNSUSI (R. A.), NWUDE (N.), ALIU (Y. O.). — Helmintos de la rata de Gambia (*Cricetomys gambianus* Waterhouse) en Zaria, Nigeria. *Rev. Elev. Méd. vét. Pays trop.*, 1984, 37 (3) : 304-307.

El autor estudió los helmintos de la rata gigante de África en el norte de Nigeria, no se habiendo notado ninguna observación hasta ahí.

Buscó los huevos de helmintos en las muestras de heces de 29 ratas gigantes salvajes cogidas en Zaria, y los helmintos en 14 otras ratas autopsiadas. 100 p. 100 de los

animales tenían helmintosis. Se evidenciaron huevos de *Heligmonina thamnomysi*, *Heterakis spumosa*, *Trichuris muris*, *Aspiculuris tetraptera*, oocistos de coccidias y un nemátodo no identificado en las heces de 79,31, 89,66, 10,35, 3,45, 58,62 y 10,35 p. 100 respectivamente de las 29 ratas examinadas.

Se encontraron respectivamente *H. thamnomysi*, *H. spumosa*, *T. muris*, *Inermicapsifer congolensis* y *Meggittina baeri* en 13, 13, 1, 11 y 4 de las rats autopsiadas.

Palabras claves : Helmintos - Rata gigante de África - Nigeria.

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