

## العدوى الطبيعية للفئران المصرية بميكرو فيلاريا غير مغلقة

للدكتور محمد الصادق عرفة ، والدكتور على حسن سليط ، والدكتور طه يوسف هلال ،  
والدكتور رالف ل . مولر

### الملخص

وقد أمكن في هذا البحث اكتشاف إصابة ثلاثة أنواع من القوارض المنزلية والمشاركة بمنطقة أسيوط ربما لأول مرة بجمهورية مصر العربية بل والعالم بنوع من الميكروفيلاريا غير المغلقة ، وهذه الأنواع هي الجرذ الفروجي والجرذ المتسلق السكندري والجرذ ذو البطن الأبيض . وقد أمكن تشخيص هذه الميكروفيلاريا على أنها دايتالونيما فتياى وأكد الباحثون ضرورة استمرار هذا البحث للعثور على الدودة البالغة ودراسة دورة حياتها لما لذلك من أهمية بالغة ، إذ بذلك يمكن الحفاظ على نوع من الفلاريا في المعمل لأجراء الدراسات المختلفة ولايضاح كثير من الجوانب الهامة التي قد تفيد في دراسة هذا المرض في الإنسان والحيوان على السواء .

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## NATURAL INFECTION OF RATS IN EGYPT WITH UNSHEATHED MICROFILARIAE

(With one figure)

By

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### SUMMARY

Unsheathed microfilariae were recovered for the first time from three murine hosts in Egypt, namely *R. norvegicus*, *R. r. frugivorus*, and *R. r. alexandrinus*. Conventional microscopical examination revealed that it is remarkably similar to or even identical with *Dipetalonema viteae*. Further investigation to recover the adult worm to confirm its diagnosis is still recommended.

The discovery of this filarioid infection might contribute to better understanding of filarial infection in man and animal so it provides an easy experimental tool to parasitologists and immunologists for further vital investigation.

### INTRODUCTION

Rats and mice in Egypt are well-known to be the definitive hosts of several helminths (WISSA 1967 and ARAFA 1968) and blood parasites (MOHAMMED and SAOUD 1964 and 1965 and ARAFA 1968). Nevertheless, no filarioid infestation has been so far reported from these murine hosts in Egypt.

In the present communication, the grey-bellied rat, *Rattus rattus alexandrinus*, the white-bellied rat *Rattus rattus frugivorus* and the brown rat, *Rattus norvegicus* which are widely distributed in Egypt and intimately associated with man (ARAFA, 1968) are reported for the first time to harbour unsheathed microfilariae.

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## MATERIAL AND METHODS

Rats were trapped alive from Assiut area in Upper Egypt with the purpose of performing certain toxicological studies. As a part of this work, the blood pictures of the murine hosts were studied. Duplicate blood films were prepared from the tail blood of each animal after light anaesthesia with chloroform or ether.

The blood films were allowed to dry well, fixed with absolute methyl alcohol, and stained with Giemsa stain diluted 1 in 15 with buffered water for 20 minutes. Microscopical examination was carried out with the high power of the microscope, and when positive, further examination was done with the oil-immersion lens.

Microfilariae were drawn with the aid of Camera Lucida and the average dimensions of the various anatomical regions as suggested by FULLEBORN (Quoted from LAPAGE, 1965) were determined.

## RESULTS

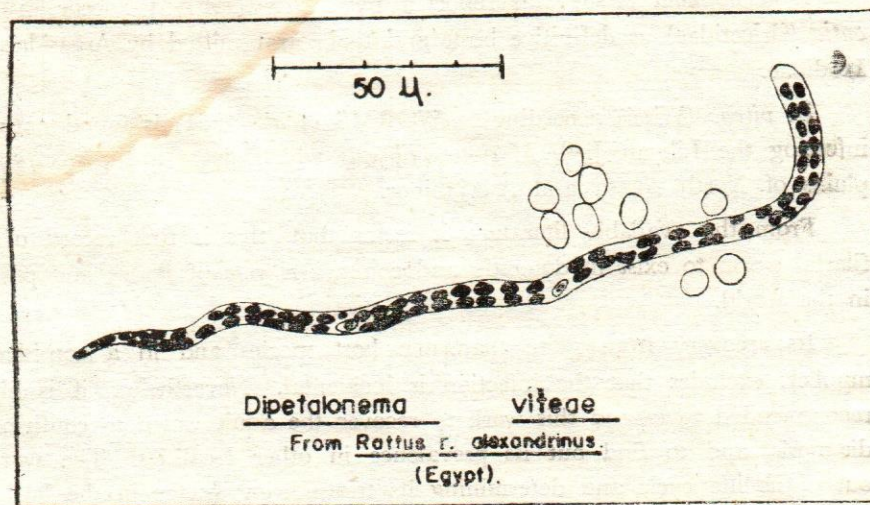
Blood examination of 18 Norway rats (*Rattus norvegicus*), 71 white-bellied rats (*Rattus r. frugivorus*) and 69 grey-bellied rats (*Rattus r. alexandrinus*) (belonging to the family Muridae, order Rodentia) collected from a suburban area of Assiut, in the middle part of Upper Egypt, during the months of November and December, 1973 revealed an infection rate of 11.1%, 2.8% & 1.5% among them respectively.

No distinct morphological differences could be discerned among the microfilariae recovered from the various murine hosts.

The microfilariae are unsheathed, with a broad, blunt cephalic end showing some fine granules near the anterior extremity. The curves in stained preparations are graceful and the body is occupied with discrete nuclei which extend to the tip of the tail. The latter is short and markedly narrower than the body with a blunt extremity (The Figure).

The average distances from the anterior extremity to the various anatomical landmarks represented as percentage of the total body length are as follow :





Total body length . . . . .	160 — 195 microns.
Maximum . . . . .	5 — 7 microns.
Cephalic space . . . . .	2.63%
Nerve ring . . . . .	23.15%
Excretory pore . . . . .	36.84%
Excretory cell . . . . .	42.10%
The first genital cell . . . . .	66.31%
Anal pore . . . . .	84.21%

#### DISCUSSION

From these characters, a provisional identification of the microfilaria was done as belonging to the Genus *Dipetalonema*. However, further study, comparing them with the collection available at the Medical Parasitology Department, of London School of Hygiene and Tropical Medicine revealed that it is remarkably similar to or even identical with *Dipetalonema viteae* (DREPKOGORSKAYA, 1933).

It might be stated that among more than 85 genera and species of filarioid worms reviewed by SCHACHER (1973) only *Brugia pahangi* is reported to occur in Muridae as definitive hosts; though many others are reported to occur in other families of the order Rodentia.



*Dipetalonema viteae* was reported by BARN (1967) to occur in *Rodentia* (Cricetidae) as definitive hosts and to be transmitted by Argasidae and Ixodidae.

*D. viteae* (Witei) according to WORMS *et al.* (1961) is found naturally infecting the Libyan Jird, *Meriones libycus* which lives in the open sandy plains of North Africa and Asia minor.

From the available literature it seems that, this is first record of this filarial worm to exist in domestic and commensal rats of Egypt and possibly in the world.

Its recovery from more than one host species and in a considerable number, excludes that the infection is incidental. Nevertheless, it is highly recommended to extend this work to recover the adult worm to confirm the diagnosis, and to find out its prevalence in other localities. The working out of its life cycle and determining its transmitting vector in the lab. and in nature seem of vital importance. The practical value of this finding is that it might provide parasitologists and immunologists with another experimental filaria species which can be easily maintained in the lab. for therapeutic, biochemical, physiological, bionomical and immunological purposes. This finding will undoubtedly contribute to better understanding of filarial infection in man and animal.

Nevertheless, an important question is still waiting a reply, whether this microfilaria represents a new species allied to *M. viteae* or it is just a strain adapted to Egyptian domestic and commensal rats.

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