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**LIGHT AND ELECTRON MICROSCOPIC STUDIES  
ON THE MICROFILARIAE OF *DIPTALONEMA VITAE*  
DERPKAGORSKAYA, 1923 (NEMATODA:  
FILARIIDAE) PARASITIZING THE BLOOD OF  
FRUIT BATS *ROUSETTUS AEGYPTIACUS*  
*AEGYPTIACUS* AT ASSIUT LOCALITY**

(With 4 Figures)

By

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دراسات بالميكروسكوب الضوئي والالكتروني على الميكروفلاريا  
ديبتالونيما فيتا الذي يصيب خفافش الفواكه روزتيس ايجبتكس ايجبتكس  
بإقليم أسيوط

جمال عابد ، رفعت خليفة ، نوال مازن ، بركات عبدالمالك

تناولت الدراسة فحص عدد ١٧٩ من خفافش الفواكه روزتيس ايجبتكس ايجبتكس وقد  
أوضحت الدراسة أن ٣ خفافيش فقط بنسبة ١.٧% مصابين بالميكروفلاريا ديبتالونيما فيتا  
في الدم الطرفي. هذا وقد أوضحت الدراسة أن الميكروفلاريا لها نهاية راسية عريضة  
ونهاية خلفية مدببة وجسمها منحنى ويصل متوسط طولها ١٨٧,٥ - ٢٠٢ ميكرون وعرضه  
٤١-٦ ميكرون (٢٠٢ × ٥ ميكرون) وقد أوضحت الدراسة بالميكروسكوب الإلكتروني النافذ  
أن النهاية الراسية خالية من الانوية أما باقي الجسم فهو ممتلئ بالانوية.

### SUMMARY

Out of 179 bats examined only three (1.7%) were infected with the microfilariae of *Diptalonus vitae*. the microfilariae were encountered in the peripheral blood of *Rousettus aegyptiacus aegyptiacus*. They are unsheathed and have a broad cephalic end and a blunt posterior end. They measured 187.5–220 µm in length and 4–6 µm in width (average 202 x 5 µm). and the body is a smoothly curved in graceful curves. Transmission electron microscope (TEM) revealed that the cephalic end

of the body is devoid from nuclei while the remaining of the body is occupied by a well demonstrated column of nuclei.

**Key words:** *Rousettus aegyptiacus aegyptiacus*, *microfilaria of Diptalonema vitae*, light microscope and transmission electron microscope

## INTRODUCTION

Fauna of parasitic nematodes of bats from Egypt was published by Jagerskiold (1909) and Boulenger (1926). Stiles & Nolan (1931) gave the most detailed account of bat nematodes in admirable key catalogue. Galal & Abed (1993) recorded the larval stage of *Physaloptera sp.* from Egyptian bats. Esteban *et al.* (1995) found *Physaloptera brevivaginata* parasitising the stomach of two species of bats of the family vespertilionidae. The parasite was described as severely pathogenic as histopathological observations of the stomach lesions revealed destruction of the mucosa, degeneration of gastric glands and focal necrosis at the points where cephalic ends of both sexes of this nematode were attached to the mucosa. Foster *et al.* (1996) reported the same parasite from Brazilian free-tailed bats from Florida. Ammar (2001) redescribed the parasite from the stomach and gut of *Taphozous nudiventris nudiventris* and *Rhinopoma hardwickei cystops*. Abdominal and thoracic cavities as well as the subcutaneous tissue of bats are ideal locations for filaroid nematodes Ammar (2001) described *Diptalonema vitae* (males, females from subcutaneous tissues and microfilariae from peripheral blood) and *Litosoma egyptiacum* n.sp. (adults from body cavities) and microfilariae from the peripheral blood.

The present work was aimed to detailed description of the microfilariae of *Diptalonema vitae* from peripheral blood of fruit bats *Rousettus aegyptiacus aegyptiacus* from Assiut –Upper Egypt.

## MATERIALS and METHOD

Total number of 179 fruit bats *Rousettus aegyptiacus aegyptiacus* captured from different localities at Assiut Governorate were examined for blood microfilariae through thick and thin blood films stained with Giemsa's stain.

For transmission electron microscopy studies: Venous blood were collected from infected *Rousettus aegyptiacus aegyptiacus*. The blood were immediately fixed in 2% glutaraldehyde solution in phosphate buffer (pH 7.2), for 24 hours and, postfixed in 1% osmium

tetroxide for 30 minutes. & washed with the same buffer. Dehydrated in ascending grades of ethyl alcohol series and finally embedded in Epon. Semi-thin sections were prepared, stained with toluidine blue, examined by light microscope and photographed. Ultra-thin sections were contrasted with uranyl acetate and lead citrate and examined using transmission electron microscopy (Jeol CXII 100) at 80 kv.

## RESULTS

Out of 179 fruit bats *Rousettus aegyptiacus aegyptiacus* were examined in peripheral blood, only 3 (1.7 %) were found to be infected with the microfilariae of *Diptaltonema vitae* (Fig.1). They exhibited no periodicity, as they were found in blood smears day and night. The microfilaria is unsheathed and they have a broad cephalic end and a blunt posterior end. In fresh blood specimens, they move actively in a worm-like movement in between the red blood corpuscles. They measured 187.5–220  $\mu\text{m}$  in length and 4–6  $\mu\text{m}$  in width (average 202 x 5  $\mu\text{m}$ ). The body is smoothly curved in graceful curves (Fig.2), and is occupied by a well-demonstrated column of nuclei which extended to the tip of the blunt tail. However, the cephalic end devoid of nuclei (Fig. 3).

## DISCUSSION

The incidence of microfilariae in the present work was very low, only 3 specimens of the fruit bats were found to be infected with these parasites. This may be due to the paucity of a suitable vectors in collected zone.

Filaroid worms belonging to the genus *Diptaltonema* exceed 40 species, but none of them are found in bats except recently where Ammar (2001) encountered for the first time, adults and microfilariae of *Diptaltonema vitae* Drepkagorskaya, 1933 from the subcutaneous tissues and peripheral blood of *Taphozous nudiventris nudiventris* in Qena Governorate. *Diptaltonema vitae* microfilariae were reported for the first time from naturally infected *Rattus norvegicus*, *Rattus r. frugivorus* and *Rattus r. alexandrinus* collected from the suburban areas from Assiut City by Arafá (1968). Monib (1980) reported the same parasite from the same area in *Rattus norvegicus* and *Rattus r. frugivorus*.

Monib (1980) in his study on parasites of small mammals in Assiut, examined 48 *Rousettus aegyptiacus aegyptiacus* bats and found them free from any parasite. He also examined 23 *Rhinopoma hardweckei cystops* bats where he found them infected only with trematodes and cestodes.

During the present study, only microfilariae were encountered, but they were very similar to those described by Ammar (2001). Hence, they were identified as belonging to the genus *Diptalonia* and the species *D. vitae* Derpkagorskaya, 1933. However, the bat *Rousettus aegyptiacus aegyptiacus* is a new host record and Assiut is a new locality for the parasite.

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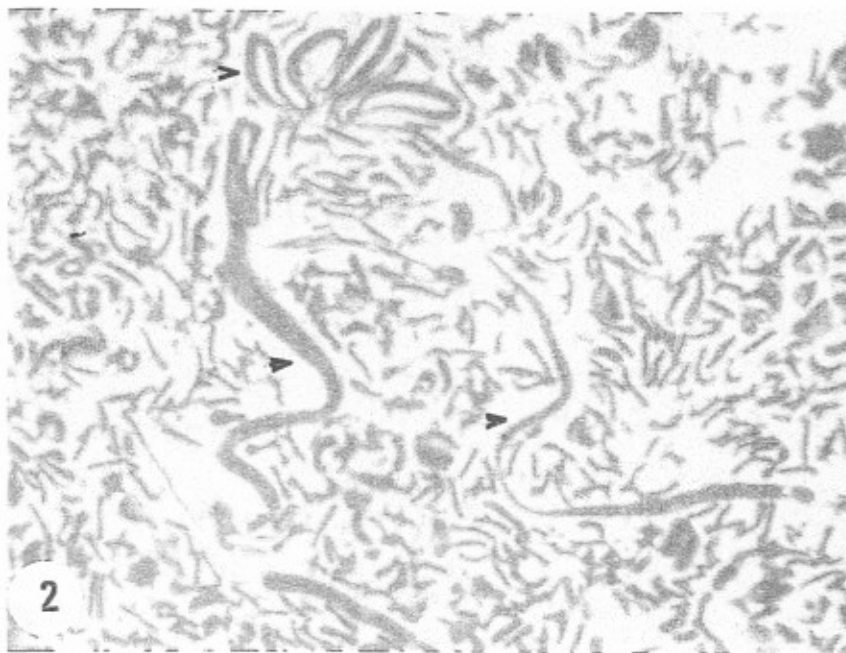
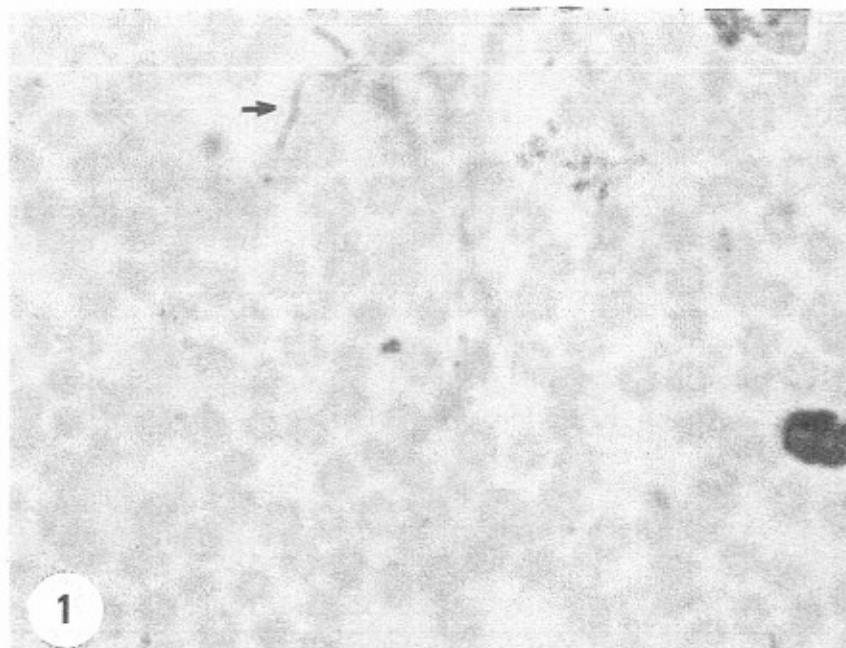
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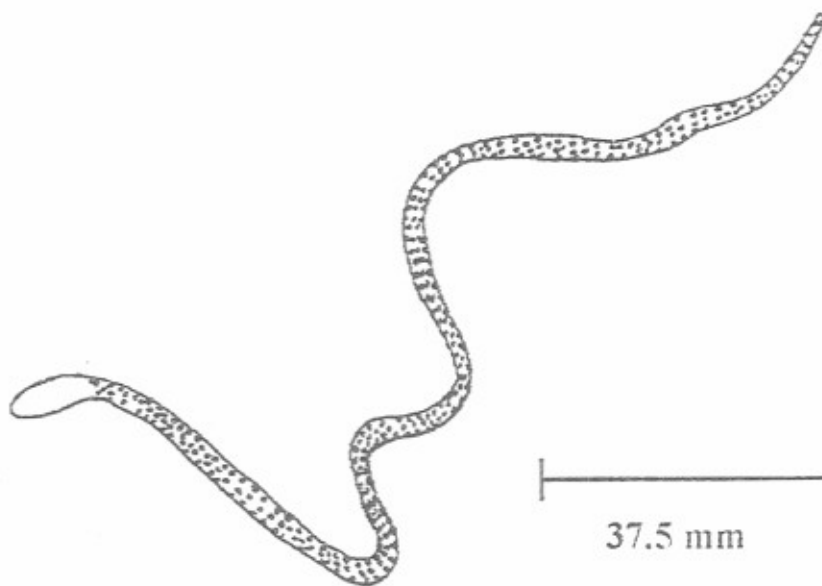
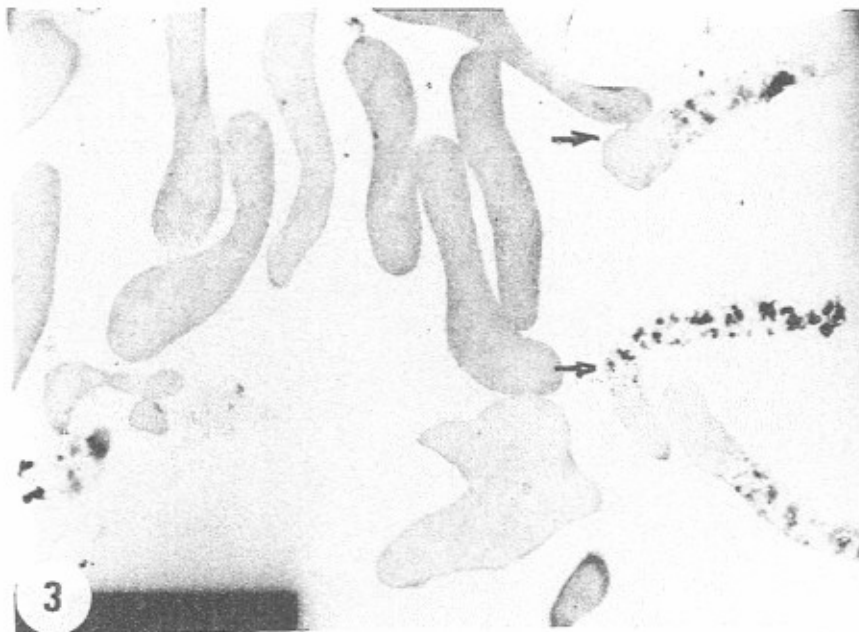
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### **EXPLANATION OF FIGURES**

- Fig. 1:** Photomicrograph of the blood smears stained with Giemsa's stain showing the microfilariae of *Dipatalonema vitae* (arrow) x 1000
- Fig. 2:** Photomicrograph of semi-thin section stained with toluidine blue showing the microfilariae of *Dipatalonema vitae* (arrow head) x 1000
- Fig. 3:** Transmission electron micrograph showing occupied all the body of microfilariae with nuclei except, the cephalic end of the body devoid of nuclei. (arrows) x10000
- Fig. 4:** Camera lucida drawing showing microfilariae of *Dipatalonema vitae*





**Fig. 4:** Camera lucida drawing of microfilaria of *Diptalonema vitae* in the blood of *Rousettus aegyptiacus aegyptiacus*.