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STUDIES ON THE COMMON SPECIES OF MITES PARASITIZING RABBITS IN ASSIUT

(with 3 Plate)

By

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دراسات عن الانواع السائده من الحلم الذى يصيب الارانب فى أسيوط

فاطمه سيـــــد

تم عزل نوعين من الحلم من الارانب المصابه طبيعياً فى منطقة أسيوط . النوع الاول هو السوروبتس كانيكيولاى من اذن الارانب والنوع الثانى هو ساركوبتس سكابياى فاركانيكيولاى من الوجه (حول الانف) . وقد تم علاج الارانب المصابه بنجاح بحقنها تحت الجلد بجرعتين من الايفرميكتين (٢٠٠ ميكروجرام / كجم من وزن الجسم) واعطيت الجرعه الثانيه بعد ١٥ يوم من الجرعه الاولى . وقد وجد ان الاشخاص المخالطين لهذه الارانب المصابه يعانون من اعراض حساسيه جلديه فى صورة ارتيكاريا .

SUMMARY

Two species of mites were isolated from naturally infected rabbits in Assiut Locality, *Psoroptes cuniculi* from the ears of rabbits (causing psoroptic ear mange) and *Sarcoptes scabiei* var. *cuniculi* on the face (around the nose) of rabbits. Infected animals were treated successfully with a subcutaneous injection of ivermectin 200 ug/kg. b.W for two successive doses with 15 days interval. Handlers of infected rabbits were suffering from allergic manifestations in the form of urticaria.

Keywords: Species, mite, rabbits, Assiut

INTRODUCTION

The mites comprise a large group of Arthropoda belonging to the subclass Acari of the class Arachnida, *(HUGHES, 1976). SWEATMAN (1958)* studied the validity of the different species of *Psoroptes* and recognized that *Psoroptes cuniculi* is a cosmopolitan species which occurs in the ears of rabbits, goats and sheep. *BENBROOK & SLOSS (1961)* Recorded that mites of the genus *Psoroptes* infest the auditory canals of animals, causing psoroptic ear mange. *GORDON and LAVOIPIERRE (1962)* recorded that sarcoptic mites cause skin diseases in almost all species of animals and there is one species, *Sarcoptes scabiei* is recognized. They suggested that sarcoptic mites are named according to the host on which it was found. *Mousa* et al, *(1986), PANDEY (1989) and BOWMAN* et al. *(1992)* studied the effect of ivermectin on the sarcoptic and psoroptic mites of rabbits. *YUNKER (1973) and MULLER & KIRK (1976)* stated that *Sarcoptes scabiei* of animals produce human infestations which cure spontaneously.

According to the available literature, few studies were done on the identification of rabbit-mites in Assiut. Therefore, this study was conducted to determine the common species of mites infesting rabbits, the effect of ivermectin for controlling these mites, and the effect of rabbit mites on the handlers of infected animals.

MATERIAL AND METHODS

Samples of mites were collected from one hundred naturally infected rabbits obtained from veterinary units in Assiut city. Samples were taken from the ear lesions and skin scrapings of

the infected area (face, around the nose). The materials removed were examined directly under dissecting microscope and then were preserved in 70% alcohol. Isolated mites were permanently mounted in Hoyers' solution *(BAKER et al., 1956)* and examined microscopically for the identification of the species.

Mites were photomicrographed and drawn by a camera lucida. Infested rabbits were injected subcutaneously with ivermectin 200 ug/kg b.w. A second injection was given 15 days later.

People who handle the infected rabbits were investigated for contact infestation.

RESULTS

In the present study two species of mites were isolated from naturally infected rabbits.

1. Psoroptes cuniculi:

Isolated from the ears of 65% of rabbits examined. The lesion was a slight to severe otitis externa, often accompanied by heavy crusting.

This type of mites was oval in shape, non burrowing and the dorsal surface of the body was devoid of scales and spines. The third and fourth pairs of legs were visible from above. All stages were provided with sucker-like pulvilli at the end of the first and second pairs of long jointed pretarsi, the epimeres of the first pair of legs is not fused. The average measurements of female were 849.6 u in length and 520.4 u in breadth. The females have bristles on the third pair and suckers on the fourth pair of legs, (P1. I, II Fig. 1). In male the third pair of legs was long and suckered while the fourth pair was very short and bears only hairs. The average measurements of male were 648 u in length and 432 u in breadth. On the ventral surface of male the posterior end was provided with a pair of copulatory suckers and terminally a pair of large tubercles; each bears several hairs, (P1. I, II, Fig. 2).

The pubescent female was characterized by the presence of a pair of posterior copulatory tubercles which were absent in the ovigerous female (P1. II, Fig. 5). On the ventral surface of the ovigerous female just posterior to the second pair of. legs, there was an inverted u-shaped oviporus, through which the eggs pass. The larvae have three pairs of legs, the third pair was ended with two long bristles. The average measurements were 374.4 u in length and 230.4 u in breadth, (P1. I, II, Fig. 3). The egg was oval in shape measuring about 316.8 u in length and 158.4 u in breadth, (P1. I, II, Fig. 4).

2. Sarcoptes scabiei var. cuniculi:

This type of mites was restricted to the face of rabbits (around the nose) and they were responsible for severe itching and loss of hairs in the affected areas (alopecia). It was found in 35% of the cases examined. The body was nearly rounded, the tegument has fine striae arranged in fields interrupted by spines or setae. The legs were very short and the posterior two pairs were not extending beyond the margin of the body. The epimeres of first pair of legs were fused in the midventral line.

In both sexes the pretarsi of the first and second pairs of legs bear empodial claws and stalked pulvilli. The female Sarcoptes measures about 424.8 u in length and 309.6 u in breadth. The third and fourth pairs of legs end in long setae and lack pulvilli (P1. I, Fig. 5, III, Fig. 1). The male was smaller in size, measuring about 230.4 u in length and 187.2 u in breadth, and was distinguished by the presence of stalked pulvilli on the fourth pair of legs, between which the sclerotised genital apparatus was found, (P1, I Fig. 6, P1. III Fig. 2). The egg was oval in shape containing six-leged larva, the average measurements of eggs was 172.8 u in length and 129.6 u in breadth (P1. III Fig. 3).

Effect of ivermectin:

Infected rabbits were treated successfully with a subcutaneous injection of ivermectin 200 microgram/kg. b.w. for two successive doses with 15 days interval. Individuals who handle infested rabbits were suffering from allergic manifestations in the form of urticaria.

DISCUSSION

The present species of rabbit-mites were identified according to *BAKER & WHARTON (1952), BENBROOK and SLOSS (1961) and KETTLE (1984).* It was found that *Psoroptes cuniculi and Sarcoptes scabiei* var *cuniculi* were the common species of mites affecting rabbits in Assiut locality. This finding agrees with *SANDFORD (1979),* who mentioned that the ear and skin mange caused by *Psoroptes and Sarcoptes* species of mites are responsible for high losses in affected rabbitaries. *KETTLE (1984)* recorded also that *Psoroptes cuniculi* is cosmpolitan in distribution and causes the ear mange of rabbits. The morphological characters of *Sarcoptes* mites of the present study were nearly similar to those of human mites *(S. scabiei* var. *hominis).* The same findings have been reported by *FAIN (1968),* who mentioned that there is one species of *S. scabiei*

which infests a very wide range of mammalian hosts and the morphological variations were of little taxonomic value. *MELLANBY (1943), YUNKER (1973) and MULLER & KIRK (1976)* recorded that *S. scabiei* infesting different mammalian species may differ more physiologically than morphologically.

As regards the effect of ivermectin on mites of rabbits, it was found that two doses of ivermectine (200 ug/kg. b.w.) injected subcutaneously to the infected rabbits, with 15 days interval, eliminated the mites and improved the skin and ear lesions. *MOUSA et al. (1986)* used a single injected dose of ivermectine (200 ug/kg. b.w.) for psoroptic and sarcoptic mange in rabbits and found that the infected rabbits were clinically improved. *Prosl and Kanout (1985)* adviced two treatments of ivermectin to eradicate the extensive infestation of sarcoptic mange. *BOWMAN et al. (1992)* found that the infected rabbits were treated by subcutaneous injection with ivermectin (200 ug/kg. b.w.) on day 0 and day 14 of the trial, and the efficacy of treatment with a total dose of 400 ug/kg. b.w. was 99.61%. This agrees with the present results. As regards the effect of rabbit-mites on the human beings, it was observed in the present study that the handlers of infected rabbits were suffering from allergic manifestations in the form of urticaria. This observations could be explained by the finding of *James and Harwood (1969)*, who recorded that the forms of *Sarcoptes* inhabiting the skin of mammals may exchange hosts to a certain degree, causes a transitory itch of individuals who handle these animals.

It could be concluded from the present study that the common species of rabbit mites were *Psoroptes cuniculi and Sarcoptes scabiei* var *cuniculi*, the topical application of two doses of ivermectin (200 ug/kg. b/w.) subcutaneously gave good result as acaricidal drug to combat the rabbit-mites without detectable side effects. Also people handling infested rabbits should be careful in handling by using gloves and avoid as much as possible direct contact with rabbits. Topical application of Benzyl Benzoate ointment might be advised when urticarial rashes appeared.

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DESCRIPTION OF FIGURES

Plate I : Camera Lucida drawing of :

Fig. 1: Adult female of *Psoroptes cuniculi.*
Fig. 2: Adult male of *Psoroptes cuniculi.*
Fig. 3: Larva of *Psoroptes cuniculi.*
Fig. 4: Egg of *Psoroptes cuniculi.*
Fig. 5: Adult female of *Sarcoptes scabiei* var *cuniculi.*
Fig. 6: Adult male of *Sarcoptes scabiei* var *cuniculi.*

Plate II: Photomicrograph of :

Fig. 1,2,3,4, showing ovigerous female, male, larva and Egg of *Psoroptes cuniculi* X 50.
Fig. 5, showing pubescent female of *P. cuniculi* x 100

Plate III: Photomicrograph of :

1, Dorsal view of *Sarcoptes scabiri* var *cuniculi* female X 150.
2, Ventral view of *Sarcoptes scabiei* var *cuniculi* male X 250.
3, Egg of *S. scabiei* var *cuniculi* contianing larva X 250.

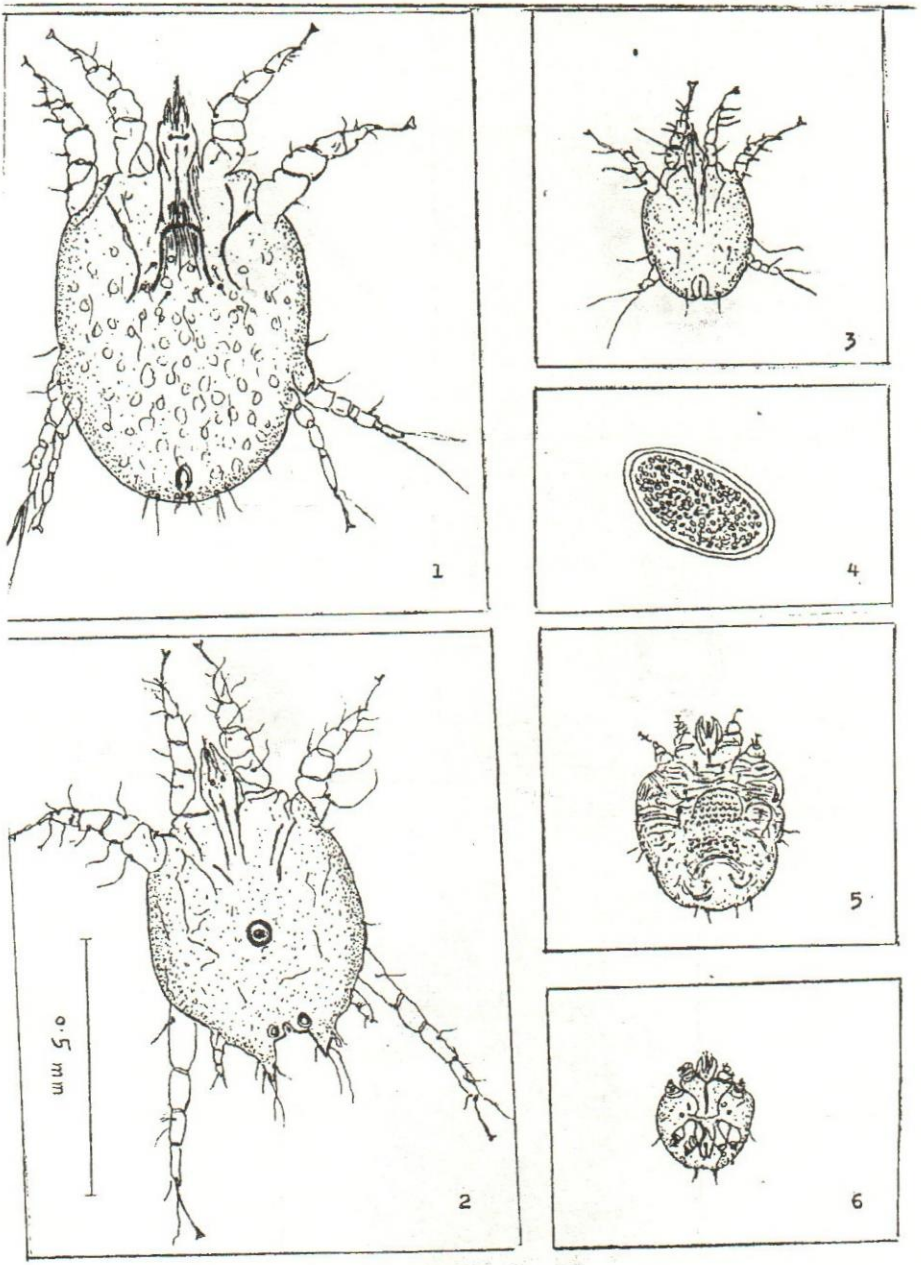

Plate 1.

Plate II

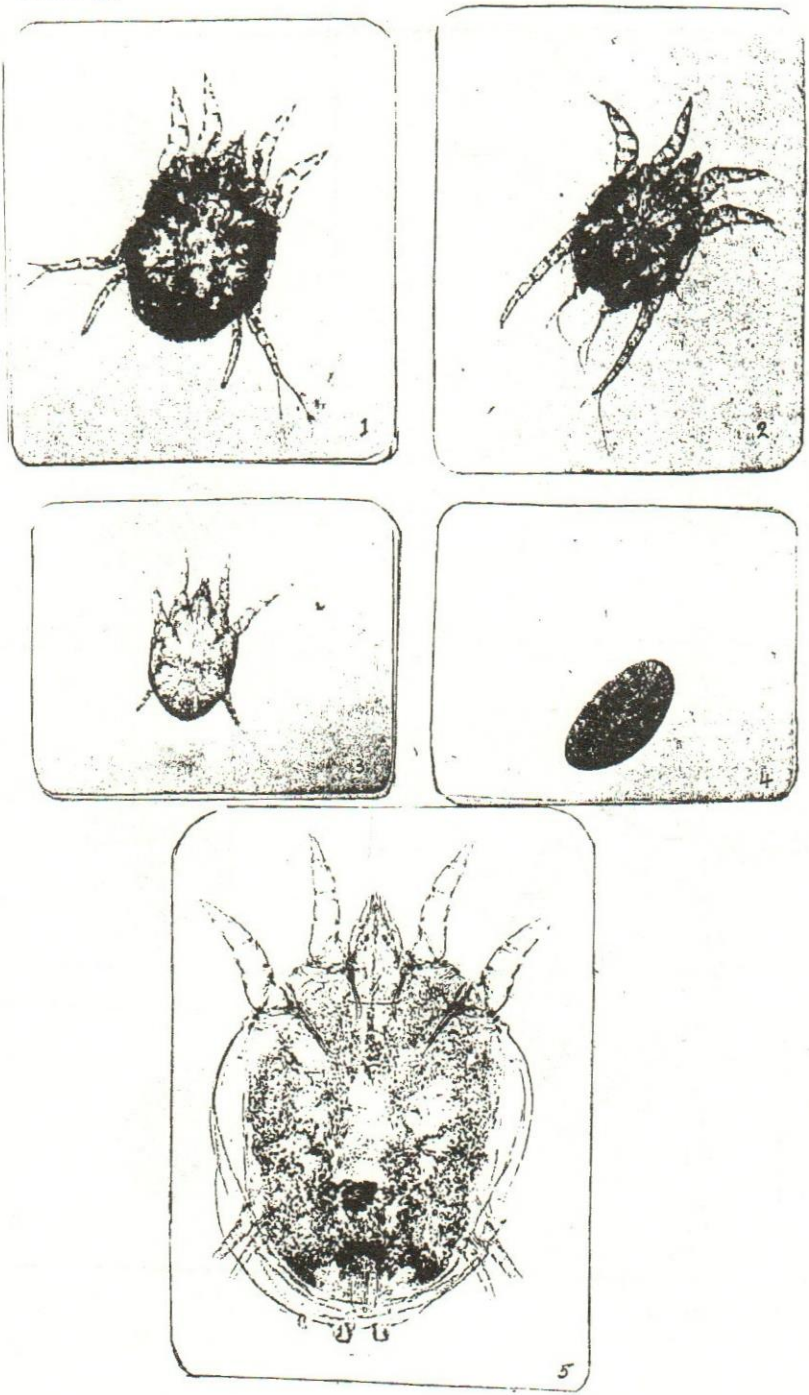

Plate LLI