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EXPERIMENTS ON BUTOX (DELTAMETHRIN) FOR TREATMENT OF NATURAL RABBIT MANGE IN EGYPT

(With 2 Tables and 9 Figure)

By

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تجارب على البيوتوكس (دلتاميثرين) فى علاج الجرب بالأرانب بمصر

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أجريت هذه الدراسة على ١٤٨ أرنب مصابة بالجرب من نوع بوسكات- نيوزيلندى- كاليفورنيا و بلدى. تم علاج ١٣٨ و ترك عشرة أرانب مصابه بدون علاج كضوابط للتجربة. باستخدام عقار بيوتوكس بالتخفيفات ٠,٠٥ ٪، ٠,٠٢٥ ٪ ضد كل من جرب الجسم ساركوبتى سكابياى و جرب الأذن سوروبتى كانيكيولاى. و قد أظهرت النتائج أن جرب الجسم ساركوبتى سكابياى يحتاج علاج مرتين بتخفيف ٠,٠٥ ٪ خلال اسبوعين و ثلاث جرعات علاجية بتخفيف ٠,٠٢٥٪ خلال ثلاثة اسابيع حتى يختفى الطفيل تماما من الأرانب المصابة. أما جرب الأذن سوروبتى كانيكيولاى فقد اختفى نهائيا من الأرانب بعد علاج مرة واحدة و خلال أسبوع باستخدام العقار بالتركيزين ٠,٠٥ ٪ و ٠,٠٢٥٪.

SUMMARY

This work was done on 148 Boscat, New Zealand, Californian and Balady Mange infested rabbits. Rabbit body mites, *Sarcoptes scabiei*, were treated by using two concentrations of Butox (deltamethrin), 0.05 % and 0.025%. The mites were eliminated within two weeks with 0.05 % concentration and after three weeks with 0.025 % concentration. In case of *Psoroptes cuniculi* (ear rabbit mites) the concentrations of 0.05 % and 0.025 % were 100 % effective within one week. No recurrence of infection was seen within three months observations.

Key words: *Rabbits - Mange - Treatment*

INTRODUCTION

Rabbits are considered as a great source of animal protein for human in Egypt.

Mange of rabbits is considered as one of the most dangerous diseases affecting rabbit breeding and produces high losses in infected rabbits. Mange in rabbits are caused either by *Sarcoptes scabiei* and/or *Psoroptes cuniculi* as well as other species.

Control of rabbit mange by several acaricides was the work of several authors in Egypt and abroad among them, WANI et al., (1989) and CURTIS and BROOKS (1990) controlled ear mites (*Psoroptes cuniculi*) in rabbits using ivermectin at 400 µg / Kg subcutaneously. While STRINADKIN et al. (1991) used Ectomin (Cypermethrin) in treatment of mange in rabbits within 3 days with a concentration of 0.05 %. On other hand DRAZ (1993) treated rabbit mange by using Ivomic (400 µg/Kg), Diazinon (Neocidol) and they were 100 % effective, while the same author mentioned that Malathion, Benzalin 25 % & sulfur ointment 8 % were unable to reach 100 % efficacy.

Butox is a new synthetic pyrethrin (deltamethrin) insecticide which has been found effective in treatment of ectoparasites specially mites in domestic animals. Several authors used that insecticide in their work, among them CARVALHO et al. (1982) who treated swine mange by using Butox (deltamethrin) by immersion in a 1:1000 solution for 3 applications. Also, RAMISZ and PIETRAK (1985) used Butox at 0.5 ml / liter (25 ppm deltamethrin) and their results revealed that Butox was 100 % effective against the fleas and lice and 50 ppm was 100 % against mange mites.

In sheep, ROSSI and LANFRANCHI (1987) found that Butox (deltamethrin) eliminated lesions and mites from 87.5 % of treated ewes and all the lambs in 25 days, at a dilution of 50 ppm by twice application at an interval of 11-12 days. Butox also was 100 % effective against canine mites by 0.005 % dilution (JANI et al., 1991) SHARMA et al., (1991) carried a field trial of therapeutic efficacy of Butox (deltamethrin) against ectoparasites in goats in India and their results revealed that, Butox at 1:500 dilution was 100 % effective within 10 days.

Moreover, EL-BAHY et al. (1993) used Butox 7.5 % pour-on (deltamethrin) in the control of chicken lice and dog ticks and their results indicated that Butox 7.5 % in 2.0 ppm/hen was able to eradicate the chicken body louse during 24 hours post-application. Also they found that a dose of 50 ppm/ animal was able to eradicate dog ticks within one week post-

application. In the same year, MAKKAR et al. (1993) used deltamethrin in treatment of *Sarcoptes scabiei* var *cameli* in a dilution of 0.5 ml / liter of water and the animals cured within 15 days.

In rabbits, few trials were made to treat mange by using Butox, ABDUL-RAHMAN et al. (1992); CHHABRA et al. (1993) and SHOBHAMANIA et al. (1993)who used Butox 3-4 times at weekly intervals, and it was 100 % effective and the mites were eliminated in 21-28 days. They stated that no recurrence of infection was seen in the 60 days observation period after treatment.

Therefore, the aim of this study is to clarify the efficacy of Butox for the treatment of Sarcoptic & Psoroptic mange of rabbits in Egypt.

MATERIAL and METHODS

Chemicals:

Butox (1R, 3R)-3 (2,2- dibromovingl)-2-2-dimethylcyclopropane carboxylate of (S)- α - cyano- 3 - phenoxybenzyle.

Generic name: deltamethrin (Roussel Uclaf).

Animals:

One hundred and forty-eight Boscat, New Zealand, Californian and Balady breeds of 6-12 months old naturaly infected by mange lesions which shown on the tail Fig. (1) and also those on nose and around mouth Fig. (2), and on fore and hind limbs Fig. (3) & (4), [88 rabbits].

Also mange lesions which detected inside the ears Fig. (5), [60 rabbits].

Methods:

Animal grouping: Rabbits were divided into 6 groups as follows:

I) Group (1): contained 42 rabbits infected with *Sarcoptes scabiei* and treated by Butox at concentration of 0.05 % by dipping method, twice with one week interval.

II) Group (2): contained 41 rabbits infected with *Sarcoptes scabiei* treated by Butox at concentration of 0.025 % by dipping, three times with one week intervals.

III) Group (3): contained 5 rabbits infected with *Sarcoptes scabiei* used as untreated control.

IV) Group (4): contained 28 rabbits infected with *Psoroptes cuniculi* treated by Butox at concentration of 0.05 % by ear dropping, only once.

V) Group (5): contained 27 rabbits infected with *Psoroptes cuniculi* treated by Butox at concentration of 0.025 % by ear dropping, only once.

VI) Group (6): contained 5 rabbits infected with *Psoroptes cuniculi* and left as untreated control.

Parasitological examination:

Skin and ear scrapings were microscopically examined and the mites were identified as *Sarcoptes scabiei* Fig. (6) as well as *Psoroptes cuniculi* Fig. (7) according to SOULSBY (1982) and GEORGI (1985).

The parasites were counted in each microscopic field for 50 ones for each examination ABDEL-RAHMAN et al. (1996).

RESULTS

The results presented in Table (1) and Fig. (8) revealed that by using concentration of 0.05 % body mites *Sarcoptes scabiei*, ranged between 0.50-2.08 with a mean of (1.33) parasite/ microscopic field before drug application. After dipping by one week, reexamination revealed that, the number of parasites decreased to 0.04-0.42 with a mean of (0.16), the parasites completely disappeared one week after the second treatment.

At a concentration of 0.025 % , three applications were used with one week intervals. The results indicated that the number of mites decreased from 0.62-2.08 with a mean of (1.26) before drug application to 0.18 - 0.82 with a mean of (0.42) after the first application then to 0 - 0.28 with a mean of (0.08) after second application. while after the third application, the mites completely disappeared .

On other hand, the treated rabbits were free from body mites, *Sarcoptes scabiei* during the three months observation period, while the infected non-treated (control) were diseased by the same degree within the whole period of the three months.

By using Butox in the treatment of rabbit ear mites "*Psoroptes cuniculi*" the results shown in table (2) & Fig. (9) revealed that, at concentration of 0.05 % of the drug, all rabbits were treated (28 rabbits) one week after one application. The mean number of the parasites per microscopic field decreased from (1.42) with range of 0.62 - 2.06 before drug application to zero within one week post-treatment. Also, by the same manner at a concentration of 0.025 % of Butox the mean number of rabbit ear mites "*Psoroptes cuniculi*" decreased from (1.34) with a range of 0.72-2.08 before drug application to zero up to the whole period of observations (3 months). On the other hand the infected control rabbits group still with the same infection till the end of the observation period.

DISCUSSION

The control of rabbit mange particularly (*Sarcoptes scabiei* and *Psoroptes cuniculi*) took place by using several acaricides as in case of Ivermectin (WANI et al., 1989, and CURTIS and BROOKS, 1990) and STRINADKIN .et al. (1991) who used Ectomin (cypermethrin) for the same aim. Also DRAZ (1993) used Ivomec, Diazinon, Malathion, Benzalin and sulpher in treatment of mange in rabbits. All the aforementioned acaricides are old and its efficacy reached in some of them to 100 % and others less than 100 %.

The results of the present study revealed that, using Butox in treatment of body mites (*Sarcoptes scabiei*) at a concentration of 0.05 % gave 100 % efficacy after 2 applications with one week interval while at a concentration of 0.025 % the rabbits were treated after 3 applications with one week interval.

Also, this study indicated that rabbit ear mites (*Psoroptes cuniculi*) was cured completely by using Butox within one week after drug application in both concentrations (0.05 % & 0.025 %). So, Butox (deltamethrin) was very effective on rabbit mange as shown in the present results. The results obtained by ABDUL-RAHMAN et al., (1992) in Egypt & that of CHHABRA et al. (1993) and SHOBHAMANI, et al. (1993), who used Butox 3-4 times at weekly intervals, revealed that the mites were eliminated in 21-28 days, while in this study the mites were completely eliminated within one week in case of *Psoroptes cuniculi* at both concentrations (0.05% & 0.025%) while in case of *Sarcoptes scabiei*, the parasites were completely eliminated within 2 weeks at the concentration of 0.05 % and within 3 weeks at the other concentration 0.025 %.

Therefore, the use of Butox (deltamethrin) is recommended for its good efficacy, its rapid action and no recurrence of infection was seen within 3 months post-treatment as well as no adverse effects of the treatment were seen.

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Table (1) Efficacy of Butox in treatment of Rabbit mange (*Sarcoptes scabiei*)

Concentration of Butox	Number of infected rabbits	Number of mites per microscopic field during the experiment							
		Before drug application		1-week post the 1st application		1-week post the 2nd application		1-week post the 3rd application	
		Range	Mean	Range	Mean	Range	Mean	Range	Mean
0.05 %	42	0.50-2.08	1.33	0.04-0.42	0.16	0	0	zero	zero
0.025 %	41	0.62-2.08	1.26	0.18-0.82	0.42	0-0.28	0.08	zero	zero
infected untreated control	5	0.96-2.02	1.41	0.98-2.08	1.45	1.18-2.22	1.62	1.18-2.26	1.52

Table (2) Efficacy of Butox in treatment of Rabbit mange (*Psoroptes cuniculi*)

Concentration of Butox	Number of infected rabbits	Number of mites per microscopic field during the experiment			
		Before drug application		1-week post application	
		Range	Mean	Range	Mean
0.05 %	28	0.62-2.06	1.42	zero	zero
0.025 %	27	0.72-2.08	1.34	zero	zero
infected untreated control	5	0.78-2.02	1.25	0.88-1.98	1.36

Fig. 1: Mange lesion on the tail of infected rabbit

Fig. 2: Lesions of mange on the nose, around mouth and on fore limbs of infected rabbit.

Fig. 3: Mange lesions on fore limbs of infected rabbit.

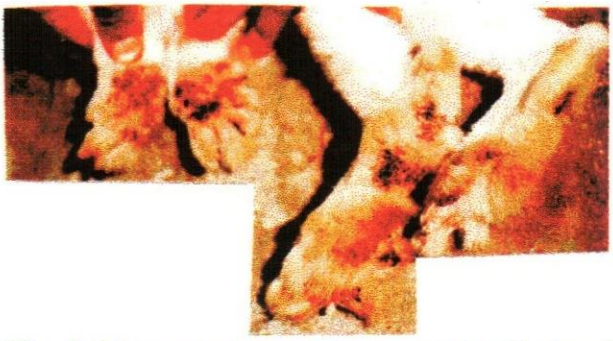


Fig. 4: Mange lesions on fore and hind limbs of infected rabbit.

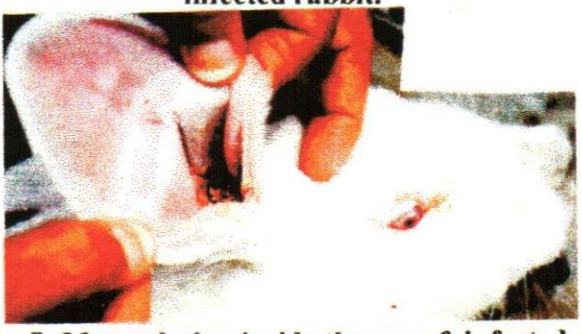
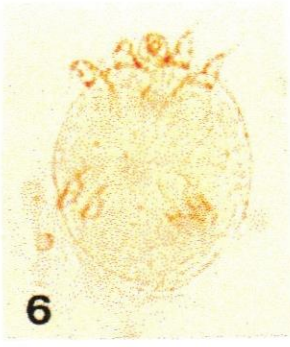


Fig. 5: Mange lesion inside the ear of infected rabbit.



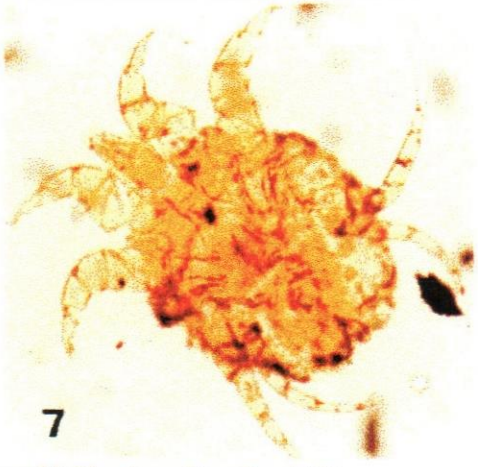


Fig. 6: *Sarcoptes scabiei* body mite of rabbit.

Fig. 7: *Psoroptes cuniculi* ear mite of rabbit

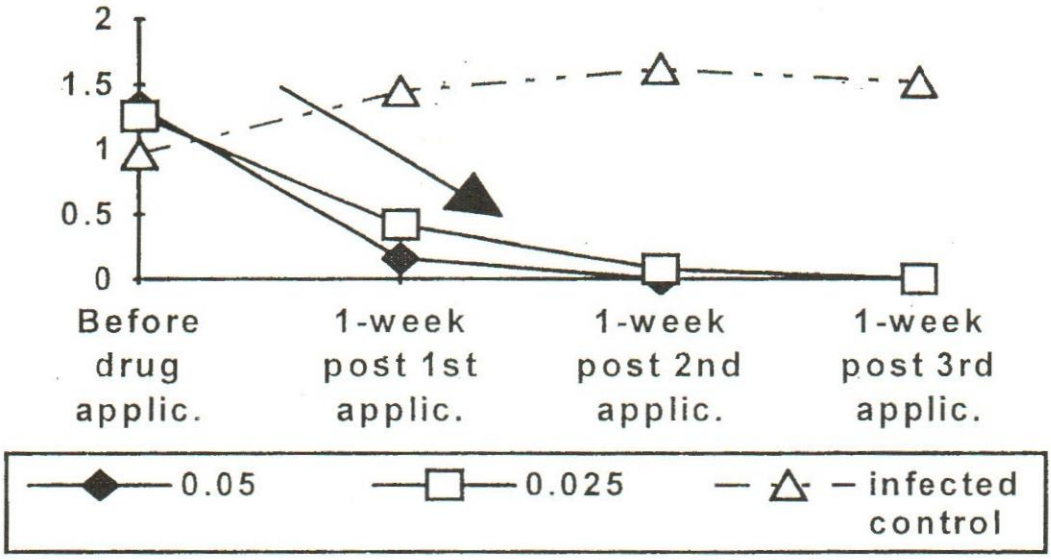


Fig (8) Efficacy of Butox in treatment of Rabbit mange (*Sarcoptes scabiei)*

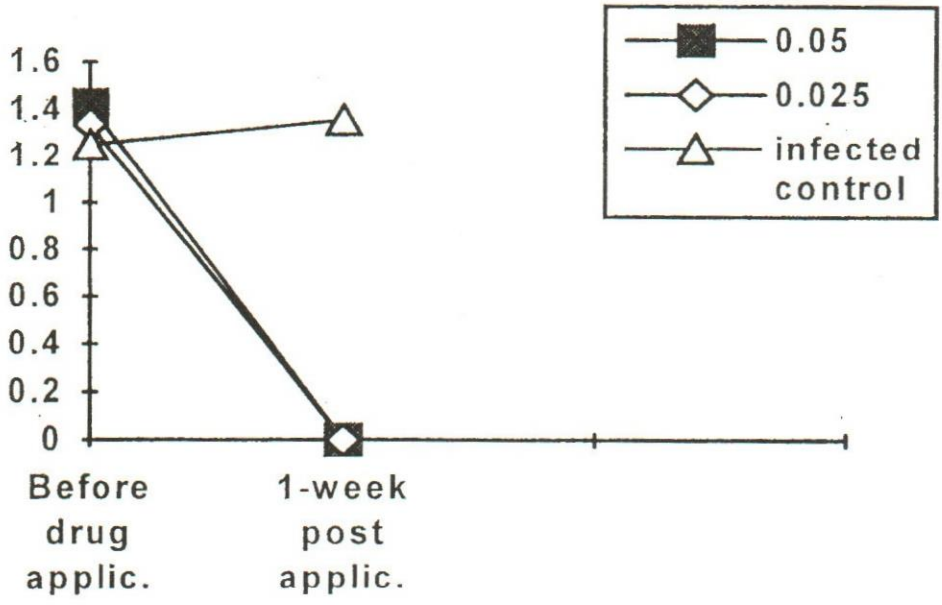


Fig (9) Efficacy of Butox in treatment of Rabbit mange (*Psoroptes cuniculi*)