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ACARICIDAL EFFICACY OF DECTOMAX (DORAMECTIN) ON TICKS AND MITE NATURAL INFESTATION AMONG CAMELS (CAMELUS DROMEDARIUS) IN EGYPT.

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SUMMARY

The present work was performed on 53 camels, to test the efficacy of Dectomax TM Pfizer at 200 µg/Kg b. w. (I/M) against *Hyalomma dromedarii* natural infestation and 300 µg/ Kg b. w. (I/M) against *Sarcoptes scabiei var cameli* as well as *H. dromedarii* natural infestation. The trials revealed 75.09% clearance for adult ticks and 72.2% for nymphs with 200 µg/Kg b. w. while it reached 100% in both stages and against mite at 300 µg/Kg b. w. 14 days post-treatment (pt) and till the end of the experiments (35 days). It was worthy to mention that, observation of these camels up to 60 days pt revealed no new infestation with the two ectoparasites.

INTRODUCTION

The research and development activities have by and large been directed towards the improvement of cattle, buffaloes, sheep, goats, rabbits and poultry. Mechanization had greatly supplanted the quality of the camel as a beast of burden yet the recent exhalation of prices of oil has again compelled some of the people to revert back to the most economical means of camel transport and camel is being effectively used in transporting (Cockrill, 1984) specially because camel is a hardy animal and tolerates the rugged climate and extremes of temperature encountered in the desert.

Sarcoptic mange and tick infestation are serious problems in many parts of the world posing a serious threat to camel health (Higgins, 1985; Melaku-Tefera, 1985; Kumar et al., 1992 and Pegram and Higgins, 1992). Some suggestions are given for integrated ectoparasite control with particular reference to the newer technologies and chemicals (Abdel-Rahman et al., 1998) available which are considered to be adaptable to the camel.

Control of camel ectoparasites by means of topically applied acaricides has not been universally successful. Difficulties with dipping or spraying of large numbers of camels have contributed to

failure of control due to laborious and often problematical application of acaricide washes. Therefore, the present work aimed to test the acaricide efficacy of Dectomax injectable which when proved, would be attractive alternative and facilitate treatment of mange and tick-infested camel herds.

MATERIALS AND METHODS

Drug:

Dectomax TM Pfizer (Doramectin), 25-cyclohexyl-5-0dimethyl-25 de (1-methyl propyl) Avermectin A.

Doses and administration:

200 µg/Kg b. w. (1 ml/50 Kg b. w.) and 300 µg/Kg b. w. (1.5 ml/50 Kg b. w.) as I/M injection in the buttock region.

Animals and experiments:

Testing the efficacy of Dectomax against natural infestation with mange:

19 male and female 12-36 months old camels, naturally suffering from mange lesions (in-between thighs, abdomen, neck and tail) their weight approxemately estimated each and randomly allocated into two groups in Oseem Village, Imbaba, Egypt. One group (10 camels) was as treated (1.5 ml/50 Kg b. w.) and other group (9 camels) was left as non-treated control. Camels were housed separately (as possible) throughout the study period.

Animals in both groups were monitored for mange infestation on days –7, 0, 7, 15, 28 and 35 days pt and then up to 60 days pt to obscure any new infestation. Skin scrapings were taken from 2-4 sites at the edge of an active mange lesion. Samples were prepared according to Pritchard and Kruse (1982) and the mean number of mites/ microscopic field (m / m. f.) was calculated where 10 m. f. were examined. Curicity % was calculated according to the following equation: Curicity % = (a-b) x 100, (a= number of treated camels on day a & b= number of treated camels still infested on days 7, 15… etc.

Testing the efficacy of Dectomax against natural infestation with hard ticks:

24 male and female camels 3-4 years old and heavily infested with hard ticks were selected in Batta Village, Benha, Kalubia, Egypt. The camels were randomly divided into two groups, one group of 14 camels as treated (1.5 ml/50 Kg b. w.) and the other 10 camels were left as non-treated ones.

Ticks (adults and nymphs) were counted from breast, in-between thighs, under tail, abdomen, hump and back as well as neck on –7, 0, 7, 15, 28 and 35 days pt. The tick clearance % was calculated according to the previously mentioned equation where a= mean number of ticks (adult and nymphs) / treated animals on day 0. & b= mean number of ticks (adults and nymphs) / treated animals still on days 7, 15…. etc.

Another group of 10 tick-infested camels was subdivided into 2 sub-groups (5 each) and one of them received only 1 ml/ 50 Kg b. w. Dectomax. All the previously mentioned parameters were also measured and both groups (24 and 10 cam-

els) were left up to 60 days in order to record any new tick infestation.

RESULTS

Results of the efficacy of Dectomax (300 mg/Kg b. w.) against camel natural infestation with Sarcoptes scabiei var cameli:

All camels in the treated group began to stop itching (scratching) one week pt while lesions started to heal 14 days pt and the animals looked healthy 3 weeks pt. Table (1) and chart (1), revealed that on 7 days pt 60% of the treated camels were free of mites while the m. / m. f. decreased to 1.0. One week more and till the end of the trial, curicity was 100% and m. / m. f. was 0.0. No new infestation among this group of camels was recorded up to 60 days pt. On the other side, the control group showed fluctuation in the m. / m. f. but still infested.

Results of efficacy of Dectomax (300 mg/Kg b. w.) against camel natural infestation with Hyalomma dromedarii:

Table (2) and chart (2a), revealed that adult *H. dromedarii* clearance was 95.98% on day 7 pt, while it reached 100% on day 28 pt and till the end of the experiment. Nymph's clearance on day 7 pt reached 94.52% while 100% of nymphs died 35 days pt. Up to 60 days no new tick infestation was observed.

Results of efficacy of Dectomax (200 mg/Kg b. w.) against camel natural infestation with H. dromedarii:

Table (2) and chart (2b) showed that this dose resulted in only 69.5% and 69.9% clearance among adults and nymphs *H. dromedarii* at the end of the trial (35 days pt) respectively.

Control non-treated animals in both dose trials continued in the normal pattern of tick infestation and fluctuated normally (table 2, charts 2a & 2b).

It was also worthy to mention that no adverse or local reactions were observed on all treated camels' 3 hours' pt and till the end of the observation period.

DISCUSSION

Doramectin induces a rapid non-spastic paralysis in nematodes and parasitic arthropods. The mode of action of avermectins and milbemycins does not involve a single mechanism. However it is presumed that the entire class, including Doramectin, acts by modulating chloride channels which are more accessible in nematodes and arthropods than in vertebrates (Turner and Schaeffer, 1990).

In the present work, a single intra-muscular injection of Doramectin (Dectomax TM Pfizer) administered at a dose rate of 300 mg/Kg b. w. showed amazing results in the complete elimination and killing of all Sarcoptes scabiei var cameli infesting camels. As this camel parasite has a zoonotic importance (Schillinger, 1987) and may spread rapidly (Lodha, 1986) . Many authors tried to compete this camel infection using many chemical products, Toxaphene (Teshume-Merhatsion, 1985), Ivomec S/C at 200 ug/Kg in twice dose (Hashim and Wasfi, 1986), (Jones, 1987) as well

Table (1): Efficacy of Dectomax against natural camel mange.

	Animals	Zero day	7 day	15 day	28 day	35 day
Treated (10)	Number of infested animals	10	4	0	0	0
	*m. / m. f.	1.69	1.0	0	0	0
	Curicity	0.0%	60.0%	100%	100%	100%
Control (9)	Number of infested animals	9	9	9	9	9
	Mean number of mites / microscopic field	1.95	1.91	1.87	1.93	1.69

*m. / m. f. = Mean number of mites / microscopic field.

Table (2): Efficacy of Dectomax against natural camel tick infestation.

Dose	Animals	Zero day		7 day		15 day		28 day		35 day	
		**MAA	***MNN	MAA	MNN	MAA	MNN	MAA	MNN	MAA	MNN
300 µg/Kg b. w. i.e. 1.5ml/50Kg b. w.	Treated animals (14)	710.6	677.61	28.5	37.1	13.1	19.5	00	4.76	00	00
	Clearance %	-	-	95.98%	94.52%	98.16%	97.12%	100%	99.3%	100%	100%
	Control animals (10)	660.5	567.4	653.4	583	658.3	580.21	698.3	498.3	697.11	510.3
200 µg/Kg b. w. i.e. 1ml/50 Kg b. w.	Treated animals (5)	692.5	658.3	172.5	183.1	150.1	179.2	194.4	159.3	211.5	197.8
	Clearance %	-	-	75.09%	72.2%	78.3%	72.8%	71.9%	75.8%	69.5%	69.9%
	Control (5)	587.5	418.3	581.3	422.4	553.2	420.1	560.3	429.2	569.4	479.2

**MAA = Mean number of adults / animal.

***MNN = Mean number of nymphs / animal.

Chart (1): Efficacy of Dectomax (1.5 ml/50 Kg b. w.) against natural camel mite infestation.

Chart 2a) : Efficacy of Dectomax (1.5 ml/50kg b.w.) against natural camel tick infestation

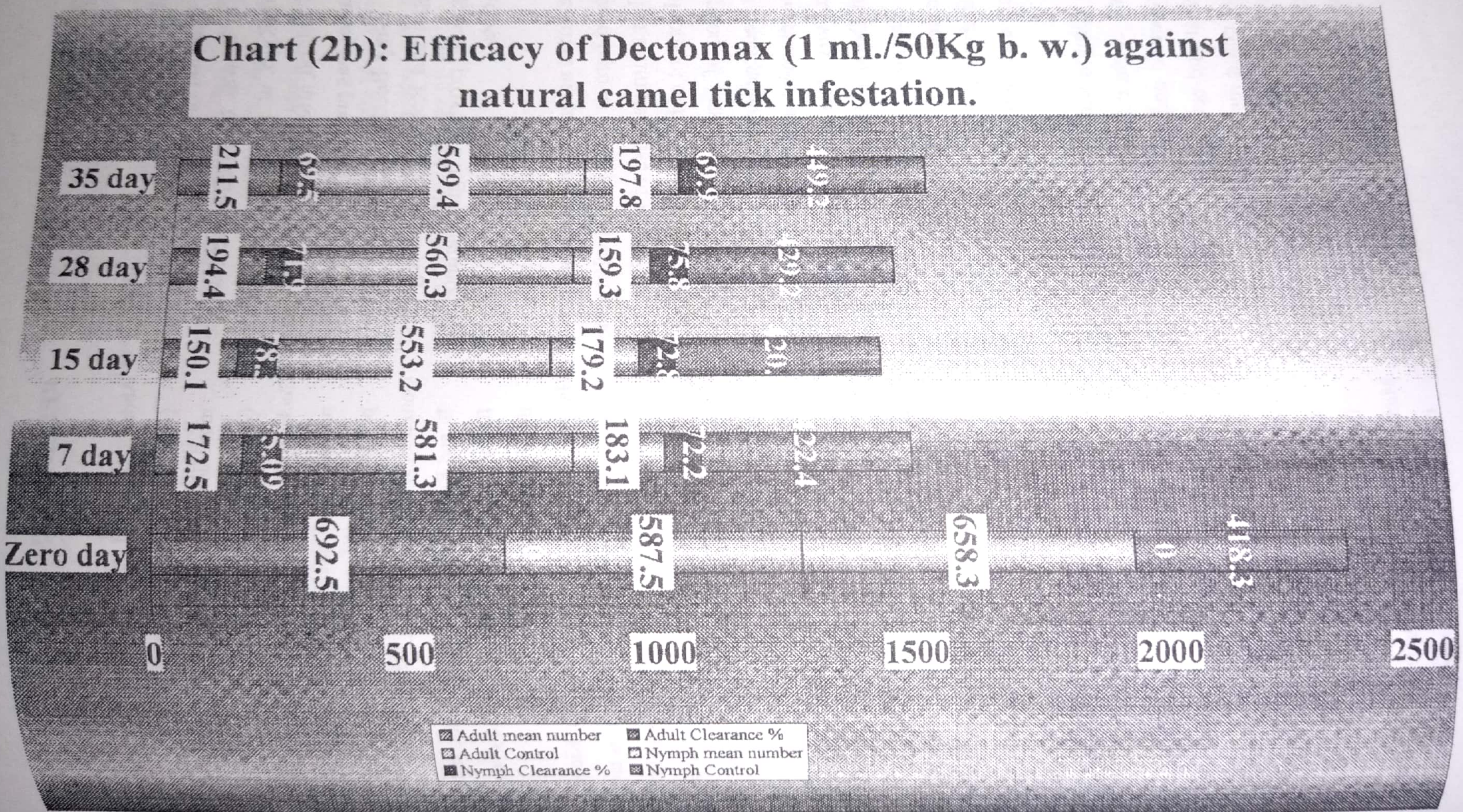

Chart (2b): Efficacy of Dectomax (1 ml./50Kg b. w.) against natural camel tick infestation.

as Radwan et al. (1987).

On the other side, the present study revealed that the I/M single injection of Dectomax at dose rate of 300 mg/Kg b. w. was 100% effective than the dose of 200 mg/Kg b. w. in controlling Hyalomma dromedarii natural infestation. The control of tick infested camel was preciously tried by Khalil et al. (1984) using Becdysone, Michael (1986) and Tager-Kagan and Robin (1986) using Ivomec 200 ug/Kg b. w. proving a high clearance but did not reach 100%.

The use of Dectomax against camel external parasites is considered here as the first trial where the extensive and indiscriminate use of acaricides has led to the development of high levels of resistance while the adoption of less susceptible breeds of camel, has not been generally accepted owing to their lively temperament and lack of information on their productivity. The therapeutic and persistent efficacy of Doramectin, as a parentral application against *Sarcoptes scabiei var cameli* and *Hyalomma dromedarii* in camels opens up the possibility of integrated ectoparasite control programs in tropical and subtropical areas.

In the workers opinion and according to Gonzales et al. (1993), we could conclude that, the combination of therapeutic and persistent efficacy of Dectomax against end-ectoparasites (when completed) of camel could result in a reduction in the total cost of parasite control and in the number of times that animals need to be managed for treatment during the year.

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