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COMPARATIVE EFFICACY OF DIFFERENT ROUTES OF APPLICATION OF IVERMECTIN AGAINST LICE AND MITES IN PIGEONS

(With One Table)

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مقارنة كفاءة الأيفرمكتين عند إعطائه بالطرق المختلفة لعلاج الحمام المصاب بالقمل والعث

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أجريت الدراسة على ٣٢ طائر مصاب بالقمل والعث وتم تقسيمها إلى أربعة مجموعات حقنت المجموعة الأولى بالعضل بجرعة مقدارها ٢٠٠ ميكروجرام أيفرمكتين لكل كيلو جرام ، والمجموعة الثانية حقنت تحت الجلد بنفس الجرعة ، وفى المجموعة الثالثة تم إستخدام الدواء موضعياً بتركيز (٠,١٪) ، والمجموعة الرابعة ضابطة وتبين من النتائج أن الدواء عند حقنه بالعضل لم يؤثر على القمل ، بينما الطيور المصابة بالعث قد شفيت تماماً بعد سبعة أيام من بداية إعطاء الدواء ، وتبين أيضاً أن الطيور المصابة بالقمل والعث والمعالجة بعقار الأيفرمكتين موضعياً قد تم شفاؤها تماماً بعد ثلاثة أيام من إستخدام العقار . ويتضح من الدراسة أن يفضل إستخدام الأيفرمكتين موضعياً لعلاج الحمام المصاب بالقمل والعث .

SUMMARY

Pigeons infested with feather mites (Megninia columbae) and lice (Columbicola columbae) were injected intramuscularly or subcutaneously or topically treated with ivermectin. A single injection of ivermectin (200 ug/kg) either intramuscularly or subctaneously was inadequate to eliminate the Megninia columbae within 7 days. Topical aplication of ivermection 0.1% eliminated both mites and lice within 3 days.

INTRODUCTION

Pigeons is one of domesticated birds, bred in Egypt as a source of animal proteins. Biting lice (Mallophaga) and mite (Acarina) infestations are rarely fatal but severe affection causes irritation and disrupted feeding resulting in anaemia, retarded growth, lower egg production and loss vitality of birds (MANUEL, 1981). Ivermectin, a derivative of one of the avermectin compounds. These compounds are a family ofchemically related agents which exhibit extraordinarily potent antiparasitic activity. They are produced by streptomyces avermitilis and have been identified as a series of macrocyclic lactone derivatives having full activity against numerous immature and mature nematode and

arthropod parasites (CAMPBELL, 1981; HOTSON, 1981). In birds ivermectin is effective against mites (HOGON et al., 1984; TASSI, 1984) and against Ascaridia and Cappillaria spp infestation in pigeons. Ivermectin is also highly effective in eliminating ectoparasites of swine (BARTH and BROKKEN, 1980; LEE et al., 1980), cattle (MELENEY, 1982; WRIGHT, 1980) and sheep (SURTHERLAND, 1981; MELENEY et al., 1980).

The purpose of the present study was to determine the efficacy of a single intramuscular or subcutaneous injection or topically application of ivermectin against Megninia columbae and Columbicola columbae in pigeons.

MATERIALS and METHODS

Birds :

Thirty two adult pigeons of the same age (14 weeks) with essentially the same degree of natural infestation with both lice and mites were selected for this investigation. The identification of lice were performed according to the key of STOJANOVICH and PRATT (1962) while mites were identified according to the key of BAKER et al. (1956).

Grouping :

The infested birds divided into four groups (each includes 8 pigeons). Each group was housed in a separate cage. Adequate distance was left between cages to eliminate cross contamination. The first group was injected intramuscularly in the pectoral muscle with ivermectin (Ivomec. MSD AGVET) at a dose rate of 200 ug/Kg. The second group was injected with the same rate subcutaenously. The third group was topically applied as spray with ivermectin salution 0.1%. The drug was dissolved in a mixture of two parts dimethyl sulphoxide and one part polyethylene glycol. The fourth group was served as a control. Birds of the different groups were examined daily for the determination of the infestation degrees.

RESULTS

Examination of the pigeons under investigation revealed that lice (Columbicola columbae) and mites (Megninia columbae) could be isolated. Injection of 200 ug invermectin intramuscularly or subcutaneously did not eliminat lice. However, 2 of 8 pigeons infested with mites and injected with ivermectin at 200 ug/Kg S.C or I.M. were completely free of mites at the 4th days. All injected pigeons were completely free of mites at the 7th days post treatment. Topically application of ivermectin in pigeons in group (3) began to eliminate lice and mites at 2nd days and totally eliminate it at 3rd days post treatment. (Table (1).

DISCUSSION

The results of the experiment showed that injection of 200 ug/Kg ivermectin intramuscularly or subcutaneously eliminate the feather mites within seven days. This was nearly similar to the results obtained HOGON et al. (1984) and KELSO (1984) who treated caged birds infested with leg mites with intramuscular injection of 200 ug/Kg ivermectin. Lice was recorde to be not affected with intramuscular or subcutaneous

injection. This might be attributed to the fact that this lice species fed of feather products which contain less traces of the inejcted drug. This result was disagreed to that obtained by MELENEY (1982). Who found biting lice (Bovicola bovis) were eleminated from calves treated intramuscularly.

Topical application of ivermectin solution (0.1%) eliminate both mites and lice within three days post application. This rapid action of ivermection (partial paralysis or complete irriversable loss of ectoparasites motility (CENTURIER and BARTH, 1980) compared with the parenteral routes might be attributed to the direct contact between the applied drug and the extrenal parasites. Although, the used concentration was much lower than used by RYAN (1986) who used a concentration of 1% ivermectin in controlling Cnemidocoptes mites by topical application. This big variation in the concentration used (ten fold) may be due to Megninia columbae and Columbicola columbae more sensitive to ivermectin than Cnemidocoptes mites.

It could be concluded from this study that topical application of 0.1% ivermectin gave a good results as Acaricidal drug for combat both lice and mites of pigeons without detectable side effects.

REFERENCES

Baker, E.W.; Evans, T.M.; Gould, D.J.; Hall and Keegan, H.L. (1956): A Manual of parasitic mites of medical and economical importance, New York; National Pest Control Association.

Barth, D. and Brokken, E.S. (1980): The activity of 22,23-dihydlroa-vermectin B_1 against the pig Louse, Haematopinus suis. Vet. Rec. 106: 388.

Campbell, W.C. (1981): An introduction to the avermectins. NZ. Vet. J. 29: 174-178.

Centurier, C. and Barth, D. (1980): Efficacy of ivermectin varsus ticks in cattle. Parasit. Infekt. Hyg. 1, Abst. 267.

Hogan, H.L.; Joseph, D.; Henrickson and Lowensting, L. (1984): Efficacy and safety of ivermectin treatment for scaly leg mite infestation in Parakeets. Abst. Pap. Annu. Meet. Am. Assoc. Zoo Vet., louisville, ky, p. 156.

Hotson, I.K. (1981): The avermectins A new family of antiparasitic agents. J.S. Afr. Vet. Assoc. 52: 348.

Kelso, P.C. (1984): Ivermectin cures scaly mite infestation. Vet. Med., 79, 446.

Lee, R.P.; Dooge, D.J.D.; Preston, J.M. (1980): Efficacy of ivermectin against Sarcoptes scabiei in pigs, Vet. Rec. 107, 503-505.

Manuel, F.M. (1981): The ectoparasites (lice and mites) occuring on domestic chicken in the Philippines. Philip. J. Vet. Med. 20(1).

Meleney, W.P. (1982): Control of psoroptic scabies on calves with ivermectin. Am. J. Vet. Res. 43: 329-331.

Meleney, W.P.; Wright, F.C.; Guillot, F.S. (1980): Identification and control of psoroptic scabies in bighorn sheep. Proc. Annu. Meet. U.S. Animal Health Asoc. 84: 403-407.

Ryan, T.R. (1986): Cnemidocoptic mite infestation of caged birds. Med. Vet. Pract., 67, 525-526.

Stojanovich, C.T. and Pratt, H.D. (1962): Pictorial key to some common species of Mallophaga on chickens U.S. Dept. Health. Educat. and Walfare, Publ. Health Serv. Atlanta.

Sutherland, I.H. (1981): Ivermectin, a novel antiparasitic agent. Vet. Rec. 108: 228.

Tassi, P. (1984): Topical treatment for scaly mites. Vet. Med. Sm. Anim. Clin., 79, 1447.

Wright, F.C. (1980): Acaricide screening for control of psoroptic mites. Proc. Entomol. Soc. Am., 5, 222-223.

Table (1): Efficacy of ivermectin on lice and mites using different routes of application.

Group No.	No. of pigeons	Species	Route of injection	Percentage of infestation days post injection 0	1	2	3	4	5	6	7	8
1	8	L	I.M.	100	100	100	100	100	100	100	100	100
		M		100	100	100	100	80	50	30	0	0
2	8	L	S.C.	100	100	100	100	100	100	100	100	100
		M		100	100	100	100	80	50	30	0	0
3	8	L	T.	100	100	60	40	0	0	0	0	0
		M		100	100	50	30	0	0	0	0	0
4	8	L	-	100	100	100	100	100	100	100	100	100
		M		100	100	100	100	100	100	100	100	100

L = Lice. I.M. = Intramuscular injection. M = Mites. T = Topical.
S.C. = Subcutenous injection