قسم: أمراض الدواجن
كلية الطب البيطري - جامعة أسيوط
رئيس القسم: د. عبد المطلب شحاته

دراسات فاعلية الأيفرمكتين في علاج الطفيليات الخارجية والديدان الأسطوانية في الدجاج

3- تأثير الأيفرمكتين عن طريق الفم على مختلف المراحل لقراد الدجاج

صلاح موسى، ناهد جاد، عادل سليمان، إبراهيم سكر، محمود عبد الرحيم

عند اعطاء الدجاج جرعة 100 ميكروجرام من الأيفرمكتين لكل كيلو جرام وزن حي عن طريق الفم تسبب في التخلص نهائياً من مختلف مراحل قراد الطيور.

وقد أظهرت القراد النيافع درجات متفاوتة من الشكل بنسب 80، 90، 100.

25 عندما فذي على طيور معالجة بعد 3، 5، 10، 15، 20، 25، 30، 40، 45، 60 ساعة على التوالي.

وذلك أظهر القراد الذي لم يتأثر ظاهراً انخفاض في معدل وضع البيض ونسبة الفقس.

* كلمة الطُب - جامعة أسيوط*
INVESTIGATIONS ON THE EFFICACY OF IVERMECTINE FOR ECTOPARASITES AND NEMATODES IN CHICKENS
III. EFFECT OF ORAL ADMINISTRATION OF IVERMECTINE ON DIFFERENT STAGES OF "ARGAS PERSICUS"
(With 2 Tables)

By
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SUMMARY

An oral dose of 100 μg ivermectine per kgm bodyweight proved to be the suitable therapeutic dose which resulted in complete eradication of different stages of fowl ticks.

Engorged ticks showed 80, 80, 100, 90 and 75% paralysis when fed on treated birds after 3, 15, 24, 48 and 72 hours respectively, active ticks showed sever reduction in egg laying rate and egg hatchability.

INTRODUCTION

Despite all efforts to control ectoparasites, serious losses among poultry to be reported as due to their role in the transmission of diseases. The major parasitic problem is the soft tick "Argas persicus" which is present in large numbers in most poultry establishments. Due to climatic differences, it is a more serious problem in southern Egyptian villages than in those in Delta (REID, 1956).

Many drugs have been used to control the parasite both on the host and premises, but laborious individual bird application methods are inappropriate to modern poultry production (SEN, 1938 and GAD, 1982).

The acaricidal effect of ivermectine after oral or subcutaneous administration to cattle and sheep have been documented in many publications (DRUMMEND, et al. 1981 and PERGRAM & LEMCHE, 1985).

The purpose of the present work was to study the effect of different doses of ivermectine given orally to chickens on different stages of "Argas persicus" at various time intervals post-treatment.

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MATERIAL and METHODS

Fowl Tick Colonies:
All collected stages were identified according to the criteria given by LOUNSBUY, 1903; HOOGSTRALL, 1956; SONENSHINE, et al. 1962; SOLIMAN, 1965 and GAD, 1982.

Laboratory Rearing of Argas Persicus:
Larvae, nymphs and adult stages were fed on white leghorn chickens according to the procedure described by MICKS, 1951 and GAD, 1982.

Moulting process and mating of fowl ticks occurred 24 hours after engorgement of both sexes and then incubated individually. Three weeks after egg deposition, hatched larvae attached themselves to the host. After full engorgement larvae dropped off within 3-5 days especially at night looking a hiding place (BISHOPP, 1919 and HOOGSTRALL, 1956).

Drugs:
Ivermectine (Otherwise known as M.K. 933 or 22,23 dihydro-ivermectine B1; Merck Sharp & Dohme) was supplied in a formulation containing the drug in 1% concentration.

Experimental Design:
Experiment I:
Efficacy of drug on engorged ticks fed on donor treated birds with 100 Ug/kgm.B.W. of Ivermectine after different time intervals.

Experiment II:
Effect of different doses of Ivermectine was studied. Doses of 50, 100 and 150 ug/kgm. B.W. were given orally to donor birds. Nymph and adult ticks were fed on these birds 24 hours post-treatment (P.T.). Engorged ticks were observed daily.

Experiment III:
Effect of the drug on larval stages was studied. Groups of 150-200 highly active hatched larvae were fed at 24 hours P.T. by 100 ug/kgm.B.W. Ivermectine. Results were recorded after 3 trials.

Control groups of ticks were fed on non treated donor chickens parallel to all experimental groups.

RESULTS

Experiment I:
The effect of a single dose of Ivermectine on ticks fed after different time intervals are shown in table (1).

Percentage of paralysed ticks were 80, 80, 100, 90 and 75% after 3, 15, 24, 48 and 72 hours P.T. respectively.

Results of egg-laying observation of treated stages revealed no evidence of excretion even in active ticks. The ability of egg laying was markedly reduced and the hatchability rate varied from 20-5% as shown in table (2).

EFFECT OF EVERMECTINE

Experiment II:
Effect of different doses of Ivermectine 50, 100 and 150 ug/kgm.B.W. on Argas persicus at 24 hours P.T.

In 1st. group 20% paralysis percent, in 2nd. group 100%, on 3rd group 100% and in control group 0%. From these results, it is clear that the effect of 100 ug/kgm.B.W. is the suitable therapeutc dose.

Experiment III:
By observation, the red inflammatory biting areas all over the body of donor chickens were detected, but larvae were not noticed.

On the other hand attached seed ticks (engorged larvae) were easily observed 3-5 days post-feeding, engorged larvae dropped off and were collected in the control group.

Table (1)
The efficacy of 100 ug/kgm B.W. Ivermectine on different stages of Argas persicus

<table>
<thead>
<tr>
<th>Groups Stage</th>
<th>G I 3 h.p.t</th>
<th>G II 15 h.p.t</th>
<th>G III 24 h.p.t</th>
<th>G IV 48 h.p.t</th>
<th>G V 72 h.p.t</th>
<th>Control untreated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>20 3 17 20 4 16 20 - 20 20 - 20 20 2 18 20 20 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>20 4 16 20 - 20 20 - 20 20 4 16 20 8 12 20 20 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60 12 48 60 12 48 60 - 60 60 6 54 60 15 45 60 60 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paralysis%</td>
<td>80%</td>
<td>80%</td>
<td>100%</td>
<td>90%</td>
<td>75%</td>
<td>0%</td>
</tr>
</tbody>
</table>


Table (2)
Effect of Ivermectine on fertilization (treated females and treated males)

<table>
<thead>
<tr>
<th>Treated Females</th>
<th>3 h.p.t</th>
<th>48 h.p.t</th>
<th>72 h.p.t</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of active females</td>
<td>5</td>
<td>2</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Ovipositive females</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>The day of laying P.F.</td>
<td>19</td>
<td>13</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>No. of eggs/female</td>
<td>45</td>
<td>40</td>
<td>17</td>
<td>95</td>
</tr>
<tr>
<td>Hatching %</td>
<td>20%</td>
<td>10%</td>
<td>5%</td>
<td>95%</td>
</tr>
</tbody>
</table>

P.F.: Post Fertilization.
DISCUSSION

Many acaricides have been used to control tick infestation in poultry farms. However, such treatments rely on individual bird application and premises, which is difficult to achieve in large poultry populations (SEN, 1938 and GAD, 1982).

Results of experiment I showed that the percentage of paralysed ticks were 80, 80, 100, 90 and 75% after 3, 15, 24, 48 and 72 hours P.T. respectively. Not only tick paralysis was observed but also egg laying and hatchability rate of active ticks was markedly reduced.

It could be concluded that the parameter of ivermectine reached its peak within 24 hours P.T. At this fixed time, different doses of ivermectine were tested in exp. II which revealed that a dose of 100 ug/kg. B.W. was the suitable therapeutic economic and safe dose in agreement to MOUSA, et al. (1986).

Exp. III showed that a dose of 100 ug/kg B.W. resulted in 100% mortalities of tick larvae fed on treated birds. Larvae failed to hold themselves attached on treated birds. The acaridical effect of ivermectine have been documented by DRUMMOND, et al. (1981) and PERGRAM & LEMCHE, 1983).

It could be concluded that an oral dose of 100 ug/kgm. B.W. when repeated after 2-3 weeks will be helpful for eradication of tick infestation regarding different stages of the parasite.

REFERENCES


