

## EFFICACY OF MOXIDECTIN POUR ON IN YOUNG RED DEER

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### ABSTRACT

Red deer (*Cervus elaphus*) fawns were left undrenched after weaning to allow a nematode build up. When mean lungworm (*Dictyocaulus viviparus*) faecal larval counts exceeded 30 larvae per gram of faeces, twenty animals were treated with a moxidectin 0.5% w/v pour-on formulation and twenty animals were left as untreated controls. Comparison of the treatment group with the control group on the basis of worm counts demonstrated that the formulation was highly effective in eliminating *D. viviparus* (99.5%), *Haemonchus*, *Ostertagia*, *Trichostrongylus* and *Oesophagostomum* spp. (>99.9%) when topically applied (wither to base of tail) at the rate of 1 ml per 10kg liveweight (0.5mg/kg) seven days earlier.

### INTRODUCTION

Moxidectin formulations were shown to be highly effective in eliminating nematodes from cattle, sheep and other domestic animals. The compound was particularly effective against lungworm (*Dictyocaulus viviparus*) in cattle. Because this nematode is the most significant parasite in recently weaned farmed red deer (*Cervus elaphus*) and that a pour-on formulation provides convenience of use to the farmer, a study was undertaken to evaluate the efficacy of a moxidectin pour-on formulation against lungworm and naturally acquired intestinal nematodes in young red deer.

### MATERIALS AND METHODS

After weaning, 48 red deer fawns were selected to form the group from which the 40 experimental animals were to be selected. The animals were left undrenched to allow lungworm (*Dictyocaulus viviparus*) infection to build up to ensure a significant burden at the time of treatment. Faecal larval counts, using a modified Baerman technique having a sensitivity 0.2 larvae per gram of faeces, were used to monitor this build up.

On April 9, mean larval count of the group was 30 larvae per gram of faeces with a range of 0-103. These levels were considered to be high enough to commence the study at first available opportunity.

On April 22, day 0, 40 fawns with the highest faecal larval counts on April 9 were selected to become the experimental animals. Fawns were randomly allocated to treatment or control group after taking into consideration sex (equal number of males and females in each group) and faecal larval counts.

Faeces were collected from all animals for larval and egg counting to establish pre-

Group 1 was treated with moxidectin pour-on at the rate of 1ml per 10kg liveweight (0.5mg/kg), using a plastic 10ml disposable syringe. The immediate pre-treatment bodyweight of the hind fawns ranged from 30.6 - 39.4kg (dose 4ml) and the stag fawns ranged from 36.2 - 47.6kg (dose 5ml).

Treatment and control groups were run separately from immediately prior to treatment administration until the end of the experiment.

On April 29, day 7, faeces were again collected from all experimental animals and 7 animals from the treatment group and 7 animals from the control group were necropsied for lungworm and gastro-intestinal worm counting.

**RESULTS:**

Results are tabulated in Tables 1-4.

Efficacy data against lungworm (D. viviparus) is shown in Table 1 using mean faecal larval counts and in Table 2 using mean total lungworm counts.

**Table 1.**

	<b><u>Mean Lungworm Larval Counts*</u></b>	
	<b>Group 1</b>	<b>Group 2</b>
	<b>Moxidectin Pour-On</b>	<b>Untreated Control</b>
Day 0	64	39
Day 7	0.15	57

\*Dictyocaulus larvae (L1) per gm of faeces. Geometric mean using log 10 (x + 1)

Compared with untreated controls this represents a reduction of 99.74%

**Table 2.**

	<b><u>Total Lungworm Counts Day 7*</u></b>	
	<b>Group 1</b>	<b>Group 2</b>
	<b>Moxidectin Pour-On</b>	<b>Untreated Control</b>
	0.4	93.3

\* Dictyocaulus viviparus counts 7 days post-treatment. Geometric mean using Log 10 (x + 1).

Compared to untreated control this represents a reduction of 99.55%.

Efficacy data against gastro-intestinal nematodes are shown in Table 3 using mean faecal egg counts and Table 4 using mean worm counts.

**Table 3.**

	<b><u>Mean Faecal Egg Counts*</u></b>	
	<b>Group 1</b>	<b>Group</b>
	<b>Moxidectin Pour-On</b>	<b>Untreated Control</b>
Day 0	67	71
Day 7	-	26

\* Mean nematode in eggs per gm faeces Geometric mean using Log 10 (x + 1)

This represents a reduction in excess of 99.9%

**Table 4**

	<b><u>Mean Total Worm Counts Day 7*</u></b>	
	<b>Group 1</b>	<b>Group 2</b>
	<b>Moxidectin Pour-On</b>	<b>Untreated Control</b>
<u>Haemonchus</u>	-	34
<u>Ostertagia</u>	-	2349
<u>Trichostrongyles</u>	-	2684
<u>Oesophagostomum</u>	-	31

\* Mean nematode worm counts 7 days post treatment. Geometric mean log 10 (x + 1).

This represents a worm reduction in excess of 99.9%.

### **CONCLUSION**

Comparison between the treatment group and the control group on the basis of worm counts showed that moxidectin 0.5% w/v pour-on was highly effective in eliminating Dictyocaulus viviparus (99.5%), Haemonchus, Ostertagia, Trichostrongylus and Oesophagostomum spp. (>99.9%) from 4-5 months old red deer fawns when topically applied at the recommended dose rate of 1ml per 10kg liveweight (0.5mg/kg).