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The Effect of Haemonchus Contortus Infection on Productive Performance of Awassi Sheep and Black Iraqi Goats

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ABSTRACT

This study was conducted to find out the effect of the infection with *H.contortus* on some productive parameters in local Awassi lambs and Black Iraqi kids. Ten lambs and ten kids of 8-9 months age from veterinary medicine college farm were selected and each kind of animals were divided into control(n=4) and infected (n=6). Infected groups were drenched with 500 L3/Kg. body weights, while control groups were kept clean from any infection. Fecal egg counts (FEC), body weight and clinical signs were carried out weekly and recorded for 11 weeks and production. Physical traits of the wool and hair were evaluated at the end of the experiment. The results of FEC showed that the lambs were significantly higher ($P<0.01$) than the kids along the experimental period. Significant depression in body weight gain in infected groups was recorded and the infected lambs were more affected than the kids. Also there were a significant depression ($P<0.01$) in wool production and physical traits of infected lambs more than hair traits of infected kids. Infected kids showed a partial self-cure in the 6th week compared to week 8th for infected lambs.

Keywords: **Haemoncus, contortus, production, sheep, goats.**

1. Introduction

Many studies showed that gastro-intestinal parasites are widely spread in the tropical and semi- tropical region and *H. contortus* is the most important parasite which effect on the productive and physiological parameters of the ruminants especially sheep and goat.

The depression in weight gain of the infected animals may be duo to loss of appetite (Bisset et al., 2001), because of the inflammatory changes in the abomasum's wall cells during the larval and adult stages (Beriajaya and Copeman, 1996). Alzuhairyet al. (1997) and Ali et al. (1996) showed that the depression in weight gain of infected animals were very clear especially when they fed on low quality diet. Also Beriajaya and Copeman (2006) were explained the effect of infection with H. contortus on lambs weight gain as a results of a severe damages in the abomasal mucosa which may affect N. digestion.

H. contortus infection could also affect lamb's wool and kid's hair growth which may be related to anemia and to the depression in blood serum protein (Ali *et al.*, 1996).

2. Methodology

This study was conducted in the farm of Veterinary Medicine College, University of Baghdad as a part of MSc. student study. A 10 of Awassi lambs and 10 of Black Iraqi kids were used. All animals were vaccinated with Vaxall and injected with Ivermictine before starting the experiment to clear the animals from possible parasitic infection.

Animals were fed on barely (400gm./animal/day) and add labium of green roughages and water. Lambs and kids were divided into 4 groups as follow:

1- LC : Lambs control group (4).
2- KC : Kids control group (4).
3- LI : Lambs infected group (6).
4- KI : Kids infected group (6).

Groups 3 and 4 were infected with 500 Larva3 of *H. contortus* / Kg. Bw. Fecal egg counts (FEC) using the modified McMaster technique (Whitlock,1948) were carried out weekly and in the same time all animals were weighted using farm balance, for subsequent 11 weeks. The wool and hair on the top left side of the animals were shaved completely (5x5 cm^2) at the beginning and at the end of the experiment and raw samples of the wool and hair were collected , weighted and then cleaned and reweighted after drying (Al-Saigh, 1990). The bundle length and fiber length and diameter were recorded (Al-Saigh *et al.* 1992).All results were statistically analyzed to find the least significant differences (LSD) between groups, using one way analysis of variance (Snedecor and Cochran, 1973).Results & Discussion

3. Results and Discussion

There were no abnormal clinical symptoms on control groups, while the most important symptoms on the infected animals were paleness of mucus membranes, especially the eyes and gum, in addition to the appetite depression and the wool falling from different parts of the body. These symptoms were clearer in lambs than in kids.

Table (1): The mean of FEC (egg/gm feces, EPG) in infected lambs and kids

Weeks	Infected Lambs	Infected Kids
3	2916± ∗1180	6016±2975
4	2350±1138	4866±1695
5	3950±953 **B****	7150±2508 **A**
6	6733±2240	6333±2541
7	8466±1780 **A**	4116±1539 **B**
8	8316±2966 **A**	2100±615 **B**
9	5900±2488 **A**	1183±359 **B**
10	3383±1360 **A**	866±224 **B**
11	2833±950 **A**	460±130 **B**

*±Standard error

**Different letters revealed to significant differences (P<0.01)

Table (1) showed that the FEC were significantly higher (P<0.01) in lambs compared to that of kids during weeks 5, 7, 8, 9. The peak count was recorded in week 7 (8466±1780)in

lambs, whereas it was in week 5 (6333±254) for kids. Fecal egg counts decreased gradually throughout the experimental period, but kids showed a self-cure earlier than the lambs. Controls groups were clean from any parasitic infection throughout the experiment. These differences in FEC between lambs and kids might be duo to immunological response to the infection in kids rather than in lambs(Balic *et al.*,2002) and might also be related to genotypic differences between the two kinds of animals (Orlakeane *et al.*,2006).

Table (2): The mean of body weight (kg.) of infected and control lambs and kids.

	Lambs		**Kids**	
Weeks	**Infected**	**Control**	**Infected**	**Control**
0	29.50± ∗0.62	26.30±0.30	18.83±1.14	17.28±2.43
1	29.11±0.75	27.37±0.26	18.35±1.21	18.35±2.19
2	27.42±0.79	27.67±0.56	17.83±1.12	18.52±2.62
3	26.95±0.85	27.95±0.74	17.83±1.21	17.83±2.11
4	26.66±0.95	26.90±0.32	17.47±1.21	17.45±2.16
5	26.38±1.05	27.37±0.51	18.17±0.92	18.20±2.17
6	26.65±1.17	28.57±0.35	19.00±1.90	18.98±2.21
7	25.63±1.55 **B****	29.30±0.47 **A**	17.32±0.79	19.68±2.28
8	25.16±1.65 **B**	29.92±0.55 **A**	17.50±0.94 **b*****	20.50±2.19 **a**
9	25.41±1.34 **B**	30.00±0.41 **A**	18.03±0.86 **b**	20.02±1.97 **a**
10	25.71±1.21 **B**	30.50±0.35 **A**	20.50±0.85	21.25±2.49
11	25.88±1.38 **B**	31.00±0.12 A	21.48±1.08	21.40±2.48

∗ ±Standard error

**Different capital letters revealed to significant differences ($P < 0.01$).

***Different small letters revealed to significant differences ($P<0.05$).

There were a significant depression ($P<0.01$) in body weight gain in infected lambs compared with controls started at week 5 and towards the end of the experiment (table 2), while the difference between infected and control kids were much less significant ($P<0.05$). These results come in parallel line with Beriajaya and Copeman(1996) observation, where weight gain losses were attributed to the loss of appetite and the inflammatory damages of the gastric cells that could affect N digestion which play an important role in weight gain of the infected animals.

Table (3): Wool and Hair weights and Physical traits in lambs and goats

Parameter / Groups	Raw Wool Weight (gm.)	Clean Wool Weight (gm.)	Bundle Length (cm.)	Wool Fiber Length (cm.)	Wool Fiber Diameter (Mic.)
Infected Lambs	2.60 ±*0.10 **b****	2.13±0.17 **b**	4.90±0.23	5.43±0.26 **b**	30.93±0.84 **B**
Control	3.3±0.18 **a**	3.06±0.16 **a**	5.46±0.35	6.20±0.58 **a**	40.00±0.25 **A**
Parameter / Groups	**Raw Hair Weight (gm.)**	**Clean Hair Weight (gm.)**	**Bundle Length (cm.)**	**Hair Fiber Length (cm.)**	**Hair Fiber Diameter (Mic.)**
Infected Kids	1.70±0.05	1.46±0.08	4.20±0.47	4.76±0.48	61.16±2.32 **B**
Control	1.83±0.15	1.60±0.12	4.66±0.32	5.13±0.34	73.06±3.72 **A**

*±Standard error

**Different letters revealed to significant differences (P<0.05 for small) and (P<0.01 for capital).

Table (3) shows that raw and clean wool production and fiber length and diameter were significantly higher in control lambs in comparison to that of infected group. Meanwhile, except for hair fiber diameter, no significant differences in hair production or fiber length were observed between control and infected kids.

These observation indicated that*H. contorts infection* could significantly affect wool production and quality. These changes might result from the shortage in some nutrients, especially serum protein, which is required for wool growth as it's suggested by Ali *et al.*, 1996.

4. Conclusion

The study shows that the infection with H. contortus significantly affects body weight gain, wool production and physical hair traits of sheep and goat. Goat showed high resistance to experimental infection with H. contortus than sheep and this might be related to different genetics infection resistance mechanisms in between the two kinds of animals.

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