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**COMPARATIVE STUDY ON THE EFFECT OF FLUKANIDE  
(7.5% RAFOXANIDE) AND BILEVON-M (NICLOFOLAN 75 mg TABL.)  
ON OVINE FASCIOLIASIS  
(With Two Tables)**

By  
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دراسة مقارنة على تأثير الفلوكانيد والبيليفون - م على  
الديدان الكبدية في الأغنام

مراد اسماعيل ، أحمد زيتون ، شعبان أحمد ، حلمي صديق

إشتمل هذا البحث على عدد ٣٠ من النعاج المصابة بالدودة الكبدية في محافظة أسيوط  
بمتراوح أعمارهم من (١ - ٤) سنوات وأوزانهم من ٦٠ - ٩٠ كجم مقسمة إلى مجموعتين متساويتين  
بالإضافة إلى ١٠ نعاج ثبت بالفحص المعلي والأكلينيكي أنها سليمة وأُستخدِمت كضوابط  
للبحث . المجموعة الأولى تم علاجها بالفلوكانيد والأخرى بالبيليفون - م . تم تسجيل أهم  
الأعراض الاكلينيكية المصاحبة للإصابة المزمنة بالدودة الكبدية للأغنام . كما تم دراسة  
تأثير كل من الفلوكانيد والبيليفون - م على الديدان الكبدية وذلك عن طريق العدد الكلي  
لبويضات الديدان في البراز . وقد اتضح من البحث أن أهم الأعراض الاكلينيكية كانت  
إسهال أسود - اوديميا تحت الفك - هزال - ضعف عام - شحوب الأغشية المخاطية - ضعف  
الشهية في البعض وانحراف الشهية في البعض الآخر - سقوط الصوف . وكذلك أوضحت الدراسة  
أن الفلوكانيد أكثر تأثيراً على الدودة الكبدية من البيليفون - م . حيث أنه لم يكتشف  
أى من بويضات الدودة الكبدية بعد العلاج ب ٤ أسابيع ، ٨ أسابيع بالفلوكانيد والبيليفون - م  
على التوالي . وأيضاً يمكن استخدام الفلوكانيد حقن تحت الجلد بدون أية احتياطات قبل  
أو بعد العلاج .

### SUMMARY

Thirty native Balady sheep infested with *Fasciola gigantica* at Assiut province and 10 healthy control (1-4 years age, 60-90 Kg. b.wt) were used in the study to investigate the clinical signs of chronic ovine fascioliasis and the effect of Flukanide (7.5% rafoxanide) and Bilevon-M (75 mg tablets of niclofolan) on the parasite. The study cleared that Flukanide was more effective and more suitable for treatment of sheep liver fluke than Bilevon-M. The examination of the treated animals did not show any *Fasciola gigantica* eggs in their faeces after 4 and 8 weeks post treatment by Flukanide and Bilevon-M respectively as shown by concentration floatation technique. Flukanide could be injected S/C safely without any pre- or post-treatment precautions.

LM. MOURAD, et al.

## INTRODUCTION

Infestation of sheep with various species of endo -and ectoparasites constitutes one of the most important problems specially in Egypt, where the climatic conditions are favourable for propagation of such parasites.

Naturally occurring epizootic of ovine fascioliasis has been studied by ROSS (1967) and RAID, et al. (1970). SINCLAIR (1972); MARTIN (1983) & BLOOD and RADOSTITS (1989) described the clinical signs of the disease.

Many drugs were used for treatment of Fascioliasis specially Rafoxanide (DJEBALL, 1977; OLAECHEA, 1979 and GRABER' 1979). Bilevon-M (Niclofolan) was also tried by many authors (AZIZ, 1980; ZIEGLER, 1979 and CONTRERAS, et al. 1979).

Treatment of ovine fascioliasis constitutes one of the very important steps in controlling this parasite. So the aim of this work is directed to a comparative study of the therapeutic effect of both Flukanide and Bilevon-M on ovine Fascioliasis. The clinical signs will be also included.

## MATERIAL and METHODS

### Animals:

30 native Balady sheep, (1-4 years age and 60-90 Kg.b.wt), naturally infested with Fasciola gigantica at Assiut province and another 10 healthy control were used for the test. These animals equally classified into 2 groups (A, B), each contained 15 infected and 5 healthy sheep.

### Drugs:

Flukanide\* injection (7.5% sol. of Rafoxanide) used for treatment of diseased animals in group A. Each animal was injected subcutaneously by 2 doses (each was 4 ml) with 5 weeks apart.

Bilevon-M\*\* (75 mg Niclofolan tablets) were used for treatment of infected sheep in group B. Each animal received two oral doses of the drug at a rate of 5 mg/kg b.wt. with 5 weeks apart.

### Faecal samples:

Faecal samples were collected weekly pre- and post-treatment for 10 weeks and examined parasitologically as described by COLES (1980).

\* Merck sharp & dome Limited Huddesdon, Hertfordshire.

\*\* Bayer Company.



## OVINE FASCIOLIASIS

## RESULTS

The collectively clinical signs resulted from chronic ovine fascioliasis were watery, darkened faecal diarrhoea, emaciation, loss of weight, pale mucous membranes, submandibular oedema, diminished appetite. Some individual showed depraved appetite and easily detached wool. The above mentioned clinical signs were in positive relation to the severity of infestation determined by total egg count per gram faecal matter. The diseased animals began to restore their condition after the 3<sup>rd</sup> week from beginning of drug intake. This was determined by reduction in submandibular oedema, stop of diarrhoea, more food intake.

Results of application of Flukanide and Bilevon-M on Fasciola gigantica were shown in tables 1, 2 which determined by total egg counts per gram faecal matter.

## DISCUSSION

The observed clinical signs of chronic ovine fascioliasis on 30 native Balady sheep at Assiut province were similar to that reported by too many authors. BLOOD and RADOSTITS (1989) related pale mucous membranes to hypochromic, macrocytic anaemia and submandibular oedema to hypo-albuminaemia.

Tables 1, 2 cleared that injection of Flukanide was relatively more effective on ovine Fascioliasis than Bilevon-M, where the mean of total egg count per gram faeces (E.p.g.) reduced from 260 to 0 at the 4<sup>th</sup> week post treatment, while that was in Bilevon-M from 253 to 63 at the 4<sup>th</sup> week and 0 at the 8<sup>th</sup> week post treatment. The obtained data were similar to that mentioned by BLOOD and RADOSTITS (1989) who reported that Rafoxanide is an efficient compound in sheep fascioliasis and it will kill the majority of Flukes older than 4 weeks. They also added that the drug has low toxicity beside its good effect on Haemonchus contortus. Our data were also similar to that cited by DJEBALL (1977) who mentioned that Rafoxanide was found by faecal egg counts to be the best, in respect of completeness and duration of effect than Niclofolan (Bilevon), however, it is more expensive. On the other hand OLAECHEA (1979) in field trials in the Argentinian province on heifers, observed that fewer liver flukes were found in those treated by nitroxylnil than in those treated with Rafoxanide.

GRABER (1979) in a published work on use of Rafoxanide in tropical Africa concluded that the drug has good activity against Fasciola hepatica, Fasciola gigantica, Oestrus ovis, haemonchus spp., Gaigeria pachyscelis, Bunostomum phlebotomum, Chabertia ovina and Bosicola radiatum. The drug destroys also immature Paramphistomes in the duodenum of sheep.

From this study and under our climatic and dietetic conditions we can conclude that the use of Flukanide injection S/C in a double dose (each of 4 ml/animal) with 5 weeks interval has a good effect on ovine fascioliasis. The drug requires lesser time beside its good effect on the elimination of other parasite species of gastro-intestinal tract.

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## OVINE FASCIOLIASIS

Table 1 : Weekly Total egg count pre-and post treatment of ovine Fascioliasis by Flukanide injection.

No. of animal	Total egg count befor treatment	Total egg count after treatment			
		1st week	2nd week	3rd week	4th week
1	200	100	50	50	0
2	250	100	50	50	0
3	250	150	50	50	0
4	150	100	50	0	0
5	200	100	50	50	0
6	400	150	100	100	0
7	250	100	100	50	0
8	200	150	50	50	0
9	350	200	100	100	0
10	250	200	50	50	0
11	300	200	50	50	0
12	300	150	100	50	0
13	250	200	100	50	0
14	350	150	100	50	0
15	200	100	50	0	0
<hr/>					
$\bar{X}_1$	260	144	70	50	0
<hr/>					
$\bar{X}_2$	0	0	0	0	0

$\bar{X}_1$  = Mean of total egg count per gram faeces for diseased animals.

$\bar{X}_2$  = Mean of total egg count per gram faeces for control.



M.L. MOURAD, et al.

Table 2 : Weekly Total egg count pre-and post treatment of ovine Fascioliasis by Bilevon-M.

No. of animals	Total egg count before treatment	Total egg count weekly post treatment								
		1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	9th week
16	300	200	200	150	100	50	50	0	0	0
17	250	100	100	100	100	50	0	50	0	0
18	350	200	200	150	100	50	50	50	0	0
19	250	100	100	50	50	50	50	0	0	0
20	300	200	200	150	100	50	50	50	0	0
21	200	100	100	50	50	50	50	0	0	0
22	200	150	150	100	50	50	50	50	0	0
23	350	200	200	100	50	50	50	0	0	0
24	200	100	100	50	50	50	50	0	0	0
25	300	100	100	100	50	50	0	0	0	0
26	350	150	150	100	50	50	50	0	0	0
27	200	100	100	50	50	50	0	0	0	0
28	250	150	150	50	50	50	50	50	0	0
29	150	100	100	50	50	50	50	0	0	0
30	150	50	50	50	50	50	0	0	0	0
$\bar{X}_1$	253	133	133	87	63	50	37	17	0	0
$\bar{X}_2$	0	0	0	0	0	0	0	0	0	0

 $\bar{X}_1$  = Mean of total egg count per gram faeces for diseased animals $\bar{X}_2$  = Mean of total egg count per gram faeces for control.