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## دراسات مقارنة على ثلاثة من مضادات الديدان الكبدية المعدة للحقن فى مصر وتأثيرها على وظائف الكبد والكلى

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يفضل الأطباء البيطريون فى مصر الان استعمال الادوية المضادة للديدان الكبدية حقنا لسهولة اعطائها بالجرعات المقررة ، لذلك اختيرت ثلاثة انواع من مضادات الديدان الكبدية المستعملة بطريق الحقن فى مصر وهى بيليفون ٤ ٪ ودوفينيكس ٢٥ ٪ وفلوكانيد ٧٥ ٪ لهذه الدراسة بغرض تقييم تأثيرها على الجاموس المصاب طبيعيا ، وايضا تم تقييم تأثيرها على وظائف الكبد والكلى فى عجول جاموسى سليمة وخالية من الطفيليات .

وقد وجد ان المستحضرات الثلاثة ذات فاعلية وكفاءة عالية على الديدان الكبدية ايضا ليس لها اثار جانبية ضارة على وظائف الكبد والكلى للحيوانات السليمة وبالتالي على الصحة العامة للحيوانات عند استخدامها .



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**COMPARATIVE STUDIES ON THREE INJECTABLE FASCIOLICIDE DRUGS  
IN CURRENT USE IN EGYPT**  
(With 2 Tables)

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**SUMMARY**

Three injectable fasciolicide drugs Bilevon 4%, Dovenix 25% and Flukanide 7.5% solutions were used in this study to evaluate their efficiency on *Fasciola* infested buffaloes. The same drugs were also tried on three groups apparently healthy, parasitic free buffalo-calves in order to throw some light on their effects on liver and kidney functions.

The three remedies used proved to be equally efficient on mature liver fluke.

Biochemical analysis of blood components showed insignificant changes between these drugs after one, 2, 7 and 14 days from injection in healthy non infected buffalo-calves.

It could be concluded that Bilevon 4%, Dovenix 25% and Flukanide 7.5% could be safely used as fasciolicides without any harmful effect on parenchymatous organs as liver and kidney.

**INTRODUCTION**

Fascioliasis is one of the most dangerous problems among cattle and sheep in Egypt. The disease causes substantial economic losses in animal husbandry. The incidence of this disease in cattle and buffaloes ranged from 10-50% in different localities of the country (EL-SHERIF *et al.* 1959; EZZAT *et al.* 1963 and ABDEL RAHMAN *et al.* 1977). There is no need to emphasize the adverse effect of liver fluke on the general health condition of affected animals and consequently their production.

There are many fasciolicide drugs currently in use orally for control of liver fluke, their efficacy were extensively evaluated (SYMONS and BORAY, 1967; ABDEL HADY, 1972; ABDEL RAHMAN *et al.* 1977 and RATH and TRIPATHY, 1977).

Nowadays veterinarians in Egypt prefer the parenteral use of fasciolicide drugs owing to their easier administration and the treated animals actually receive their recommended dose. Thus this work was directed to:

- 1- evaluate the efficacy of three injectable fasciolicide drugs on naturally *Fasciola* infested buffaloes (Bilevon\* 4%, Dovenix\*\* 25% and Flukanide\*\*\* 7.5%).

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\* Niclofolan manufactured by Bayer (Ilever Kusen) W. Germany.

\*\* Nitroxylin manufactured by Specia, Paris.

\*\*\* Rafoxanide manufactured by Merck Sharp and Dohme (U.S.A.).



- 2- Comparing their effect on liver and kidney functions when given to apparently healthy buffaloes to select the most efficient and safest drug.

### **MATERIAL and METHODS**

Thirty buffaloes, 5-8 years old naturally infested with liver fluke, as revealed by their faecal examination, were selected in this study from the animals admitted to the clinic of Fac. of Vet. Med. Zagazig University. These animals were divided into three groups, each of 10 animals.

**Group I:** Received Bilevon 4% solution at dose rate of 1 ml/50 kg. B.W.

**Group II:** Inoculated with Dovenix 25% solution at dose rate 1 ml/25 kg. B.W.

**Group III:** Injected with Flukanide 7.5% at dose rate of 1 ml/25 kg. B.W.

All remedies were inoculated once subcutaneously.

Faecal samples were collected from all animals of the three groups and examined microscopically at regular intervals for presence of fasciola eggs for a period of three months post-treatment by using sedimentation technique after ECKERT (1963).

Another thirty apparently healthy buffalo-calves, 6-9 months old, belonging to El-Marg Calf Rearing Unit, General Meat and Milk Company were selected. These calves proved to be free from internal and external parasites. They were also divided into 3 groups (1,2 and 3) each of 10 animals. Each group was subcutaneously inoculated once with one of the three previously mentioned fasciolicides. Blood samples for biochemical analysis were collected from these calves just before and one, 2,7 and 14 days post-injection. Serum bilirubin, total serum protein and serum albumin were determined according to the methods described by MALLOY and EVELYN (1937); KING and WOOTTON (1959) and DOUMAS *et al.* (1971), respectively, while serum transaminases, urea nitrogen and serum creatinine were determined according to the methods described by MALLOY and EVELYN (1937); KING and WOOTTON (1959) and DOUMAS *et al.* (1971), respectively, while serum transaminases, urea nitrogen and serum creatinine were determined according to the technique of REITMAN'S and FRANKEL (1957); MARSCH *et al.* (1965) and HUSDAN and RAPOPORT (1968), respectively.

### **RESULTS**

Results concerned with serum proteins, serum transaminases, serum bilirubin, creatinine and urea nitrogen before injection of the fasciolicide drugs used and at different periods post-injection in apparently healthy buffalo-calves were recorded in Tables (1 & 2).

### **DISCUSSION**

All faecal samples collected from all groups of infested buffaloes after treatment by the used fasciolicides were proved to be free from fasciola eggs up to 3 months post-treatment. These results revealed the high efficacy of the three injectable remedies on mature liver fluke. CORBA (1978) reported similar results when used Bilevon 4% solution against *Fasciola hepatica* in cattle. ZIEGLER (1979) proved that both Dovenix 25% and Bilevon 4% were highly effective against mature liver fluke and their developmental forms when given parenterally to infested cattle.



## THREE FASCIOLICIDE DRUGS

Table (1) indicated that in apparently healthy animals of all groups under study, the recorded values for total serum protein, serum albumin and globulin after one, two, seven and fourteen days from injection of Bilevon, Dovenix and Flukanide does not show any significant changes than before injection.

From table (2) the levels of serum transaminases (SGOT & SGPT), serum bilirubin, creatinine and urea nitrogen show slight decrease in the first two days after injection of the used drugs which returned quickly to their normal levels as before injection within two weeks.

The disappearance of fasciola eggs from faeces of naturally infested buffaloes after administration of the three fasciolicides, in addition to the absence of the deleterious effects on liver and kidney functions of apparently healthy non infected buffalo-calves, indicated that these drugs are reliable, safe and nearly equally efficient.

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Table (1): Shows the mean values of total serum protein, albumin, globulin and A/G ratio in apparently healthy buffalo-calves injected with three fasciolicides.

Group No.	Drug used and dose	Time of sampling	Blood constituents			
			Total protein gm/100 ml.	Albumin gm/100 ml	Globulin gm/100 ml	A/G ratio
1	Bilevon 4% 1 ml./50 kg.	Before injection	7.48±0.18	3.54±0.10	3.94±0.08	0.90
		1 day post inj.	7.28±0.21	3.38±0.15	2.90±0.09	0.87
		2 days post inj.	7.36±0.20	3.42±0.09	3.90±0.13	0.87
		7 days post inj.	7.42±0.23	3.44±0.17	3.98±0.07	0.86
		14 days post inj.	7.46±0.19	3.52±0.16	3.94±0.05	0.89
2	Devonix 25% 1 ml./25 kg.	Before injection	7.32±0.28	3.52±0.12	3.80±0.18	0.93
		1 day post inj.	7.28±0.19	3.38±0.11	3.90±0.10	0.87
		2 days post inj.	7.25±0.23	3.40±0.15	3.85±0.15	0.88
		7 days post inj.	7.25±0.30	3.44±0.13	3.81±0.19	0.90
		14 days post inj.	7.26±0.20	3.45±0.16	3.81±0.19	0.91
3	Flukanide 7.5% 1 ml./25 kg.	Before injection	7.24±0.37	3.40±0.15	3.84±0.22	0.89
		1 day post inj.	7.12±0.32	3.28±0.17	3.84±0.19	0.85
		2 days post inj.	7.12±0.35	3.32±0.19	3.80±0.17	0.87
		7 days post inj.	7.18±0.28	3.36±0.13	3.82±0.15	0.88
		14 days post inj.	7.20±0.30	3.38±0.18	3.82±0.13	0.88

Table (2): Shows the mean values of some blood parameters referring to liver and kidney function tests in 30 apparently healthy buffalo calves before and after injection of the three fasciolicides.

Group No.	Drug used and dose	Time of sampling	Blood constituents				
			S.G.O.T. Units/ml	S.G.F.T. Units/ml	Bilirubin mg%	Greatinine mg%	Urea-N mg%
1	Bilevon 4% 1 ml./50 kg.	Before injection	46.50±1.90	19.50±1.04	0.79±0.08	1.50±0.17	22.40±0.64
		1 day post inj.	42.50±1.83	18.50±1.44	0.64±0.12	1.40±0.15	19.37±1.30
		2 days post inj.	44.50±2.02	19.00±1.15	0.61±0.15	1.50±0.12	19.37±1.13
		7 days post inj.	45.00±2.31	18.50±1.04	0.74±0.06	1.53±0.15	21.80±0.52
		14 days post inj.	46.00±2.08	17.00±1.32	0.76±0.10	1.50±0.18	22.27±0.79
2	Devonix 25% 1 ml./25 kg.	Before injection	52.00±2.65	17.00±1.15	0.75±0.07	1.67±0.14	23.80±0.81
		1 day post inj.	51.00±2.31	19.50±1.44	0.55±0.05	1.83±0.15	22.10±1.44
		2 days post inj.	43.00±1.53	20.00±1.15	0.52±0.02	1.50±0.18	22.70±0.81
		7 days post inj.	47.00±2.31	19.00±1.06	0.63±0.06	1.60±0.15	20.86±1.13
		14 days post inj.	46.00±2.87	17.50±0.87	0.70±0.04	1.63±0.19	21.30±1.27
3	Flukanide 7.5% 1 ml./25 kg.	Before injection	46.00±2.31	18.00±1.73	0.84±0.11	1.57±0.18	20.40±1.04
		1 days post inj.	44.50±1.44	20.00±1.53	0.72±0.09	1.50±0.17	18.50±0.92
		2 days post inj.	43.00±2.65	20.50±2.02	0.66±0.05	1.40±0.17	20.20±1.15
		7 days post inj.	45.00±2.89	20.00±1.53	0.76±0.06	1.43±0.15	21.27±0.90
		14 days post inj.	45.00±1.87	19.00±1.15	0.82±0.06	1.50±0.20	20.40±1.18

(±) Standard error