

Testarea eficacității produselor Rombendazol 10% (Romvac) și Fasinex (Novartis) în infestația naturală cu *Fasciola hepatica* la ovinele din Bilbor, județul Harghita

Therapeutic efficacy testing of Rombendazol 10% (Romvac) and Fasinex (Novartis) in natural infestation with *Fasciola hepatica* at sheep from Bilbor, Harghita County

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Rezumat

Studiul s-a derulat în perioada ianuarie-februarie 2008 pe un număr de 30 ovine din rasa Țigaie și Țurcană din localitatea Bilbor, județul Harghita. Animalele au fost distribuite întâmplător în trei grupuri (n=10): grupul A1 (tratată cu albendazol), grupul B1 (tratată cu triclabendazol) și grupul martor (M) – dozele administrate animalelor au fost cele recomandate de producător. Examenul coproscopice s-a efectuat în ziua 0 și 14, prin metodele recomandate de WAAVP, iar eficacitatea produselor antihelmintice s-a calculat după relația Presidente. În urma experimentelor efectuate se poate concluziona că produsul Fasinex (triclabendazol) a avut o eficacitate de 98,35%, iar în cazul Rombendazol 10%, eficacitatea calculată a fost de 71,55%.

Abstract

The study was carried out between January -February 2008, on 30 sheep Tigaie and Turcana breeds from Bilbor, Harghita County. Animals were distributed randomly into three groups (n = 10): group A1 (treated with albendazole), group B1 (treated with triclabendazole) and control group (M) - the dosage used was the one recommended by the producer. Coproscopical examination was made on days 0 and 14 using the methods recommended by WAAVP and the efficacy was evaluated using Presidente relation. Investigations revealed an efficacy value of 98.35% for Fasinex and 71.55% for Rombendazol 10%.

Materials and methods

Fasciolosis is the most important hepatobiliary helminthosis affecting ruminants and causing losses in livestock.

Early diagnosis of fasciolosis permits a prompt intervention with narrow-spectrum products, but with a high degree of efficiency, so economic losses are minimal.

Application of early therapy in animals infected reduces the organ damage and increases the treatment efficiency.

In the trial conducted we tried to track the effectiveness of two products currently used by practicing veterinarians.

By knowing these aspects it is possible to implement appropriate therapies in different areas knowing its climatic conditions [1, 2, 3, 5, 6].

The economic impact of fasciolosis is constantly growing. This parasite with wide extinction can be rapidly diagnosed by serological tests and can be easily treated with specific substances.

The experiment was conducted in Bilbor, Harghita County, from January to February 2008 on 30 sheep Tigaie and Turcana breeds, females, aged between 2 and 5 years.

The sheep belonged to private breeders that, in previous years, observed cases of chronic fasciolosis.

Eartaged and individualized animals (under the current rules) were distributed randomly into three groups (n = 10): group A1 (treated with albendazole), group B1 (treated with triclabendazole) and control group (M).

Animals from group A1 were treated "per os" with product Rombendazol 10% (Romvac)

at a dose of 5 ml/animal/day for two days, which corresponds to a dose of 10 mg/kg bw Lot B1 was treated with Fasinex (Novartis) product at a dose of 12 mg/kg bw, administered "per os", a single dose.



Fig. 1. The sheep herd with *Fasciola hepatica* parasitism

On day 0 and 14, the animals were subjected to laboratory investigations: coproscopic examination using successive washings modified by Charlier et al. (2008) method.

Faecal samples were individually collected directly from the rectum in individual plastic cups and transported to the laboratory of parasitic diseases of DSVSA Harghita.

Laboratory methods are less effective in the acute clinical form, but in chronic evolution the method of successive washings is efficient.

This method aims to highlight *Fasciola hepatica* eggs.



Fig. 2. The appearance of faeces samples in the isothermal box

Successive washings method is a physical method based on the difference in weight between eggs of *Fasciola hepatica* and tap water.

This method consists of mixing feces examined with tap water and then the

homogenized content slips through a sieve into a graduated cylinder.

Over the filtered liquid tap water is poured into the cylinder to the upper limit and allow forming a deposit.

Then carefully decant the liquid, without leading store format, and refill the cylinder with tap water.

Operation of filling and decanting the liquid column is repeated until the water is clear, then take the deposit formed is pipeted into a watch glass or a glass slide and examined under a microscope with 10 x objective [4].



Fig. 3. Sampling directly from the rectum of sheep under study

In a recent study, in Belgium, Charlier et al. (2008), made a coproscopic evaluation of fasciolosis in calves in spring and autumn season, using the sedimentation-flotation techniques with 4g (SF4) and 10g (SF10).

It was compared the sensitivity (Se) and specificity (Sp), of the technique with the presence of adult *F. hepatica* in the necropsy performed later.

The results show that for both seasons SF4 method sensitivity was 43% and specificity of 100%. For SF10 method the result was 64% sensitivity and 93% specificity.

Therefore we preceded to exam coproscopical the samples using the method applied by Charlier (sedimentation-flotation technique 4 g-SF4).

To correlate the intensity of infestation of animals, namely sensitivity and specificity of the coproscopic method, on the 14th day after treatment of each group of animals treated a sheep with a positive coproscopic result, was slaughtered.

The effectiveness of antihelmintics used was determined using Presidente relation

recommended by W.A.A.V.P. (World Association for the Advancement of Veterinary Parasitology).

Presidente relationship (%): $[1-T2/T1 \times C1/C2] \times 100$

where:

T1 and T2 = OPG test group on day 0 (T1) and day 12 (T2)
 C1 and C2 = OPG the control group on day 0 (C1) and day 12 (C2) [11].

Results and discussions

Examination results for coproscopic sedimentation-flotation method (SF4) in animal groups studied are shown in Table. 1.

Table 1
 Coproscopic exam results for flotation sedimentation method (SF4) in groups A1 and B1 on day 0

Group	Coproscopic individual examination results									
Anim.	1	2	3	4	5	6	7	8	9	10
A1	1(+)	1 (+)	2 (++)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)
B1	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)
M	1(+)	1(+)	1(+)	2(+ +)	1(+)	1(+)	1(+)	1(+)	1(+)	2(++)

Legend: + - Low infestation (1egg/sample);
 ++ - Low infestation (1-5 eggs/sample);
 +++ - Medium infestation (6-10 eggs/sample);
 ++++ - High infestation (>15 eggs/sample)

Analysis of coproscopic sedimentation-flotation exam results of A1 and B1 animal groups show that from the 10 animals of batch A1, six of them tested negative and four other had low infestation, revealing a single *F. hepatica* egg/sample.

In group B1, four samples were negative and the other six shown low infestation with one egg/sample examined. Results of treatment with albendazole in sheep infected with *F. hepatica* lot A1 are shown in Figure 4.

Figure 4 reveals the results in animals treated with albendazole group A1. Notice that in two of animals from group A1 (Nos. 4 and 10) treated with albendazole, on day 14, coproscopic examination result was positive, and the degree of infestation reached the level of day 0.

Following treatment with albendazole (group A1) and triclabendazole (group B1) at 12 days post-treatment coprological investigations were repeated (successive washings method) (Table 2)

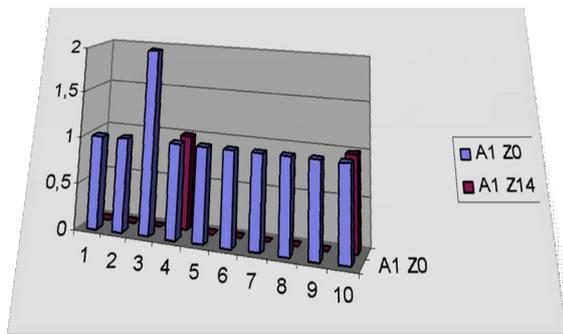


Fig. 4. Effectiveness (%) in animals treated with albendazole in A1 Group

Table 2
 Coproscopic examination results using successive washings method in groups A1 and B1 at day 12

Group	Coproscopic individual examination results									
Anim.	1	2	3	4	5	6	7	8	9	10
A1	0	0	0	1(+)	0	0	0	0	0	1(+)
B1	0	0	0	0	0	0	0	1(+)	0	0
M	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)	1(+)

Legend: + - Low infestation (1egg/sample);
 ++ - Low infestation (1-5 eggs/sample);
 +++ - Medium infestation (6-10 eggs/sample);
 ++++ - High infestation (>15 eggs/sample).

The analysis of the table shows that the sheep no. 1 and 6 from group A1 were negative after treatment with albendazole, and in group B1 two of the six positive animals on day 0 were not negative.

The results obtained after treatment with albendazole in sheep infected with *F. hepatica*, shows that they don't have a high efficiency and the use of albendazole based products in the area created a state of resistance in hepatobiliary trematodes populations.

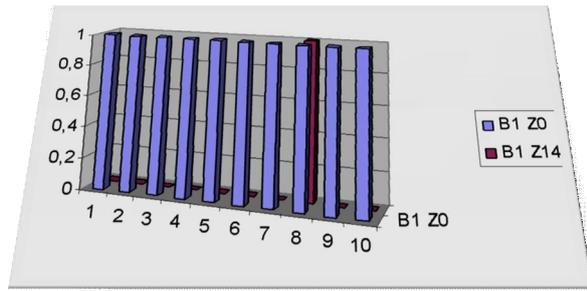


Fig. 5. Effectiveness (%) treatment of animals with triclofenazole B1Lot

Results of treatment with triclofenazole in sheep infected with *F. hepatica* group B1 are shown in Figure 5.

In Figure 5 we can see that at 12 days post treatment two animals (no. 5 and 8) showed a slight infestation, others are negative coproscopic.

Applying non-parametric test "square hi" to animals from groups A1 and B1 showed a correlation between the values monitored on day 0 and 12, which reveals the homogeneity of these groups.

At 12 days after administration of specific medication in each group tested (A1 and B1) a sheep hat was coproscopic positive was slaughtered.

After pathological examination, the presence of *F. hepatica*, five adult individuals, of the animal slaughtered from group A1 was observed. From the animal slaughtered in group B1 we identified one adult *Fasciola*.

Correlation with positivity coproscopic presence of *F. hepatica* adults show that sedimentation-flotation method may be a method of guidance for practicing veterinarians.

The results obtained in the two groups of animals investigated shows that in sedimentation-flotation method (SF4) the sensitivity was 56% and specificity was 100%, values close to those given in the literature.

The effectiveness of antihelmintics used was determined by Presidente relation and the result was 71.55%.

In group treated with triclabendasole the efficacy determined by Presidente relation was 98.35% (group B1).

Conclusions

1. The efficacy of triclabendazole in group B1 was 98, 35%, the product is considered highly effective in the treatment of sheep fasciolosis.
2. In group A1 treated with albendazole, the efficacy was 71, 55%, which classifies the product as weakly effective in sheep fasciolosis.
3. The "hi square" reveals the presence of homogeneity in groups A1 and B1 in the study.

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