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## Efficacy of Decoquinat in Pelleted Feed in Case of Eimeriosis in Lambs

Nataliia Soroka\*, Oleksandr Filipenko

National University of Life and Environmental Sciences of Ukraine  
03041, 15 Heroiv Oborony Str., Kyiv, Ukraine

**Abstract.** Eimeriosis of sheep reduces the profitability of the production of wool, leather, meat, and milk, which causes substantial damage to the sheep industry, and therefore requires the introduction of effective means of prevention and treatment of animals from this infestation. The purpose of this study was to establish the efficacy of decoquinat in granular feed in case of lamb eimeriosis. As a result of coproscopic studies according to DSTU 5079 2008 "Veterinary medicine. Methods of laboratory diagnosis of eimerioses" determined the extent of invasion of lambs by oocysts of various *Eimeria* species, namely *E. arloingi* – 41%, *E. crandallis* – 29%, *E. intricate* – 15%, *E. faurei* – 15%, which are registered in animals of separate farms of the Cherkasy region. Clinical symptoms of eimeriosis are observed in young animals from the age of one month and are characterized by anaemia of visible mucous membranes, diarrhoea, depression of the general condition, weakness, and predominantly acute course of invasion with high mortality. The manifestation of clinical symptoms of the disease depends on many factors, namely the age of lambs, the sanitary situation on the farm, changes in feed fattening programs, stressful situations that arise due to the movement of sheep to other premises or weaning lambs from ewes. In older lambs, as a rule, the disease has a chronic and asymptomatic course. In such animals, *Eimeria* oocysts are excreted in faeces in much smaller quantities than in one-month-old lambs during an acute course of infection. The maximum values of invasion extensiveness (100%) and invasion intensiveness (12,000 oocysts in 1 g of faeces) were found in two-month-old lambs. Invasion in the digestive canal of these animals worsens the absorption of feed nutrients, which contributes to a decrease in the average daily weight gain (on average 155.3 g/day), which increases with treatment of animals with decoquinat (on average 185.7 g/day). In general, the use of decoquinat in sick lambs at a dose of 1 mg/kg of body weight for 28 days shows prominent therapeutic and preventive effectiveness. Therewith, extensefficiency is 90%, and parasite carrier is observed only in 10% of animals. Therefore, for the effective treatment of lambs of distinct age groups, the decoquinat preparation can be recommended, which is especially important for farms with intensive rearing of young sheep

**Keywords:** oocysts, *Eimeria*, invasion, treatment, diagnostic methods

### Introduction

Eimeriosis is a disease caused by single-celled protozoan parasites of the genus *Eimeria* which can affect all types of domestic ruminants (cattle, bison, sheep, goats, deer). Each type of livestock is infected with species varieties of *Eimeria* spp. This shows their specificity for parasitism. Since 1902, *Eimeria* was considered non-pathogenic, but by

the 1960s they were recognized as causing animal diseases. Furthermore, infected animals are vulnerable to various pathogens of infections and infestations. [1].

On the territory of Ukraine, according to research by scientists [1; 2], Eimeriosis is a common disease in sheep, where pathogens *E. arloingi*, *E. crandallis*, *E. intricate*, and

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\*Corresponding author

*E. faurei* occupy one of the leading places. Given that young animals usually get sick [2; 3] and the invasiveness is 99%, then parasitic diseases, namely Eimeriosis, cause considerable economic losses to farms and their owners, reducing the profitability of sheep breeding by 30%.

Nowadays, sheep breeding is one of the fields of activity of farmers in the central part of Ukraine. The problem for most farms and homesteads is non-observance of general sanitary and hygienic measures, which leads to losses in this area of animal husbandry and adversely affects zootechnical and economic indicators of profitability, which restrains the increase in the liquidity of sheep breeding [3].

When raising lambs, farmers strive for a stable increase in the body weight of the animals. This can only be achieved when the animals receive sufficient feed and when farmers pay due attention to the health of the lambs [4]. For farmers all over the world, the lack of desired results due to the death of lambs from pathogens of eimeriosis is noticeable [5; 6;].

To ensure the proper effect in the treatment of lambs with this infestation, farms use an arsenal of specific products offered by the Ukrainian market of veterinary preparations. However, their use does not always give the desired therapeutic effect. Specialists of the veterinary service most often use antiparasitic preparations, which, combined with therapeutic properties, show immunostimulating efficacy on the animal body [7]. Therefore, despite the scientific results already obtained, eimeriosis of lambs still does not lose its relevance today. Considering the current situation, it is advisable to continue scientific research on the creation of new, more effective therapeutic preparations and remedies, as well as to modify the methods of their use. Specifically, this refers to granulation of decoquinate to feed for uniform application of the preparation to animals.

The purpose of the study lied in evaluating the effectiveness of decoquinate in granulated feed in the treatment and prevention of eimeriosis in lambs and ensuring an increase in daily body weight gain.

### Literature Review

Eimeriosis refers to protozoal diseases of lambs and young animals of other animal species, which is manifested by damage to the digestive tract. The disease is marked by a considerable death of animals, as well as exhaustion and a decrease in immunity. Thus, in some farms, the mortality rate of lambs was recorded within 90-100% [6]. At the same time, lambs with eimeriosis have growth retardation and developmental depression. Therewith, the quality of products is substantially reduced, which leads to economic losses in sheep breeding [6].

According to F.A. Akande and A.M. Philip (2020) [7], the invasiveness of eimeria substantially depends on the way lambs are kept in farms. Thus, in case of group keeping of animals, when they are actively in contact with each other from the first day of life, the invasion intensiveness of *Eimeria* increases by Days 14-21 or subsequently – by Days 25-35. After Days 45-60, the pathological process in lambs acquires maximum indicators and then the disease proceeds chronically [7; 8].

B. Bangoura and K.D. Bardsley (2020) often found *Eimeria* together with other single-celled pathogens and helminths of various species [9]. According to S.T. Keeton

and C.B. Navarre (2018), infestation of young sheep with *Eimeria* shows seasonal dependence. Warm and excessively humid spring is a particularly dangerous period for lambs' infection by these pathogens. The explanation of the established pattern is that high indicators of the average monthly temperature and humidity of atmospheric air create favourable conditions for intensive development, maturation, and preservation of exogenous forms of *Eimeria* in the environment [10].

The seasonal dynamics of the incidence of eimeriosis in lambs is especially controlled in farms where young sheep are kept in untreated or so-called "primitive" premises. As a rule [11-13], in the conditions of industrial sheep farming, sanitary and hygienic parameters are observed in all types of livestock complexes, which has less influence on the course of eimeriosis according to the results of other authors [14]. In this case, the course of eimeriosis in these animals and its spread are regulated only by their rearing system [15].

Infected lambs release *Eimeria* oocysts with faeces into the environment 5-7 days after infection. Subsequently, this is recorded during the entire period of the disease [16; 17]. *Eimeria* is diagnosed by detecting *Eimeria* oocysts in fresh faeces using faecal flotation techniques similar to those used to establish roundworm eggs. According to H. Hoste *et al.* (2022), diagnosis should be established on a group basis, since the number of oocysts can vary substantially between individual lambs in the group [18]. In this regard, M. Acharya *et al.* (2020) [19] developed and recommended the use of eimeriostatics in animals.

Currently, manufacturers have developed a powerful arsenal of medicines to eliminate eimeriosis in sheep. Thus, H. Legendre *et al.* (2018) [20] believe that some preparations can be added to feed, water, or used as a balanced and pressed compound feed. According to A.M. López *et al.* (2019) [21], the corresponding medicinal products affect the animal body continuously or periodically. At the same time, the use of such preparations causes a decrease in the natural resistance of not only pathogens, but also the defences of the animal body.

Considering the scientific data accumulated in the world, lamb eimeriosis stays an urgent issue for applied veterinary medicine, since the species composition of pathogens has not yet been sufficiently clarified and the area of their distribution has not been definitively determined. Furthermore, morphofunctional changes in the body of lambs with eimeriosis are still understudied.

### Materials and Methods

Experimental studies on eimeriosis in lambs were conducted during 2019-2022 at the scientific laboratory of the Department of Pharmacology, Parasitology, and Tropical Veterinary Medicine of the Faculty of Veterinary Medicine of the National University of Life and Environmental Sciences of Ukraine. For this purpose, groups of lambs of the Romanov breed were formed from one month to six months of age with clinical symptoms characteristic of eimeriosis – lack of appetite, diarrhoea, and unsteady gait.

Production experiments were conducted in sheep farms of the Cherkasy region, specifically two farms ("Ararat" and "Lobodiuk") and two homesteads ("ALEKS Agro" and "Rudenkovo"). These farms specialize in the production

of meat, wool, leather with wool, as well as in the production of milk. They are characterized by almost identical conditions for keeping and feeding sheep. Thus, the farms "Lobodiuk" and "Ararat" use free grazing of animals on their own haymakers, which are located on the territory of Cherkasy region, and the farms "Rudenkovo" and "ALEKS Agro" raise sheep indoors.

One experimental and one control group of 10 lambs each ( $n = 10$ ) were formed to evaluate the effectiveness of decoquinate added to the granulated feed fed to lambs for the treatment and prevention of eimeriosis and to increase their daily body weight gain. All lambs had free access to ewes, pelleted feed and water.

Lambs of the experimental group were given decoquinate at 1 mg/kg in free access. The active substance was added to the over-granulated AVA ZDOROVA feed (starter granulated compound feed for lambs aged 0 to 3 months).

Individual samples of faeces from the rectum were collected for coproscopic studies in lambs. In counting the number of *Eimeria* oocysts in 1 g of faeces, the study adhered to the method described in DSTU 5079:2008 "Veterinary Medicine. Methods of Laboratory Diagnosis of *Eimeria* Diseases" [22] using a Bresser Biolux LCD Touch microscope (30x-1200x).

The species affiliation of *Eimeria* was established by cultivation in a 2% solution of potassium dichromate at 30°C for seven days.

The efficacy of decoquinate in sheep with eimeriosis was established by calculating the extensefficiency according to formula (1):

$$EE = 100 \frac{E2 \cdot C1}{E1 \cdot C2} \cdot 100 \quad (1)$$

where *EE* is the extensefficiency, %; *E1* is the invasion extensiveness of experimental animals before treatment; *E2* is the invasion extensiveness of experimental animals after treatment; *C1* is the invasion extensiveness of control animals before treatment of experimental animals; *C2* is the invasion extensiveness of control animals after treatment of experimental animals.

In this case, the inefficiency (IE) was calculated according to the formula (2):

$$IE = \frac{100 - (IE \times IIOc)}{IIC} \quad (2)$$

where: *IE* is the number of dead parasites in the experiment after disinfection, %; *IIE* is the invasion intensiveness in the experiment, %; *IIOc* – initial level of II in control, eggs, oocysts/g; *IIC* – II in control, eggs, oocysts/g.

The obtained numerical results were processed statistically using SAS software version 9.X for Mac (SAS Institute Inc., USA), where the Kruskal-Wallis test was used to evaluate differences between three or more samples under experimental conditions involving ordinal data with independent measurement plans. This test regulates one-way analysis of variance. Variance analysis requires numerical scores that can be used to calculate average values. To use the Kruskal-Wallis test, it is sufficient that the data is ranked according to the change in the number of measurements. The Kruskal-Wallis test is also a mirror image of the Mann-Whitney U test. However, the Mann-Whitney U test restricts comparison to only two samples, whereas

the Kruskal-Wallis test is used to compare more than three samples [23].

In addition, the intensity of invasion (II) was calculated for eimeria in lambs using a McMaster chamber (Great Britain, Marienfeld Superior).

The invasion extensiveness (IE) was calculated using the generally accepted formula (3):

$$IE = \frac{\chi}{\gamma} \times 100 \quad (3)$$

where *IE* is the invasion extensiveness;  $\chi$  is the number of infected animals in the group;  $\gamma$  is the total number of animals in the group.

To find the average daily gain of sheep during the fattening period (4) and at the age of reaching a body weight of 80 kg (5), the following formulas were used:

$$X = \frac{T2 - T1}{P2 - P1} \times 1000 \quad (4)$$

where *X* is the average daily growth, g;  $T_1$  is the weight of animals at the beginning of the accounting period, kg;  $T_2$  is the weight of animals at the end of the accounting period, kg;  $P_1$  is the age of animals at the beginning of the accounting period, days;  $P_2$  is the age of animals at the end of the accounting period, days;

1000 is the conversion factor to grams.

$$X = B + \frac{80 - m}{P} \quad (5)$$

where *X* is the age of the animal upon reaching a body weight of 80 kg, days; *B* is the real age of animals on the day of the last weighing, days; *m* is the real body weight of animals on the day of the last weigh-in, kg; *P* is the average daily growth of animals for the accounting period, kg.

The number of feed days is found by multiplying the average livestock for the reporting period by the number of days in this period [24].

Experiments involving lambs followed the "General Ethical Principles of Animal Experiments", which were approved at the National Bioethics Congress held in Kyiv in 2001 [25] and acted per the provisions of the "European Convention for the Protection of Vertebrate Animals" [25].

## Results and Discussion

According to the results of research in farms and homesteads of the Cherkasy region, infection of sheep with eimeria was established. During the entire experiment, in the conditions of private and homestead farms, the intensity of infestation in lambs with eimeria increased from a minimum of 13.5% during the first month to a maximum of 95.9% in the second month of the study. According to the results of the survey of 140 animals, eimeriosis was registered in 45 lambs from farms and in 34 animals from household farms.

On average, the intensity of infestation in sheep in the herd increased by 23.9% every 14 days, which indicated the statistical need for difference (Kruskal-Wallis test;  $P < 0.05$ ) between the following periods of the study. The exception was the period between Days 42 and 58, when the smallest increase in the invasion extensiveness was detected – by 13.2%.

According to the obtained research results, during the analysis of the species composition, representatives of the

genus *Eimeria* were recorded in most cases in lambs, namely *E. arloingi* (invasion extensiveness – 41%) and *E. crandallis* (invasion extensiveness – 29%), which dominated in the

youngest animals, while less pathogenic species appeared in older animals – *E. intricate* (invasion extensiveness – 15%) and *E. faurei* (invasion extensiveness – 15%) (Fig. 1).

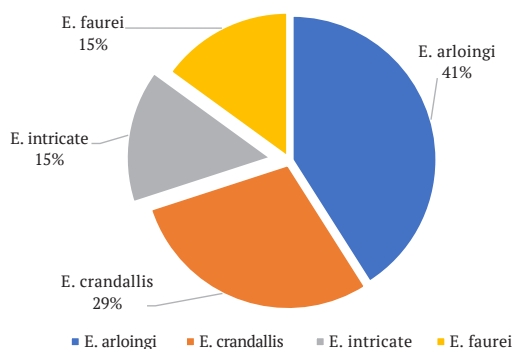


Figure 1. Infection of lambs by various types of *Eimeria* in farms of Cherkasy region

The research results confirm the data of other authors [5; 12; 13], where *E. arloingi* and *E. crandallis* were detected in the first period of life of lambs (Day 28). At the same time, according to the data of the literature [4], the spread of *E. intricate* and *E. faurei* was not previously recorded in lambs on the territory of Ukraine.

As is known [6], the species composition of the causative agents of eimeriosis primarily depends on the locality, more precisely, the environmental conditions, the susceptibility, and sensitivity of animals, as well as the conditions of their breeding.

Several types of *Eimeria* oocysts were detected simultaneously in the samples taken from the faeces, which had a detrimental effect on the general condition of the lambs' body. Thus, during a clinical study in lambs, the following was recorded:

- disorders of the gastrointestinal tract;
- dyspepsia with significant excretion of faeces with mucus and blood;
- an increase in body temperature in individual lambs to 41.5°C with a pronounced deterioration in the general condition of the body.

In individual adult sheep who reached one to two years of age, a subclinical course of invasion was noted.

In addition to scale, another important indicator

characterizing the course of eimeriosis in sheep is the invasion intensiveness, expressed by the number of oocysts released per 1 g of faeces. Analysing the results of our research and the results of other researchers [15], the period of rearing lambs until Day 28 is characterized by a relatively low intensity of invasion, which indicates a slight penetration and reproduction of eimeriosis pathogens in their body.

In studies conducted in European countries, the highest level of oocysts per 1 g of faeces was established in the second month of life of lambs [13]. According to other studies [12] conducted on the territory of the Cherkasy region, the critical moment is the period between Days 38 and 50 of life of lambs, when there is less penetration of pathogens of eimeriosis into the body. In case of rapid spread of infection of sheep on the farm, oocysts in faeces can be detected from Days 21 to 33 of their life.

The highest values of the invasion intensiveness and extensiveness were recorded in two-month-old lambs, namely: IE was 100%, and the average II was 12,000 oocysts in 1 g of faeces. Lambs older than 5-6 months of age were affected less (IE – 77%, average II – 3,564 oocysts in 1 g of faeces).

The dynamics of II changes in eimeriosis in the lambs under study from the first to the second month of life is presented in Fig. 2. The average II in the study period was 7,970.2 oocysts in 1 g of faeces.

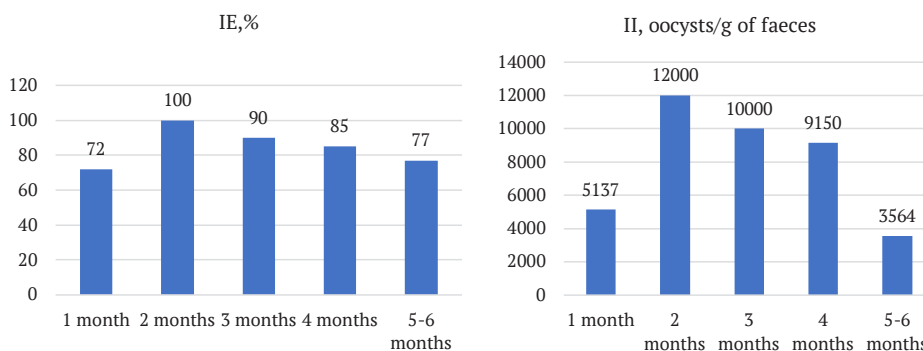
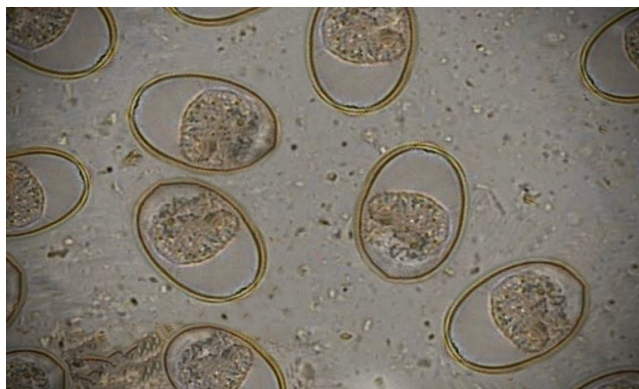


Figure 2. Dynamics of lamb infestation depending on age in farms of Cherkasy region

Before starting the experiment, the lambs of both groups were examined several times for the presence of *Eimeria* oocysts. It was found that all lambs were infected

with *Eimeria* oocysts (Fig. 3). The invasion intensiveness was 10-20 oocysts in one field of view of the microscope.



**Figure 3.** *Eimeria* oocyst of *E. Arloingi* in sheep ( $\times 700$ )

On Day 7 of examination of faeces in the experimental group, it was established that all lambs were infested with *Eimeria* oocysts (Table 1). On Day 14 of the experiment, no *Eimeria* oocysts were detected in the faeces of five lambs, i.e., the EE was 50%. On Day 21 of the experiment, 8 lambs with an extensefficiency index of 80%

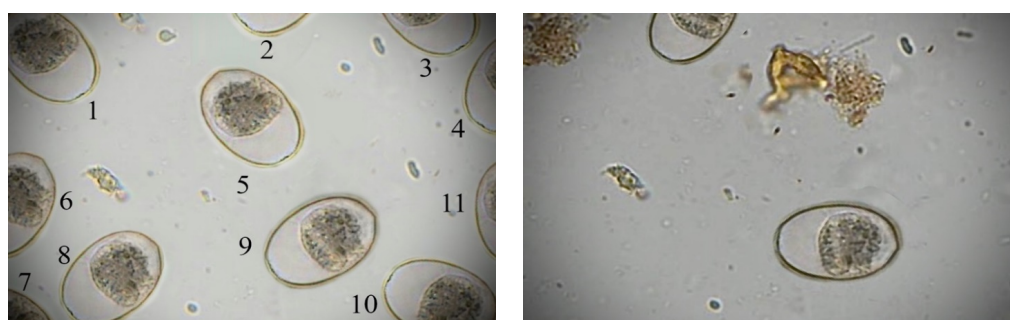
were released from *Eimeria*. On Day 28, only 9 lambs were released from *Eimeria* infestation. Notably, one lamb remained affected by *Eimeria* oocysts. During the study, 2-3 oocysts were detected in the field of view of the microscope, which confirms the parasite carrier of eimeriosis pathogens.

**Table 1.** Indicators of invasion of lambs during treatment with decoquinat (m  $\pm$  m, n = 10)

Group	Lambs released from <i>Eimeria</i> oocysts	EE, %	Lambs released from <i>Eimeria</i> oocysts	EE, %	Lambs released from <i>Eimeria</i> oocysts	EE, %	Lambs released from <i>Eimeria</i> oocysts	EE, %
	Day 7		Day 14		Day 21		Day 28	
Control	0	0	0	0	0	0	0	0
Experimental	0	0	5	50	8	80	9	90

In the control group of lambs, both at the beginning of the experiment and on Day 28 of the study, all 10 animals stayed infected with *Eimeria*. Therewith, the invasion intensiveness even slightly increased from 10-20 to 15-29 oocysts in the

field of view of the microscope (Fig. 4). Lambs of the experimental and control groups were weighed 1-2 hours after morning feeding. The results of average control weighings are presented in Table 2.



**Figure 4.** Photo of oocysts in the same field of view of the microscope in the control and experimental group on Day 28 of the experiment; numbers indicate *Eimeria* oocysts of *E. Arloingi* in sheep ( $\times 700$ )

**Table 2.** Dynamics of lamb body weight gain (m  $\pm$  m, n = 10, kg)

Group	Before the study	Day 7	Day 14	Day 21	Day 28
Control	9.45 $\pm$ 0.18	10.47 $\pm$ 0.17	11.40 $\pm$ 0.20	12.66 $\pm$ 0.20	13.80 $\pm$ 0.21
Experimental	9.40 $\pm$ 0.18	10.40 $\pm$ 0.17	11.72 $\pm$ 0.20	13.20 $\pm$ 0.20**	14.60 $\pm$ 0.21*

**Note:** \* P < 0.05, \*\* P < 0.01, compared to the indicators of the control group

According to the results obtained, the absence of relative weight gain of lambs on Days 7 and 14 of the experiment was established. On the other hand, 21 days after the start of the study, the body weight of lambs increased by 4.27% ( $P < 0.01$ ), and on Day 28 – by 5.80% ( $P < 0.05$ ) compared to Day 21 of the study.

The average daily gain was 155.36 g in the control group and 185.71 g in the experimental group, which confirms the effectiveness of decoquinate fed to lambs.

In various farms in the Cherkasy region, infection with *Eimeria* of lambs was noted, regardless of age group. The maximum values of their *Eimeria* invasion were detected at the age of two months. Furthermore, there is a pattern where indicators of the invasion intensiveness and extensiveness of lambs decrease with age.

Therewith, the positive effectiveness of decoquinate was found, provided that it is used at a dose of 1 mg/kg of animal weight for 28 days. This provided an extensefficiency of 90%. In 10% of lambs, the II did not exceed 2-3 oocysts in the field of view of the microscope, and they stayed parasitic carriers of eimeriosis pathogens. Importantly, the use of decoquinate by adding it to the pre-granulated feed AVA ZDOROVA (AVA GROUP Ukraine) at 1 mg/kg for eimeriosis leads to an increase in average daily growth by 19.6%.

Thus, with eimeriosis of lambs after the period of the highest II, its significant decrease is noted. The number of oocysts released with lamb faeces, as a rule, is steadily decreasing. This dependence is confirmed by the results of the conducted studies. As demonstrated by statistical analysis, the increase in mean value observed in the second month of the study was the result of high values recorded in individual lambs. It should be emphasized that adult sheep have a constant but low level of infection with *Eimeria* oocysts from the environment. Thus, adult sheep become asymptomatic parasitic carriers of eimeriosis pathogens and, at the same time, a reservoir and source of infection of lambs in farms of various forms of management and, especially, with their intensive cultivation.

Data from the literature [19] and the results of our research indicate that in lambs kept in farms with an intensive breeding system, the degree of infection with eimeria pathogens can reach more than 96%. With low II, an asymptomatic course of the disease is possible; therewith, animals stay infected with *Eimeria*. Therefore, it is important to carry out certain preventive measures with such sheep. Otherwise, disregarding such measures may lead to significant economic losses in the farm.

It is noted that II increases between the first and second months of lambs' life, after which there is a period of gradual and constant release of *Eimeria* oocysts with faeces

into the environment. However, the number of *Eimeria* oocysts can vary significantly depending on the general condition of the lambs. When conducting microscopic studies, oocysts of one type of *Eimeria* or more of them compared to others were detected more often. However, oocysts of other *Eimeria* species are somewhat less common.

At the same time, the factor that accelerates both the spread of eimeriosis and II is the early weaning of lambs from ewes, as well as untimely preventive measures, and, if necessary, preventive treatment. In this regard, the best solution to the prevention of eimeriosis is keeping lambs together with ewes as long as possible, as well as the use of chemotherapeutic agents that prevent the occurrence of invasion and contribute to the improvement of their body's defences, improve the quality of life and stimulate productivity.

### Conclusions

According to the data obtained, in farms of the Cherkasy region, the prevalence of eimeriosis in lambs during the year ranges from 72-100%, and in household farms – reaches 90-100%. In all types of farms, this protozoan disease is caused by pathogens: *E. arloingi* (IE – 41%), *E. crandallis* (IE – 29%), *E. faurei* (IE – 15%), and *E. intricate* (IE – 15%). The highest values of the investigated indicators are typical for two-month-old lambs, namely: IE – 100% and average II – 12,000 oocysts in 1 g of faeces.

The efficacious influence of decoquinate is noted at 1 mg/kg body weight of lambs when used for 28 days. The extensefficiency is 90%. 10% of lambs stay parasitic carriers of eimeriosis pathogens. The invasion intensiveness in them is 2-3 oocysts in the field of view of the microscope.

The therapeutic effect of decoquinate at 1 mg/kg, added to AVA ZDOROVA feed (starter granular compound feed, produced by AVA GROUP Ukraine), is manifested in lambs already on Day 14 after feeding; the extensefficiency is 50%, and on Day 28 – 90%.

The average daily gain is 155.3 g in the control group, and 185.7 g in the experimental group, which in turn confirms the effectiveness of the decoquinate used in lambs.

Thus, for effective treatment of sheep with eimeriosis, the authors of this study recommend using decoquinate with granulated compound feed produced by AVA GROUP (Ukraine).

In the future, it is planned to find the features of the pathogenesis and spread of eimeriosis in lambs in other regions and to analyse the effectiveness of the available preventive measures; to recommend new developments for use; to systematize and propose the organization of scientifically based medical and preventive measures in sheep farms.

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## Ефективність декоквінату в гранульованому кормі за еймеріозу ягнят

Наталія Михайлівна Сорока, Олександр Віталійович Філіпенко

Національний університет біоресурсів і природокористування України  
03041, вул. Героїв Оборони, 15, м. Київ, Україна

**Анотація.** За еймеріозу овець знижується рентабельність виробництва вовни, шкіри, м'яса та молока, що завдає істотних збитків галузі вівчарству, а тому потребує впровадження на виробництві ефективних засобів профілактики та лікування тварин за цієї інвазії. Метою дослідження було визначити ефективність декоквінату в гранульованому кормі за еймеріозу ягнят. У результаті проведення копроскопічних досліджень згідно з ДСТУ 5079:2008 «Ветеринарна медицина. Методи лабораторної діагностики еймеріозів» визначено екстенсивність інвазії ягнят ооцистами різних видів еймерій, зокрема, *E. arloingi* – 41 %, *E. crandallis* – 29 %, *E. intricate* – 15 %, *E. faurei* – 15 %, які рееструються у них в окремих господарствах Черкаської області. Клінічні симптоми еймеріозу спостерігаються у молодняка з одномісячного віку і характеризуються анемічністю видимих слизових оболонок, діареєю, пригніченням загального стану, слабкістю та переважно гострим перебігом інвазії з високою летальністю. Прояв клінічних симптомів хвороби залежить від багатьох факторів, зокрема, віку ягнят, санітарної ситуації в господарстві, зміни кормових програм відгодівлі, стресових ситуацій, що виникають внаслідок переміщення овець в інші приміщення або відлучення ягнят від вівцематок. У ягнят старшого віку, як правило, хвороба має хронічний та безсимптомний перебіг. У таких тварин ооцисти еймерій виділяються з фекаліями у значно меншій кількості, ніж в одномісячних ягнят за гострого перебігу інвазії. Максимальні значення екстенсивності інвазії (100 %) та інтенсивності інвазії (12000 ооцист в 1 г фекалій) встановлено в двомісячних ягнят. За інвазії у травному каналі цих тварин погіршується засвоєння поживних речовин корму, що сприяє зменшенню середньодобового приросту маси тіла (в середньому 155,3 г/добу), який зростає за лікування тварин декоквінатуром (в середньому 185,7 г/добу). Загалом, застосування хворим ягням препарату декоквінату в дозі 1 мг/кг маси тіла, впродовж 28 діб виявляє високу лікувально-профілактичну ефективність. При цьому, екстенсивність становить 90 %, а паразитозність відмічається лише в 10 % тварин. Тому, для ефективного лікування ягнят різних вікових груп може бути рекомендований препарат декоквінат, що особливо актуально для господарств з інтенсивним вирощуванням молодняка овець

**Ключові слова:** ооцисти, *Eimeria*, інвазія, лікування, методи діагностики