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COMPARISON OF TREATMENT AND ECONOMIC EFFICACY OF ANTIHELMINTHICS FOR SWINE ASCARIASIS

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It was found that the causative agent of ascariasis is the most common among nematodes of pigs of different ages and production groups. Of the 150 helminthocoprooscopically examined samples, ascarides affected 74 heads, i.e. the extent of invasion (EI) was 49.3% with the intensity of invasion (II) of 24.4 specimens of eggs.

We tracked the infestation of pigs in each age group and found that firstly we found ascaris eggs in pigs aged from 1.5 to 2 months. Extensity and intensity of infestation was respectively 13.3% and 5.5 specimens of eggs. Then extensity and intensity of infestation dramatically increased. Thus, in pigs aged 2–4 months, respectively, it accounted for 64.6% and 22.5 specimens of the eggs, so they were the most affected. The pigs aged 4–6 months also had a high degree of damage by ascarides. Extensity of invasion was 78.4% with intensity of infestation 31.9 specimens of eggs. Then extensity and intensity of ascaris infestation significantly decreased, and in fattening pigs it was, respectively, 37.1% and 12.5 egg specimens; in sows it was 16.7% and 3.5 specimens of eggs, respectively.

The intensity of ascaris infestation ranged in groups from 20.3 to 30.8 eggs.

On the 12th day after the last intake of anthelmintics, we sampled the faeces again.

The results of helminthological tests after deworming indicate that 1% brovalsen and promectin provided a 100% therapeutic effect for pig ascaris invasion. Animals in the control group were infected with pathogens of ascariasis (EI = 100%, II = 27.8 eggs).

In order to study the effect of ascarides on the body of pigs, at the beginning of the experiment and after 30 days the animals were weighed, as the assessment of the effectiveness of the tested drug was carried out also in terms of average daily gain.

During the period of the experiment, which lasted 30 days, the average weight of pigs from research groups as the first as well as the second was higher than in the control group: the first experimental group by 1.98 kg or by 28.2%, and the second – by 2.27 kg or by 32.3%.

Key words: helminthiasis, anthelmintics, ascariasis, pigs, promectin, brovalsen.
Соловійова Л.М., Єрохіна О.М., Пересунько О.Д., Човгун А.М. Порівняння лікувальної та економічної ефективності антигельмінтіків за аскарозу свиней

Встановлено, що найчастіше серед нематодозів свиней різних вікових та виробничих груп зустрічається збудник аскарозу.

Із 150 досліджених нами гельмінтокопроовоскопічно проб аскарідами було уражено 74 голови, тобто екстенсивність інвазії (EI) становила 49,3% при інтенсивності інвазії (II) 24,4 екземпляра яєць.

Ми простежили за ураженістю свиней по кожному віковому групі і встановили, що вперше яйця аскарід вищої від 1,5 до 2 місяців. Екстенсивність та інтенсивність інвазії становила, відповідно, 13,3% і 5,5 екземплярів яєць. Потім екстенсивність та інтенсивність інвазії різко насторожила. Так, у поросят віком 2–4 місяців, відповідно, становила 64,6% та 22,5 екземплярів яєць, отже, вони були максимально уражені. Свині віком 4–6 місяців також мали високу ступінь ураження аскарідами. Екстенсивність інвазії становила 78,4% при інтенсивності інвазії 31,9 екземплярів яєць. Потім екстенсивність та інтенсивність аскарозної інвазії значно зменшилися і у свиней, які знаходились на відгодівлі, становили, відповідно, 16,7% і 3,5 екземплярів яєць відповідно.

Інтенсивність аскарозної інвазії коливалася у групах від 20,3 до 30,8 екз. яєць.

На 12-й день після останньої дачі антигельмінтних препаратів, ми знову відібрали проби фекалій.

Результати гельмінтокопроовоскопічних досліджень свиней після дегельмінтизації свідчать про те, що бровальзен та промектин 1% забезпечили 100%-ний лікувальний ефект свиней від аскарозної інвазії. Тварини контрольної групи були уражені збудниками аскарозу (EI = 100%, II = 27,8 екз. яєць).

Ключові слова: гельмінтози, антигельмінтіки, аскароз, свині, промектин, бровальзен.
[8, p. 25], the eggs of pathogens found in fecal material are morphologically identical, but mature pathogens have slight differences.

At slaughterhouses you can find mature helminths in the intestines, as well as liver damage (“white dots”) and lungs. The signs of pneumonia or pleurisy can be indicators of ascariasis [3, p. 1908], and the study of nasal and pulmonary secretions in piglets can detect the presence of ascaris larvae [7, p. 20].

According to A. R. Szakacs, V. Miclăuş et al. [11], interstitial tissue and bronchioles were affected in the lungs. Zonal necrosis was observed on the epithelium of the bronchioles, with detachment of cells into the lumen of the bronchioles, the intensity of which differed depending on one part of the lung parenchyma to another.

According to the literature, the effectiveness of fenbendazole drugs, such as phenzol at a dose of 5 mg/kg on DR for ascarosis of pigs, EE of which was 90%, and IE = 99%

| The results of helminthocoproscopic studies for ascariasis |
|----------------------------------------------------------|
| Age and production groups animals | Total studied animals, ch. | Total affected animals, naked. | EI, in percent. | Total found eggs, copies. | II, copy eggs |
|----------------------------------|----------------------------|-------------------------------|----------------|------------------------|--------------|
| 1,5–2-monthly                    | 15                         | 2                             | 13,3           | 11                     | 5,5          |
| 2–4-monthly                      | 48                         | 31                            | 64,6           | 697                    | 22,5         |
| 4–6-monthly                      | 37                         | 29                            | 78,4           | 925                    | 31,9         |
| Fattening                        | 35                         | 13                            | 37,1           | 163                    | 12,5         |
| Sows                             | 12                         | 2                             | 16,7           | 7                      | 3,5          |
| Breeding boars                   | 3                          | 0                             | 0              | 0                      | 0            |
| Total                            | 150                        | 74                            | 49,3           | 1803                   | 24,4         |

| The results of helminthocoproscopic studies of pigs before deworming |
|---------------------------------------------------------------------|
| Group animals           | Number animals in the group, ch. | Number affected animals, ch. | EI, in percent | II, copy eggs | p < |
|------------------------|---------------------------------|-----------------------------|----------------|--------------|-----|
| Experimental: the first | 0                               | 10                          | 100            | 30,8±3,9     | 0,1 |
| second                 | 10                              | 10                          | 100            | 20,3±2,8     | 0,1 |
| Control                | 10                              | 10                          | 100            | 24,8±3,5     | -   |

Notes: EI – extent of invasion, II – intensity of invasion; p < – compared experimental groups with the control.

| The results of helminthocoproscopic studies of pigs after deworming |
|---------------------------------------------------------------------|
| Group animals           | Number animals in the group, ch. | Number affected animals, ch. | EI, in percent | II, copy eggs | EE, in percent | IE, in percent |
|------------------------|---------------------------------|-----------------------------|----------------|--------------|---------------|---------------|
| Experimental: the first | 10                              | 0                           | 0              | 0            | 100           | 100           |
| second                 | 10                              | 0                           | 0              | 0            | 100           | 100           |
| Control                | 10                              | 10                          | 100            | 27,8±2,1     | –             | –             |
has been repeatedly confirmed [10, p. 132]. Ascarosis in piglets of 2–4 months of age was found to be 100% effective with ivomec and 64,28% with piperazine [12, p. 45].

Ascaro-sis in piglets of 2–4 months of age was found to be 100% effective with ivomec and 64,28% with piperazine [12, p. 45].

A. suum eggs are quite stable in the environment, can remain viable in the soil from 6 to 9 years [13, p. 150], and in water at a temperature of 70–80 °C they die within 2 s [14, p. 28].

The purpose and objectives of the study. The aim was to study the prevalence of helminthic infestation in pigs LLC “Kozatske” Bobrovska district of Chernihiv region and the anthelmintic properties of brovalzen and promectin 1% in ascarosis of pigs.

To achieve this goal, the following tasks were set: to study the spread of pig ascarosis in LLC “Kozatske” Bobrovska district of Chernihiv region; to determine the age dynamics of pig infestation with roundworms in the farm; to study the effectiveness of deworming of pigs with brovalzen and promectin 1% for ascarosis.

Material and methods of research. Experiments to study the anthelmintic efficacy of brovalzen and promectin 1% were performed on piglets 2–4 months of age spontaneously infested with roundworms. For this purpose, on the principle of analogues formed 3 groups of pigs (1 control and 2 experimental) with 10 heads in each. Animals of the first experimental group were administered brovalzen with food at a dose of 2 g / 10 kg of body weight, mixing the drug with a two-day norm of feed, twice, repeating the treatment after 24 h, in a group method. 1 g of brovalzen powder contains 75 mg of albendazole (active substance). Animals of the second experimental group used promectin 1% subcutaneously, from the inner surface of the thigh at a dose of 1 ml per 33 kg of body weight once. 1 ml of the drug contains 10 mg of ivermectin and auxiliary components. Pigs in the control group were not prescribed anthelmintics. Anthelmintic efficacy was determined on the 12th day after deworming. Faecal samples taken individually were examined by a combined method standardized by G.O. Kotel-nikov and V.M. Hrenov.

Tests to determine the effectiveness of treatment were extensibility (EE) and intensification (IE). Based on the results of weighing the animals, which was carried out before the use of drugs, as well as 30 days after their use, the average daily gain of piglets was calculated.

| Results of weighing pigs before and after treatment | Group animals | Average body weight 1 goal, kg | Weight gain during the experiment, kg | Average daily weight gain, kg | ± to the control group for the period of the experiment, kg | ± to the control group | Weight gain after treatment | ± to the control group |
|--------------------------------|--------------|-----------------------------|-------------------------------------|-----------------------------|--------------------------------|-------------------------|---------------------------|-------------------------|
| Control | 21,9±1,21 | 7,0±0,75 | 0,234 | _ |
| Experimental I | 21,3±1,80 | 9,0±0,51 | 0,300 | +0,066 |
| Experimental II | 20,1±2,30 | 9,3±0,89 | 0,310 | +0,076 |

Notes: * – p <0,001, ** – p <0,01, *** – p <0,05, **** p <0,1, compared with I and II experimental with the control group.
Main results of the study. In order to study the epizootic situation with helminthiasis of pigs in the farm conducted the selection and study of 150 samples of feces from pigs of different ages and production groups.

Ascaris affected 74 piglets, i.e., the extent of invasion (EI) was 49.3% with an intensity (II) of 24.4 specimens of eggs (table 1).

We monitored the incidence of pigs of each age group and for the first time ascaris eggs were diagnosed in piglets aged 1.5 to 2 months. Extensiveness and intensity of invasion were, respectively, 13.3% and 5.5 specimens of eggs. Then the extent and intensity of the invasion increased sharply and in piglets aged 2–4 months, respectively, were 64.6% and 22.5 specimens of eggs. Pigs aged 4–6 months also had a high degree of roundworm infestation. The extent of the invasion was 78.4%, the intensity – 31.9 specimens of eggs. Then EE and IE of ascariasis invasion decreased significantly and in pigs that were fattening, were, respectively, 37.1% and 12.5 specimens of eggs, and in sows – 16.7% and 3.5 specimens of eggs (table 1).

In groups to study the therapeutic efficacy of anthelmintics, the intensity of ascariasis invaded from 20.3 to 30.8 copies. eggs (table 2).

On the 12th day after the last administration of anthelmintic drugs, faecal samples were taken again. The results of helminthocoproscopic studies of pigs after deworming are shown in table 3.

The results of helminthocoproscopic studies of pigs after deworming indicate that brovalzen and 1% promectin provided a 100% therapeutic effect in ascariasis. Animals of the control group remained affected by ascariasis pathogens (EI = 100%, II = 27.8 specimens of eggs).

In order to study the effect of roundworms on pigs at the beginning of the experiment and after 30 days, the animals were weighed, as the evaluation of the effectiveness of the test drug was carried out at the level of average daily gain (table 4).

Table 4 shows that during the experiment, which lasted 30 days, the average body weight of piglets in the experimental groups of both the first and second was higher than in the control group: in the first – by 1.98 kg (28.2%), the second – 2.27 kg (32.3%).

Conclusions. 1. Ascariasis invasion has a well-defined age dynamics. 2. Brovalzen at a dose of 2 g / 10 kg, which was administered for two days with compound feed, with a repeated course after 24 h and promectin 1% at a dose of 1 ml per 33 kg of body weight were once effective anthelmintics for ascariasis in pigs (EE = 100%, IE = 100%).

Prospects for further research. Measures to control swine ascariasis will include studying the effectiveness of new anthelmintics on this invasion and disease prevention.

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АНАЛІЗ НЕБЕЗПЕЧНИХ ФАКТОРІВ ТА РИЗІКІВ У ПРОЦЕСІ ВИГОТОВЛЕННЯ ВИРОБІВ ІЗ М'ЯСА ПТИЦІ

Проаналізовано низку наукових досліджень і встановлено, що реформування традиційної системи управління безпечною харчових продуктів є насальною проблемою і в Україні. Наявні підходи не можуть вважатися доволі ефективними, оскільки вони не завжди визначають і адекватно не вирішують проблеми, не можуть забезпечити ефективне реагування на швидкій розвиток і зміни, що зумовлюють імовірні ризики, не завжди враховують під час прийняття рішень наукові дані.

Дослідження впливу небезпечних факторів у процесі виробництва харчових продуктів із м'яса птиці проведено з описом характеристик продукції, процесів, визначення механізму дії небезпечних факторів та їх критичних меж.

Аналіз впливу небезпечних факторів на сировину (охолоджені курячі тушки) показав, що є різні джерела забруднення: недостатня концентрація мікроїонів та дефіцитуючих речовин, недостатнє відмивання, надмірна доза посолювальних компонентів, розвиток фонової мікрофлори в разі порушень температурних режимів та тривалості технологічних операцій.