

Clinical Effectiveness of “Tilmovet 20% – premix” in Methaphylactic Treatment of Weaned Pigs Against Ileitis and Dysentery

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Abstract

In a pig farm with manifestations of ileitis and dysentery, the methaphylactic efficacy of “Tilmovet 20% – premix” (“Biovet” – Peshtera) having the active substance tilmicosin phosphate – 200 g/1 kg is tested.

A batch of 30-day-weaned pigs with an average live weight of 8.1 kg was divided into two groups of 380 pigs. The trial group received feed supplemented with Tilmovet 20% – premix at a dosage of 1 kg/t of feed during the first 10 days from weaning, and the control group only a feed ration. The clinical status of the pigs was monitored and cases of diseased, dead and slaughtered by necessity were recorded for 65 days. Pathological and bacteriological tests were performed to determine the diagnosis, respectively the reason for their failure.

It was found that the methaphylactic course with Tilmovet 20% – premix given at a dosage of 1 kg/t of feed for 10 days against ileitis and dysentery in grower pigs, eliminates the clinical manifestation of both diseases and mitigates the manifestations of PCVD, and it was reported: - less affected by ileitis and dysentery - by 2.4%; - less died of both diseases - by 1.1% and less pigs slaughtered by necessity – by 1.32%, in compared to the control group.

The treated with Tilmovet 20% – premix grower pigs achieved a 49 g higher average daily gain, respectively, with 3.2 kg of pig more gain growth than those obtained in the control group, and 2.1% more animals transferred to the fattening group, which determined the methaphylactic efficacy of the premix as very good.

Key words: pigs, ileitis, dysentery, methaphylaxis, Tilmovet 20% – premix

Клинична ефективност на “тилмовет 20% – премикс” при метафилактично третиране на отбити прасета срещу илеит и дизентерия

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Резюме

В свинеферма с прояви на илеит и дизентерия е изпитана метафилактичната ефективност на “Тилмовет 20% – премикс” (“Биовет-АД” – Пещера), имащ за активна субстанция tilmicosin phosphate – 200 g/1 kg.

Партида прасета, отбити на 30-дневна възраст, със средно живо тегло 8,1 kg е разделена на две групи по 380 прасета. Опитната група е получавала фураж с добавка на Тилмовет 20% – премикс, в дозировка 1 kg/t фураж през първите 10 дни от отбиването, а контролната група – само фуражна дажба. Проследено е клиничното състояние на прасетата и са регистрирани случаите на заболявания, умрели и заклани по необходимост в продължение на 65 дни. Извършени са патологоанатомични и бактериологични изследвания за определяне на диагнозата, съответно причината за тяхното отпадане.

Установено е, че метафилактичният курс с Тилмовет 20% – премикс, даден в дозировка 1 kg/t фураж в продължение на 10 дни срещу илеит и дизентерия при подрастващи прасета, елиминира клиничното проявление на двете заболявания и смекчава проявите на PCVD, в резултат на което са отчетени: – по-малко заболявания от илеит и дизентерия – с 2,4%; по-малко умрели от двете заболявания – с 1,1% и по-малко заклани по необходимост прасета – с 1,32%, в сравнение с контролната група.

Третираните метафилактично с Тилмовет 20% подрастващи прасета реализират 49 g по-висок среден дневен прираст, съответно с 3,2 kg на прасе повече добит прираст от получените в контролната група и 2,1% повече животни, прехвърлени в групата за угояване, което определя метафилактичната ефективност на премикса като много добра.

Ключови думи: прасета, илеит, дизентерия, метафилантика, тилмовет 20% – премикс

Introduction

Ileitis in swine (Porcine ileitis) is a relatively new but increasingly common infectious disease that causes severe diarrhea, stunted growth and sometimes sudden death. It is characterized by hyperplasia of the enterocytes in the crypts of mucosa and inflammation, with ulceration, hemorrhage and necrosis in the distal part of the small intestine and the beginning of the large intestine (Mc Orist and Gebhart, 1999; Lawson and Gebhart, 2000; Dineff et al., 2005; Yordanov and Dimitrova, 2014-a).

The cause of ileitis *Lawsonia intracellularis* is a Gram-negative, intracellular bacterium that grows in the intestinal epithelial cells and has a relatively long period of survival as an obligate bacteria (Lawson et al., 1993; Mc Orist et al., 1995).

Now ileitis exists in most countries with developed pigproduction and the affected farms suffer economic loss, direct from mortality and indirection by deterioration of production results, which is why the disease is becoming a problem for public pigproduction (Lawson and Gebhart, 2000; Elanco, 2000; Mc Orist, 2006; Mc Orist

et al., 2006). The disease has the highest prevalence in pigs between 10-th and 24-th day after weaning (Guedes, 2002; Charles, 2004).

In recent years, ileitis was established and in many pig farms in Bulgaria. The spread of infection in the breeding herds is about 10%, in farms with closed-cycle of production – about 65%, and while in fattening farms – 84% (Dinev et al. 2005; Yordanov, 2008-a; Yordanov et al., 2010). In our country by ELISA was found that over 80% of public holdings and over 70% of personal holdings (back yard) were affected by ileitis, and the most common are pigs of groups of growing, fattening and gilts (Dimitrova et al., 2010; Yordanov and Dimitrova, 2012; Petkova, 2017).

Traditionally, ileitis in pigs diagnosed post-mortem on the basis of the macroscopic findings, including large intestinal lesions, and on some modern laboratory methods, demonstrating the antigen or specific antibodies against *L. intracellularis* (Guedes, 2002; Keller et al., 2004; Kroll et al., 2005; Yordanov et al., 2010; 2011).

Ileitis in pigs is a bacterial disease and it is therefore possible to use some antibiotics. Tiamulin – 120 ppm, tilmicosin and tylosin – 100 ppm and chlortetracycline – 400 ppm, for 14

days, given orally, such as soluble forms, feed premixes or i.m. injections at an equivalent dose, effective against infection with *L. intracellularis*. Intracellular antibiotics such as tetracyclines and tylosin have the advantage that reach the agent into the cell and can eliminate it. In evaluating of the therapeutic efficacy of tiamulin, tylosin and lincomycin it has been found that they are effective against *L. intracellularis*. Penicillins, aminoglycosides and fluoroquinolones are proving ineffective (Winkelman et al., 2000; McOrist, 2004). Upon co-infection with PRRSV, *L. intracellularis* and *B. hyodysenteriae* Poolperm et al. (2006) compared the therapeutic effect of tiamulin and tylosin, where in obtain good therapeutic effect of both agents.

In farms infected or threatened by disease, besides isolation and treatment of illness apply methaphilactic treatment of other pigs either side of antibiotic agents given in therapeutic and prophylactic doses in courses of 14 days or pulse medication. The pigs in the infected farms should be treated on 6 – 8 weeks old (Van Aken et al., 2002; Yordanov et al., 2010). In the presence of the clinic, both the acute and chronic ileitis, a method of treatment by diet is possible and feasible (Kyriakis et al., 2002; McOrist et al., 2006).

Swine dysentery is a disease in easily portable to young pigs, which is manifested clinically by bloody diarrhea, wasting fast and high mortality, and pathomorphological with haemorrhage and necrosis in the lining of the large intestine. Caused by *Brachispira hyodysenteriae* of the genus *Treponema* (Harris and Glock, 1973; Harris and Kinjon, 1975; Taylor, 1995).

In our swine dysentery is established for the first time in 1955 by Genev and Enchev (1969), but gained widespread since the introduction of hybrid pig and significant imports of gilts from countries of Western Europe (Yordanov, 1982; 2008-b; 2014; Ganovski, 1988).

The disease mainly affects pigs from 6 to 20 weeks old, and the lesions are limited to the large intestine and no affects the ileum. In farms without proper prevention and methaphylaxis, morbidity can reach more than 50% (Harris and Glock, 1973; Sommer, 1978; Ganovski, 1988; Yordanov, 2008 b; 2014 b). Upon infection with

B. hyodysenteriae systemic effect occurring result in dehydration and death. Ultra-sharp course and high mortality due to toxins (Sommer, 1978; Taylor, 1995; Whiteman, 2004; Hampson, 2012).

Furthermore in a clinical formulation, the disease can occur as a subclinical infection which can continue until the death of the animals. In herds where the disease is stationary, the affected pigs showed lower growth and reduced efficiency of nutrition (Taylor, 1995; Hampson, 2012; Yordanov, 2014; Yordanov and Dimitrova, 2014). After morbidity resistance to disease within 3 weeks (Harris and Kinjon, 1975). Used chemotherapeutic agents disease do not prevent recurrences of the disease and as a result appear asymptomatic carriers (Harris and Glock, 1973).

The laboratory diagnosis of dysentery include: – proof of the cause by direct microscopy smears; – isolation of *Brachispira* on solid media; – by immunofluorescence; – histopathological samples from the colon; – ELISA and PCR (Taylor, 1995; Whiteman, 2004; Hampson, 2012; Dimitrova et al., 2015).

For the treatment of dysentery are widely used type of antibiotic, as macrolides, pleuromutilins, lincosamides and tetracyclines, applied most commonly through food or drinking water. In holdings, where dysentery is stationary disease, is widely used methaphylactic treatment of weaned piglets, growing, fattening and pigs in repair with medicated premixes, involving any of the active against *B. hyodysenteriae* antibiotic drugs (Yordanov et al., 2000; 2003).

We set the goal to examine methaphilactic efficiency of “Tilmovet 20% - premix” (“Biovet-AD” – Peshtera) against co-infection of ileitis and dysentery in weaned pigs in a semi-industrial pig farm.

Materials and methods

In pig with sporadic signs of ileitis and dysentery, in which it was applied individual therapy with specific antibiotic agents, but without satisfactory clinical and epizootical effect, was

tested methaphylactic efficiency of “Tilmovet 20% – premix” (“Biovet-AD”) having an active substance tilmicosin phosphate – 200 g/1 kg.

For this purpose a lot of pigs, weaned at 30 days of age with an average live weight of 8.1 kg, were divided into two groups of 380 pigs. Group I, designated control, received starter feed mixture for weaned pigs without added antibiotic or other alternative means, against bacterial diseases in pigs, and Group II, defined the trial, was getting the same feed mixture, but in the first 10 days of weaning with the addition of Tilmovet 20% – premix in dosage 1 kg/t forage.

Throughout the study (65 days) was traced clinical condition of the pigs in both groups were recorded cases of the disease and dead from ileitis and dysentery, and slaughtered animals in need. Of dead and slaughtered pigs were pathological and microscopic examinations to determine the diagnosis, as the reasons for their failure.

At weaning and transfer in group for fattening, was measured live weight of animals from both groups, and calculated gain growth and average daily gain.

Results

By the 7th day of weaning pigs in both groups (control and trial) had a good appetite and developed normally, without clinical manifestations of intestinal and respiratory diseases (Table 1).

From the 8th day, in single animals of the control group was shown diarrhea, and after the 12th day in 9 of them (2.4%) diarrhea passed into the bloody with admixtures and without admixtures of mucus. By the 20th day 2 of diseased pigs died and 5 were slaughtered by necessity, all mortem lesions characteristic for associated infections of ileitis and dysentery and microscopically confirmed to *B. hyodysenteriae*. After 21 days of the experiment in 19 pigs (5%) of the same group, showed clinical signs of porcine circovirus disease (PCVD) and additionally died 5 more pigs (n2 of ileitis and dysentery and n3 of pneumonia and cachexia, due to PCVD), and 6 pigs were slaughtered by necessity, with clinical signs and pathological changes typical of PCVD.

By 21 days, the animals of the experimental group remained in very good and good clinical and body condition. From 22-th to 30-th day 14 pigs (3.7%) showed signs of respiratory disease, including 2 pigs (0.53%) died, and 6 pigs (1.58%) were slaughtered by necessity, all with changes characteristic of PCVD.

From 31-th to 65-th day of the trial, from the two groups were not registered dead animals, but pigs in the control group were visibly weaker, while treated with Tilmovet 20% – premix were in very good and good clinical and body condition, resulting in higher by 3.2 kg. average live weight of pigs (38.5 kg), than in the control group (35.3 kg).

In general, the effectiveness of methaphylactic rate with Tilmovet – 20% premix is as follows: 2.4% less diseased from ileitis and dysentery of pigs, 1.1% less died of these two diseases, 0.26% less died by PCVD, 1.31% less total dead, and by 1.32% less slaughtered by necessity pigs. As a result of all this, the experimental animals realize 3.2 kg higher rate or 49 g in higher average daily gain, and more by 2.64% animals transferred to the group for fattening.

Discussion

The results of the clinical examination of the animals in both groups (control and test) showed that the first cases of bloody diarrhea, with participation and without the participation of mucus are established from the 8th to 12th day after weaning in pigs in the control group. Till 20-days were recorded and the first dead and slaughtered animals in need, while in the experimental group, treated with Tilmovet 20% – premix, diseased and dead pigs with clinical signs of ileitis and dysentery no were observed. These data confirm the epidemiological and clinical characteristics of dysentery and porcine ileitis described by Yordanov (1982; 2008 a) Ganovski (1988), Dinev et al. (2005), Yordanov and Dimitrova (2014-a), Taylor, (1995), Whiteman, (2004) and Gebhart, (2006) and define methaphylactic efficiency of used premix against both diseases as very good, which is consent with provided by

other authors (Kyriakis et al., 2002; Winkelman et al., 2000; Guedes, 2002) and the recommendations of Yordanov et al. (2010) and Yordanov and Dimitrova (2014-a).

Besides direct prophylactic efficacy against ileitis and dysentery, administration of Tilmovet 20% – premix turns and indirect impact on the manifestation of PCVD, which in the control group affects over 5% of pigs in the period from 21th to 30th day after weaning, happened reason for the increase in mortality to 1.84% and slaughter necessarily to 2.9% in the control

group, in 0.53% and 1.58%, respectively, in the test group.

Thanks to the better health status of the pigs in the test group at the end of the experiment (65th day) reported higher average daily gain of 0.049 kg, and produced in excess of 3.2 kg increase in compared to the control group.

In summary, one can say that methaphylactic treatment of weaned pigs against ileitis and dysentery with Tilmovet 20% – premix in dosage 1 kg/1 t, feed for 10 days, eliminates clinical manifestation of both diseases, mitigates

Table 1. Clinical effectiveness of the methaphylactic treatment of weaned pigs against ileitis and dysentery with „Tilmovet 20% – premix”

No	Indexes	Measure	I – gr. Contr.	II – gr. Trial	Difference
1.	Weaned pigs – average body weight	num.	380	380	0.0
		kg	8.1	8.1	0.0
2.	Course of treatment with Tilmovet 20% – prem. x 1 kg / t fodder	day	–	10	+ 10
3.	Duration trial	day	65	65	0.0
4.	Ill pigs from ileitis and dysentery	num.	9	–	– 9
		%	2.4	–	– 2.4
5.	Dead pigs from ileitis and dysentery	num.	4	–	– 4
		%	1.1	–	– 1.1
6.	Dead pigs from PCVD*	num.	3	2	– 1
		%	0.79	0.53	– 0.26
7.	All dead pigs	num.	7	2	– 5
		%	1.84	0.53	– 1.31
8.	All pigs slaughtered by necessity	num.	11	6	– 5
		%	2.9	1.58	– 1.32
9.	Pigs, transferred in group for fattening – average body weight	num.	362	372	+ 10
		%	95.26	97.9	+ 2.64
		kg	35.3	38.5	+ 3.2
10.	Received growth of 1 pig in group of fattening pigs	kg	27.2	30.4	+ 3.2
		%	100	111.7	+ 11.7
11.	Average daily gain	kg	0.419	0.468	+ 0.049
		%	100	111.7	+ 11.7

*PCVD – porcine circovirus disease

the manifestations of PCVD, reduces mortality and slaughter of necessity, and helps to obtain higher average daily gain, and hence the receive growth. These findings are concert with the established effectiveness of methaphylactic treatment against ileitis and dysentery with antibiotic premixes by a number of authors (Yordanov et al., 2000; Kyriakis et al., 2002; Van Aken et al., 2002; Winkelman et al., 2000; Yordanov et al., 2003; 2010; 2011; Yordanov and Dimitrova, 2012, 2014-b).

Conclusion

Methaphylactic rate with Tilmovet 20% – Premix, given at a dose 1 kg/t of feed for 10 days against ileitis and dysentery of grower pigs, eliminating the clinical manifestation of the two diseases and attenuate manifestations of PCVD, as a result of which were reported – less diseased than ileitis and dysentery – by 2.4%; – less dead of the two diseases – 1.1% and less slaughtered by necessary pigs – by 1.32%, compared with the control group.

Treated methaphylactic weaners with Tilmovet 20% – premix in dosage 1 kg/t of feed for 10 days, realized during the period of adolescence (65 days) with 49 g in higher average daily gain and 3.2 kg of pig produced more growth than those obtained in the control group and 2.1% more animals transferred to the group fattening, which determines methaphylactic efficiency of premix as very good.

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