
METHAPHYLACTIC TREATMENT OF PIGLETS COCCIDIOSES WITH BAYCOX[°] 5%: EFFECT ON WEIGHT GAIN, DIARRHOEA – RELATED MORBIDITY, MORTALITY DURING SUCKLING AND NURSING AND OECONOMIC EFFICIENCE

Busse, F.-W.¹, Westphal, B.*² and Eggelmeyer, F.³

¹ Animal Health Service, LWK NDS, Am Schoelerberg 7, 49082 Osnabrueck, Germany;

² Bayer Health Care, Animal Health, 51368 Leverkusen, Germany
(* bernhard.westphal@bayerhealthcare.com);

³ Vet. Prax., Lohbeckerstrasse 9, 49593 Bersenbrueck, Germany

Keywords: coccidiose, Baycox treatment, healthier pigs, higher benefit

ABSTRACT

After the oral treatment of all piglets 3–5 days after birth with Baycox[°] 5% we found a better intestine health in the suckling and in the flat deck period. In this study there was reduced diarrhoea during suckling and in the flat deck. With the Baycox[°] therapeuticum the treatment against *E. coli* and *Clostridium perfringens* type C could be decreased for nearly 40% during the breeding period. All pigs got better health status with higher weight gain and uniformity. The Baycox[°] treatment resulted a better monetary benefit during increasing the body weight.

INTRODUCTION

In the first weeks after birth many piglets have problems with diarrhoea. Endoparasites, enteric bacteria and viral infections have an economic impact on the profitability of pig production through reduction in daily weight gain and in higher losses during fattening. In piggeries diarrhoea of piglets is an important disease during suckling, associated with coccidiose and bacterial infections. Coccidiosis in nursing piglets is a disease caused by *Isoospora suis* and is found in all types of farrowing facilities and under all types of management systems (9). If *I. suis* has established in a farm it is maintained through piglet to piglet transmission, by infected suckling sows and by the contaminated farrowing floor. Reports about the piglets coccidiose caused by *Isoospora suis* demonstrate a high farm prevalence of the disease in different European countries. Overall *I. suis* was found in 26% litters and in 69% farms (12). In the farms in our region with a high pig density we watch, that a coccidiose favoured the increasing of the pathogenicity of enteric diseases in growing pigs. With the study we investigated the relationship between the treatment with Baycox[°] against *I. suis* and the economic efficiency for the pig herds.

MATERIAL AND METHODS

During the farm visits of the vets they looked for the health status of the pigs by clinical monitoring and collected different samples for laboratory tests. During the visits together with the farmer we controlled the performance. In our region 3–5 days old piglets get an oral metaphylactic treatment with Baycox^o against *I. suis*. In many farms with diarrhoea, after a clinical diagnose and a laboratory test by the vets the pigs were treated against *E. coli* or clostridiosis. In this study we collected the different therapeutic and economic dates during fattening.

RESULTS

In the faecal samples from the litters with diarrhoea we found oocysts of *I. suis*. In the samples from the younger piglets were more oocysts (56%) than in the older once; in the litters with diarrhoea were 86% oocysts (Table 1). In the faecal samples from different farms, tested for bacterial, virus and parasitic colonisation, before the treatment against *I. suis*, we found more gains than after the oral application of Baycox^o (Table 2). The weaning weight in the treated group was one kg higher than in the control group. At the end of nursing the body weight in the Baycox^o group was 3.5 kg higher (Table 3). In the treated group during the suckling period the pigs showed a diarrhoea reduction to 98% and a mortality reduction to 50% (Table 4). During suckling and nursing in the Baycox^o treated group we found a 50% reduction of the mortality (5). The weight uniformity in the different weights groups was in the treated groups higher at the end of the nursing period (6). The Baycox^o treatment resulted in monetary benefit because of better weight gain to the tune of 0.93 to 1.33 €.

Table 1. Clinical examination of farrows (N=94) and detection of oocysts in faecal samples

Parameter	Detection of oocysts (%)
piglets 7–14 days p.p.	56
piglets 15–28 days p.p.	48
litters with diarrhoea	86
litters without diarrhoea	24

Table 2. Results for the incidence of germs in faecal samples (N=281) of piglets (5–21 days p.p.) before and with Baycox^o 5% therapy

Probations (N=281)	Without Baycox ^o treatment (%)	With Baycox ^o treatment (%)
oocysts	89	6
<i>E. coli</i>	62	24
<i>E. coli</i>	14	11
<i>Cl. Perfringens</i> , type A	81	12
Rotavirus	6	4

Table 3. Weight development after metaphylactic Baycox^o 5% use during 77.2 days

Weight (kg)	Without Baycox ^o treatment	With Baycox ^o treatment
birth weight	1.6	1.6
weaning weight (p=0.0097,significant)	6.0	7.0
end of nursing (p=0.0448,significant)	18.6	22.1

Table 4. Baycox^o 5% effect on diarrhoea and mortality on suckling period

Results (N=391)	Without Baycox ^o treatment (%)	With Baycox ^o treatment (%)
diarrhoea (N=79) (p=0.027,significant)	34.7	0.6
mortality (N=50) (p=0.03,significant)	16.0	8.5

diarrhoea reduction: 98%,mortality reduction: 50%

Table 5. Baycox^o 5% effect on mortality during suckling period and nursery

Results (N=391)	Without Baycox ^o treatment (%)	With Baycox ^o treatment (%)
mortality (N=67) (p=0.029,significant)	12.0	20.9

Mortality reduction during suckling and nursing: 43%

Table 6. Baycox^o 5% effect for uniformity in the weight groups (N=335) at the end of the nursing period

Weight groups (kg)	Without Baycox ^o treatment (%) (N=179)	With Baycox ^o treatment (%) (N=156)
<15	8.4	1.4
15–19	16.2	11.6
19–23	21.2	26.0
23–27	33.5	24.7
27–31	15.1	20.6
31–35	3.4	11.6
> 35	2.2	4.1

DISCUSSION

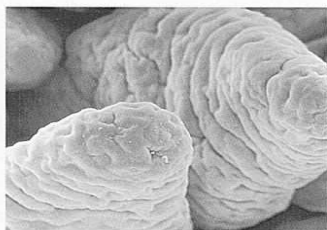
I. suis is a cause of diarrhoea on piglet-rearing farms. It is a primary pathogen and the occurrence correlates positively with the occurrence of diarrhoea at the age of 2–3 weeks (6). In the first weeks after birth different germs produce clinical problems with enteritis under the piglets. The reasons for diarrhoea are different germs after birth (Table 7).

Table 7. Reasons for enteritis and clinical symptoms during the suckling period

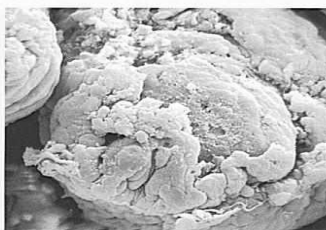
Germ	sickness symptoms
Rotavirus	apathy, vomiting, yellow-pasty enteritis
Coronavirus	vomiting, wasting, slight enteritis
TGE Virus	vomiting, grey-yellow foul smelling enteritis
EVD Virus	grey-yellow enteritis
KSP Virus	fever >41°C, foul-smelling, bloody enteritis
<i>E. coli</i>	aqua-yellow or dilute, brown enteritis
<i>Cl. perfringens</i>	fluid red brown enteritis, with blood
Coccidiosis	yellow pasting, fatty steatorrhoea

In the blood and faecal samples were selected different germs for infections. The oocysts of *I. suis* were found by a flotation medium with NaCl and sugar under UV-light of a fluorescence-mikroscope (2). The “metaphylactic” treatment with Baycox^o in the piggeries prevented the appearance of clinical signs, better immunity against different germs, a better intestinal morphology allowing the development of immunity. The pathomorphological examinations showed that on average the intestinal villi length was longer on days 10 and 14 in animals treated with Toltrazuril compared with the other groups (13). The link between oocysts excretion and clinical signs seems to be precluded by interaction between parasites, animals, management and the environment (3). In commercial units with grower-finisher pigs in Great Britain they found interactions between the level of dietary fibre and infestation with endoparasites and between infection with *L. intracellularis* and infestation with *Trichuris suis* in grower pigs (8). In the study the incidence of diarrhoea in the Baycox^o treated group were more reduced than those of the control. In many farms the therapeutic programs could be stopped after the Baycox^o medication, as the pigs were healthier. In the trial the Baycox^o treated pigs gained a higher weight. At the time of weaning the Baycox^o treatment resulted a better weight uniformity. In the study the diarrhoea-related morbidity dropped during the suckling period. The total mortality in the Baycox^o treated group was more reduced compared with the untreated group.

Intestinal picture (Bayer Animal Health, 2003)



intestinal
obB



villidestructed intestinal
5 days post infection



villidestructed intestinal villi
7 days post infection

In the early Baycox^o treated piggeries the piglets had a better weight gain, more uniformity, reduced diarrhoea and lower therapeutic costs in the suckling period. In our study we found, that in many farms with the Baycox^o treatment of piglets the veterinarians and the farmers could reduce the therapy with antibiotics against *E. coli* and haemorrhagic enterotoxaemia. We summarize, by the “metaphylactic” use of Baycox^o for the piglets, the drugs could be reduced and the pigs had a better health status. In Dutch herds with Toltrazuril treatment the piglet feed intake increased with a better health and on average 789 gram per litter more than the control (5). In a German field study the mean average weight gain on six selected farms at the end of the suckling period was + 376.9g (1). The Baycox^o treatment resulted in monetary benefits because of better weight.

Disinfection measures did not reduce the maximum incidence of Isosporosis, because the oocysts are very resistant to commonly used disinfectants (4). A *in vitro* study with Neopredisan 135–1 (Menno-Chemie, 22850 Norderstedt) – concentration: 2%, exposure time: 2 hours – reduced 96.96% of the oocysts by lysis (7). In a field study with two farms without *I. suis* therapy and normal disinfection before farrowing the floor was disinfected one and two weeks p.p. again with Neopredisan^o 135–1 (2%). Afterwards the excretion of oocysts from the piglets was reduced for 43% (11). When the initial contamination of the pen with *I. suis* is high in poorly cleaned pens the majority of the piglets are infected almost soon after birth (10). In a Greece study there was a remarkable variation of the infestation incidences between untreated litters in a *I. suis* contaminated farm. This might be associated to pen related factors such as efficiency of cleaning and disinfection (10).

CONCLUSIONS

Coccidiosis represents a problem in nursing piglets, especially in countries with an intensive pig production. *I. suis* infected pigs excrete oocysts and infect the whole pen. By the intestinal lesions of the micro villi the piglets are more infected with different germs and have a reduced protection against clinical diseases. The weight gain profile for Baycox^o groups revealed consistently higher values than the untreated. The piglets have a better weight gain, are healthier without drugs therapy for reducing germs and diarrhoea. Coccidiosis is a disease, which has not only a negative consequence in the piggery but also during the fattening. With a Toltrazuril treatment in the first days p.p. the pig production costs are lower and the benefit is higher till the fattening.

REFERENCES

- (1) Boehne, I. et al., 2006, Coccidiose in suckling piglets, Proc. IPVS, 275
- (2) Dauschies, A. et al., 2001, Autofluoresc. for the detection of nematode eggs and protozoa, in particular *I. suis* in swine faeces, Parasit. Res. 87, 409 ff
- (3) Castillo, J. et al., 1996, The effect of coccidiosis on pre-weaning and post-weaning growth of early-weaned piglets, Proc. IPVS, 357
- (4) Gevaert, D. et al., 2006, Prevalence of Isospor. in farms with a history diarrhoea, Proc. IPVS, 269
- (5) Gevaert, D. et al., 2006, Influence of Toltrazuril treatment of Isosporose, Proc. IPVS, 270
- (6) Mundt, H.C. et al., 2000, Incidents, diagnosis and significance of *I. suis* coccidiosis on pig rearing farms, Proc. IPVS, 79
- (7) Nevermann, J., 2004, Desinfection gegen *I. suis* oocysten, Proc. Bp T, 9

- (8) Pearce, G., 1998, Interaction between dietary fibre, endoparasites and enteric bacteria in grower finisher pigs, Proc. IPVS, 252
- (9) Sotiraki, S. et al., 2004, The effect of pen contamination level on intra-litter spread of *I. suis* infection under on-farm farrowing conditions, Proc. IPVS, 245
- (10) Sotiraki, S. et al., 2006, Effect of early blind treatment of isosporosis on the spread of *I. suis* under field conditions, Proc. IPVS, 180
- (11) Straberg, E. et al., 2003, Desinfection gegen *I. suis*, Proc. DVG, 66
- (12) Torres, A. et al., 2004, Prevalence survey of *I. suis* in twelve EU countries, Proc. IPVS, 243
- (13) Wüstenberg, S. et al., 2001, Studies on the efficacy of toltazuril, diclazuril and sulfadimidin against artificial infections with *I. suis* in suckling pigs, Proc. I. C. Vet. Parasit., Stresa, I., 26ff