Short Communication: Natural Prophylaxis to the Control of Swine Coccidiosis

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***Abstract*—** *Coccidiosis swine causes high economic loss, and its prophylaxis is usually performed by the use of chemical drugs. However, these chemical drugs are not allowed in agroecological, organic or biological dynamic systems of production. Additionally, there are concerns about pharmacological resistance and contamination by the presence of chemical residues in the environment and at the food of animal origin. The objective of this study was to evaluate the weight gain and the prevalence of coccidia in piglets submitted to the following treatments: alcoholic extract of propolis 30% (AEP), chemical treatment toltrazuril (CTT), negative control with grain alcohol (NCA) and negative control without treatment (NCT). By means of the individual weights and the number of coccidia at the faeces, it was monitored 216 piglets from commercial farms. Under the conditions of this study none therapeutic intervention provided benefits for weight gain and prevalence of coccidia. Thus, by making it possible the minimization of chemical drug use, these results allow us to suggest the laboratory periodic monitoring as a prophylactic control method for swine coccidiosis.*

Keywords*— *Isospora suis, laboratory monitoring, organic production, piglets, propolis.

I. INTRODUCTION

Brazil has one of the largest pig herds in the world (Gennari et al., 1997). Nonetheless there is a need to fulfill the demands of globalization, and this large-scale production, usually conflicts with the production of agroecological or organic food. Consumers are increasingly demanding about the quality standards and food safety (Castro Neto et al., 2010).

Coccidiosis and colibacillosis are highlights as causes of enteritis in piglets (Linares et al., 2009), determining diarrhea, dehydration and consequently loss of uniformity of litters (Pelliza et al., 2007). *Isospora suis* affects piglets with the highest prevalence from 6 to 21 days (Zlotowski et al., 2008).

Propolis have been identified as natural treatment due to their activities coccidiostat (Moura et al., 1998), antiprotozoal (Dantas et al., 2006), antifungal, antimicrobial (Cardoso, 2009) and antiviral (Cueto et al., 2011). However, their properties and quality are vary by the bee flora and species of bee (Pinto et al., 2011). Thus, the objective of this study was to evaluate weight gain and prevalence of coccidia in piglets submitted to the following treatments: alcoholic extract of propolis 30% (AEP), chemical treatment toltrazuril (CTT), negative control grain alcohol (NCA), and negative control without treatment (NCT).

II. MATERIAL AND METHOD

It was used 216 piglets of Landrace and Large White breeds, coming from two commercial farms. These animals were randomly distributed among the treatments: alcoholic extract of propolis 30% (AEP), chemical treatment toltrazuril (CTT), negative control with grain alcohol (NCA) and negative control without treatment (NCT). The AEP and NCA treatments were performed by direct oral administration of 1 mL every 24 hours at seventh, eighth and ninth day of age. The chemical treatment CTT was performed by a single dose, as directed by its manufacturer. The AEP treatment was prepared using the proportion of weight to weight of the grain alcohol and crude propolis. The propolis was collected at the northern region of the state of Paraná - Brazil. The extraction of propolis constituents occurred by immersion in grain alcohol for 20 consecutive days. It was realized daily agitation for thirty seconds, and the extract was maintained in dark ambient all this period. The extract was evaluated for values of: dry weight, dry extract, phenolic compounds (%), flavonoids content in quercetin (%), pH and antioxidant properties. The rules of Regulation Identity Technical and Propolis Extract Quality, present in the

regulations No. 03 of January 19, 2001 the Ministry of Agriculture, Livestock and Supply – MAPA (Brasil, 2001), were used as parameters to evaluate the extract properties.

The results were evaluated by individual weights of piglets at birth, 10 and 21 days and by the count of coccidia in feces at birth, 6, 14 and 21 days old. The feces were collected directly from the rectum and transported at 4°C in isothermal box. The modified Willis Mollay-method was used for oocyst count per gram feces (oPG), accordind to Fortes and Hoffman (1993).

Statistical analysis were performed using the program SAEG 5.0 (1993). It was used the Tukey test 5% for analysis of the weights, and the chi square test for stool tests.

III. RESULTS AND DISCUSSION

The piglets presented an average weight gain until weaning of 4,21Kg at the farm 1, and 2,97Kg at the farm 2, and these results were not different between treatments. These values are similar to those found by Furtado et al. (2009), who classified the piglets as mild. Similar results were also reporded by Bierhals and colleagues (2011).

In relation of the chemical components present in propolis extract the physicochemical analysis showed 13.17% of dry matter, 55.5% of total phenolic, and 1.19% of flavonoids content. However, in spite of these values are in accordance and above the limits required by MAPA (Brasil, 2001), propolis did not determine differences in the pig weight gain. These results differ from those found by Silva et al. (2000), and Garcia et al. (2004), once these researchers noted an increase in feed conversion and weight gain. But they evaluated the use of propolis extract in poultry and rabbits, respectively. Similar to propolis, the other treatments did not show benefits in relation to weight gain.

Regarding the prevalence of coccidiosis at the assessed piglets by the present study, the use of chemical drug also did not provided economic benefits. Thus, the monitoring of animals through regular coprological tests, may be the best procedure to minimize the use of chemical coccidiostats in pigs. Considering that the animals corresponding to the NCT group, have not undergone any treatment, and there was no infestation difference compared to the others groups, it was possible to conclude that, at these evaluated conditions, the drug use did not provide benefits for weight gain and prevalence of coccidia.

It is still important to emphasize the additional environmental advantages, by the reduce of contamination with chemical residues in the environment, and economics advantages by minimize the costs for purchase of medicines. These factors are even more relevants to promote the control of animal health in agroecologic, orgânics and biodynamic systems of production, because the use of chemical drugs is prohibit.

IV. CONCLUSION

These results allow us to suggest the laboratory periodic monitoring as a prophylactic control method for minimizing the use of chemical coccidiostats in pig farming, justifying the interference by the use of chemical drugs only when necessary.

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