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Influence of thermal fogging with disinfectant on productive and health parameters in finishing pigs

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Introduction

Respiratory diseases cause great losses to swine production. In order to prevent this problem in finishing units, thermal fogging equipment may be used to spray disinfectants in the facilities. With it, spraying produces droplets between 10-50 microns (μ), smaller than those produced by other systems, as aspersion. In the present experiment we evaluate thermal fogging with disinfectant to control respiratory infections, measuring daily weight gain (DWG) and monitoring respiratory tract lesions at slaughter.

Materials and Methods

1134 animals were split into three experimental groups of 378: T1 – control, without thermal fogging; T2 – thermal fogging at each 48 hours until 30 days after arrival in the finishing unit; and T3 – thermal fogging each 24 hours until 30 days after arrival. The animals were weighed at arrival and at 30, 50 and 110 days after housing. A peroxide disinfectant (Virkon S, Dupont) was used, diluted at 1:50 in water. A volume of one liter of dilution was applied for each of 200m³ volume of the finish building. At slaughter, lung lesions were measured with the use of a pneumonia index (IPP), and nasal turbinates were examined with the use of a rhinitis index (IRAP).

Results and Discussion

DWG during the finishing stage was higher (P<0.005) in T2, followed by T1 and T3 (1.025±0.006 Kg, 1.001±0.007 Kg, 0.960±0.004 Kg, respectively). Animals from T1 presented lower IPP (P=0.0237) and tended to have lower IRAP (P<0.0825), when compared to animals of T2 and T3, respectively (Table 1).

Table 1. Pneumonia (IPP) and rhinitis index (IRA) in the three treatments.

	T1	T2	T3
IPP	0.58±0.02a	0.69±0.03b	0.64±0.03ab
IRAP	1.35±0.06c	1.40±0.06cd	1.50±0.04d

T1, T2 and T3: Treatments 1, 2 and 3.

a,b in the same line P=0.0237

c,d in the same line P<0.0825

The tendency of T3 to show higher IRAP could be related with lower DWG, as it is accepted that atrophic rhinitis causes growth losses in affected pigs, determining up to 9.5% DWG decrease (2). Lowered DWG performance of T3 could also represent an inadequacy of the protocol used to apply the disinfectant, because there are no data about the ideal concentration and frequency of use. DWG values for T2 were significantly better than the other treatments; this could justify the use of fogging at each 2 days. However, animals of T2 had higher IPP than animals of T1 and T3. A possible explanation for this would be the fact that *Mycoplasma hyopneumoniae* (Mh) infection in this group could have been prevented in the phase of use of fogging and was delayed to a later appearance, in the finishing period. From the economic point of view, it would be preferable a delayed infection with Mh, even if more slaughter lesion had to be found, because of the lower period in which the animal would be forced to live with pneumonia. It was observed that only T1 showed a tendency (P=0.065) of having lower DWG in pigs with lung consolidation when compared to those without consolidation (1.019±0.009 Kg vs. 0.995±0.008 Kg). This result could reflect the effect of the disinfectant in reducing the microbial flora of the environment, improving air conditions, or an effect determined by the inhalation of disinfectant and a direct effect on the airways. This would be justified by the fact that, with the thermal fogging device used, at least part of the particles generated would be able to reach the higher and lower respiratory tract (1).

Conclusions

DWG of animals submitted to the thermal fogging system at each 48 hours was 6.34% higher when compared with fogging at each 24 hours, and 2.34% higher when compared with animals not submitted to the treatment. Animals experiencing fogging during the first 30 days of housing and that presented lung lesions at slaughter did not have decrease in DWG when compared to animals that did not present lung consolidation.

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