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COMPARATIVE STUDY OF TWO METHODS FOR EVALUATION OF CONTAMINATION OF PIG PENS



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Introduction

Washing and disinfection of pens between pig groups to avoid exposure to germs shed by the previous groups is important. When properly done animals raised in a clean environment have less diseases (1,2,4,5). Quality of cleaning and disinfection has been evaluated by bacteriological methods and indirect tests that measure protein concentration or ATP content (3). Results obtained with those tests have varied compared with bacterial isolation “gold standard”. The aim of this study was to compare the contamination level measured by bacterial isolation with luminimetry and petrifilm tests, of four sites of pig pens before and after washing and disinfection.

Material and Methods

The study was done in six farrow to finish commercial farms and from each two grower-finish pens were used.

After pens were emptied, swab samples were collected from feeders, flooring, drinkers and walls from each pen, then they were cleaned and disinfected according to the procedures of the farm. Sampling was done from a 10 x 10 cm adjacent sites.

Bacterial isolation. It was done according to standard methods and the results were given as colony forming units (CFU) by 100 cm².

Luminimetry test. AccuPoint (Neogen, Corp). The surface was rubbed with a probe and read in a luminimeter.

Petrifilm test. Rida Count Total (R-Biopharm AG) consists in a 10 x 10 cm plaque containing bacteriological medium on a base. The plaque was placed on the surface, covered, incubated at 35 °C by 24-48 hs and the number of colonies was recorded.

Results and discussion

The results of bacterial isolation was taken as the “gold standard”. There was not any statistical relationship between the number of bacteria with luminimetry results. Rida Count test was more useful only after disinfection with a low number of bacteria (Table 1).

It was found that there was a decrease of contamination from 100% before washing to 18% (range of 12-21) after washing and to 8% (range of 3-14) after disinfection. Sometimes the level of

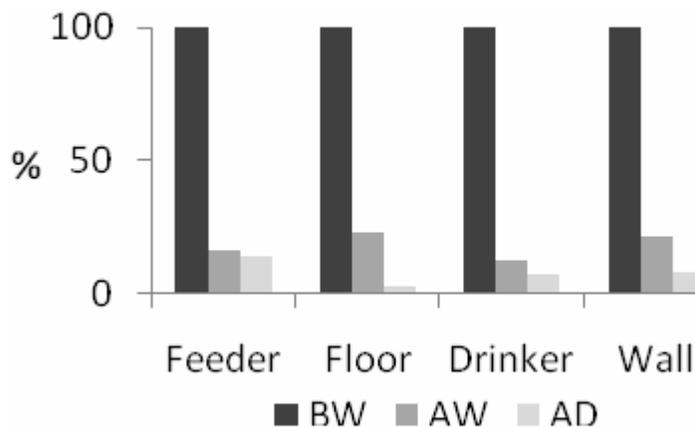
contamination after washing and disinfection increased. In figure 1 the percentage of bacterial concentration measured by bacteriological methods in four sites of the pig pens before and after washing and disinfection is shown.

In this study it was found that by standard methods of washing and disinfection there was a great decrease of bacterial contamination when monitored by bacterial isolation as had been reported elsewhere.

Table 1. Relationship between the number of isolated bacteria by bacteriological methods and luminimetry values in relative lighting units (RLU) in 96 sampled sites of pig pens.

| Bacteriology CFU /100 cm² | Luminimetry (RLU) | Number of sampled sites |
|---|------------------------------|------------------------------------|
| 0 | 0 | 4 |
| 0 | 59 to 99999 | 25 |
| 10 a más de 1,000000 | 13 to 99999 | 111 |

Figure 1. Percentage of bacterial concentration in four sites of the pig pens before (BW) and after washing (AW) and disinfection (AD) measured by bacteriological methods.



It was concluded that washing and disinfection reduced bacterial contamination of pig pens from 80% to 97% but did not eliminate it completely, probably due to the rough surface of pens. The most contaminated sites before washing were the feeders, floor and drinkers and the least were the walls, as it had been reported elsewhere. Luminimetry test was not useful to determine contamination and petrifilm test was useful only after premises were disinfected because it was able to detect only small amount of bacteria.



Referentes

1. Estrada, E., et al. 2002. XXXVIII Reunión Nacional de Investigación Pecuaria, Puebla, Mexico. 2002. p. 277.
2. Gómez, R.S., et al.. XXXIX Congreso Nacional de la Asoc. Mex. Vet. Esp. Cerdos 224, 2004.
3. Jasso, V. A: In, Actualidades de bioseguridad en la industria porcina. FMVZ, UNAM, Ediciones Pecuarias, 27, 2008.
4. Kihlstrom SL, Morrow WEMM, Davies PR, Luginbuhl GH: J. Swine Health Prod. 2001; 9:65-69.
5. Manuel-León A., et al. Proc. International Pig Veterinary Society, 17(2):138, 2002.