

EFFICACY OF SOME DISINFECTANT COMPOUNDS AGAINST PORCINE BACTERIAL PATHOGENS

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Effective prevention and control of infectious diseases in piggeries rests on a series of key factors including herd biosecurity, management of pig flow in combination with cleaning and disinfection, maintaining a good general level of hygiene, vermin control, vaccination, prompt treatment of infectious diseases and isolation of infected animals.

Cleaning and disinfection of buildings between batches of pigs is one of the most important critical control points, both in everyday prevention of diseases and in controlling the spread of infection during disease outbreaks. However, there is limited information in the scientific literature on the efficacy of disinfectants against bacterial pathogens that are endemic in the UK pig industry.

The objectives were:

- To test selected recent bacterial isolates, representing a range of common endemic diseases, against a number of disinfectants recommended for agricultural use
- To contribute to existing information on the range of susceptibilities of bacterial pathogens to disinfectants
- To optimise the benefits of the cleaning and disinfection procedures on farms and maximise the cost-benefits of these procedures

Seven chemical disinfectants were tested against 10 species of porcine bacterial pathogens that are common in UK pig units, using the British Standard method BS EN 1656:2000. A range of temperature conditions, two contact times and two levels of organic soiling were included.

The bacterial pathogens showed widely different susceptibilities to the different disinfectants and none of the compounds was universally effective. *Salmonella enterica* Typhimurium, *Salmonella derby*, *E.coli* (Abbotstown strain) and *Yersinia enterocolitica* generally showed poor susceptibility to disinfectants whereas *Brachyspira hyodysenteriae*, *Actinobacillus pleuropneumoniae*, *Bordetella bronchiseptica*, *Pasteurella multocida*, *Haemophilus parasuis*, *Streptococcus suis* and *Staphylococcus hyicus* were all susceptible to multiple disinfectants under low organic matter conditions. Under high organic matter conditions, the efficacy of disinfectant compounds was markedly reduced in most tests. Low temperature and short contact times adversely affected results in some tests.

This project has provided useful information of the susceptibilities of recent field isolates of porcine bacterial pathogens against a number of disinfectants deemed suitable for farm use. Unfortunately the limit on time and resources did not allow testing of a more diverse range of products or higher numbers of bacterial isolates. Extending the range of disinfectants tested and increasing the number of field isolates tested are the suggested directions for future work.

There are many factors that influence the choice of disinfectant compounds used on farms. Knowledge of the likely efficacy of compounds against the target infection and the conditions under which they will be used, are highly important. Additional factors to take into account are:

- Environmental temperature (the possible need for higher concentrations of disinfectant under cold conditions)
- Contact time (allowing 60 minutes or more wherever possible)
- Effectiveness of removal of organic matter before disinfection

Most disinfectants are hazardous to operators and the provision of training, protective clothing and equipment is important for health and safety reasons. Factors such as corrosiveness of compounds, environmental impact, fish toxicity and suitability for discharging run-off into drains and water courses all require careful consideration before use.