

Improving farm building disinfection by applying a second disinfection with Ultradiffusion[®]

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Objective : to evaluate the application of dry disinfection, the Ultradiffusion[®], on the final result of disinfection and destruction of specific pathogens.

Material and methods

In two farrowing rooms, a recommended cleaning and disinfecting protocol implemented followed by a complete drying of the rooms

A second disinfection by Ultradiffusion[®] carried out 5 days after with Fumagri[®] HA (1 g/m³).

In one of the two rooms, a second ultradiffusion performed 24 hours after the first one.

The effectiveness of surface disinfection evaluated by Petri dishes in ten sample sites the total number of bacteria before and after Ultradiffusion[®].

The efficiency of the process on specific pathogens (*Salmonella sp*, *Staphylococcus sp* and *Streptococcus sp*) performed by the use of germ carrier steel discs under a test protocol compliant with the French Standard (AFNOR NFT72281).

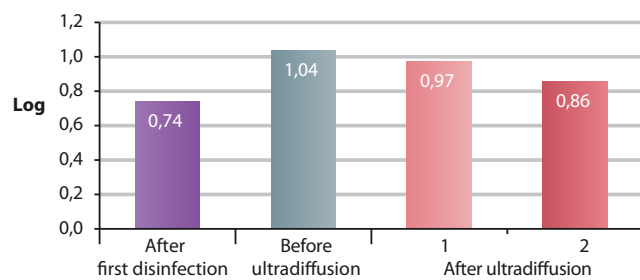
Results

Temperature and humidity in the two rooms for ultradiffusion were optimal : about 21C and 50% humidity.

Results for total bacteria counts in Petri dishes suggest an improvement in the final disinfection.

- During the drying phase, the level of contamination increases insignificantly. After ultradiffusion, the contamination level decreases, but also without significant difference.
- 60% of the samples show fewer bacterial colonies after the ultradiffusion.

Results with the method of microbiological carrier test show a reduction of contamination exceeding 2 log after ultradiffusion for the 3 types of pathogenic microorganisms considered, with values of up to 2.6 log. These results demonstrate a significant efficacy from 99% to 99.8%.



Petri dishes: means of colonies

Ultradiffusion: results of germ-carrier method

| | Bacteria | Samples | Types of discs | Efficacy in % of reduction | |
|-------------------|-------------------------------|---------|--------------------------------|----------------------------|--------|
| | | | | log | % |
| 1 ultradiffusion | <i>Salmonella enteritidis</i> | 1 | Horizontal disc | 2,45 | 99,6% |
| | | | Vertical disc | 2,47 | 99,7% |
| | | 2 | Horizontal disc | >2,00 | >99,0% |
| | | | Vertical disc | >2,00 | >99,0% |
| | <i>Staphylococcus aureus</i> | 1 | Horizontal disc | 2,64 | 99,8% |
| | | | Vertical disc | 2,14 | 99,3% |
| | | 2 | Horizontal disc | 2,21 | 99,4% |
| | | | Vertical disc | 2,00 | 99,0% |
| | <i>Enterococcus hirae</i> | 1 | Horizontal disc | 2,36 | 99,6% |
| | | | Vertical disc | 2,09 | 99,2% |
| | | 2 | Horizontal disc | 2,1 | 99,2% |
| | | | Vertical disc | 2,14 | 99,3% |
| 2 ultradiffusions | <i>Salmonella enteritidis</i> | 1 | First Ultradiffusion | 1,90 | 98,7% |
| | | | 2 nd Ultradiffusion | >3,11 | >99,9% |
| | | 2 | First Ultradiffusion | 2,24 | 99,4% |
| | | | 2 nd Ultradiffusion | >3,11 | >99,9% |
| | <i>Staphylococcus aureus</i> | 1 | First Ultradiffusion | 2,28 | 99,5% |
| | | | 2 nd Ultradiffusion | 2,39 | 99,6% |
| | | 2 | First Ultradiffusion | 2,15 | 99,3% |
| | | | 2 nd Ultradiffusion | 2,37 | 99,6% |
| | <i>Enterococcus hirae</i> | 1 | First Ultradiffusion | 1,98 | 99,0% |
| | | | 2 nd Ultradiffusion | 2,09 | 99,2% |
| | | 2 | First Ultradiffusion | 2,11 | 99,6% |
| | | | 2 nd Ultradiffusion | 2,14 | 99,3% |

Conclusion

The method of microbiological carrier test confirms, in field conditions, the efficacy of the here-applied global disinfection process to decrease the number of the 3 types of pathogenic microorganisms considered, with a reduction of contamination exceeding 2 log. The Ultradiffusion[®] after the recommended cleaning and disinfecting protocol could be a preventive measure in programs to control salmonella or other pathogens.

