

## New hope in the struggle against resistant bacterium in pigs

**The disinfectant Stalosan F could be a new weapon for combating the antibiotic-resistant MRSA bacterium, according to a new pilot study carried out by scientists at the Department of Veterinary Disease Biology, University of Copenhagen, in collaboration with the DLG subsidiary Stormøllen, which produces Stalosan.**

A new study proves that Stalosan® F – best known as a disinfectant applied to the base course in all types of livestock housing – can combat pig MRSA. The study was carried out by scientists under controlled conditions approximating an ordinary livestock housing environment as much as possible.

“Stalosan F and other disinfectants have previously proven their effectiveness against MRSA in the laboratory, but the pioneering aspect here is that Stalosan now appears to be effective under real-life conditions in livestock pens by reducing the occurrence of air-borne MRSA. Now it is important to test the product on the farm to see whether it can be used to reduce the risk of transmission to farmers,” says Luca Guardabassi, Professor, Department of Veterinary Disease Biology.

MRSA is a transmissible staphylococcus bacterium between animals and humans. It is possible to be a carrier of the bacterium without having an infection, but conversely the bacterium can also cause severe illnesses such as osteitis and infective endocarditis. The occurrence of MRSA in humans in Denmark is still low compared to many other countries, but according to Statens Serum Institut, the number of new cases of MRSA has sharply risen in Denmark since 2003, to 1,293 cases in 2011 – the highest in more than 25 years. The increase is particularly due to a new type of MRSA (CC398) primarily found in pigs.

“Therefore, we will soon be conducting a more detailed study of how Stalosan F can be used in pig herds in Denmark and abroad to combat MRSA. Combating pig MRSA is important, because we produce a large number of pigs in Denmark, and pigs are main carriers of the MRSA CC398 bacterium,” according to Jan van Wyhe-Storgaard, Stalosan’s technical product manager.

Further details are available from:

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## Appendix:

### **MRSA: a resistant staphylococcus bacterium**

MRSA – an acronym for methicillin-resistant *Staphylococcus aureus* – is a staphylococcus bacterium which is resistant to antibiotics. The bacterium can cause a wide range of infections, from superficial wounds and boils to serious infections such as osteitis and infective endocarditis. The bacterium can live on the skin or in nasal passages without the carrier showing signs of infection, and the bacterium can be transmitted through interpersonal contact or by touching objects like a door handle. Source: Danish Health and Medicines Authority

MRSA was previously almost exclusively a hospital-acquired phenomenon but most of the cases are now community-acquired and affect people who are not in contact with hospitals. Part of the increase is due to a new type of MRSA whose primary reservoir is pigs from where it infects humans who are in contact with live pigs. These cases now constitute a total of 13% of all new cases nationwide and up to 30% in some regions. Source: Statens Serum Institut.

### **What is Stalosan?**

Stalosan is a disinfectant powder which combats bacteria, viruses, fungi, and parasites in a manner that is very different from conventional disinfectants. Stalosan F is used in livestock during the actual production period and, as a result, provides sustained biosecurity.

Stalosan was invented in 1964 and has been further developed since then on a few occasions into the final version, Stalosan F. Thus, Stalosan A, B, C, D and E were produced in the laboratory before Stalosan F was marketed. Stalosan G has also been added after this, but it is used in other settings.

### **How the study was carried out:**

The study of Stalosan F's effect on MRSA was carried out in a Danboks pen system comprising two identical stable-like pens. Four six-week-old pigs were placed in each pen for 30 days. All of the pigs had an MRSA infection before being released in the Danboks pens. The pigs were cared for as usual in the pens. Stalosan F was blown into one Danboks pen on days 1, 2, 3, 7, 10, 13 and 16 in a volume equivalent to 50 g/m<sup>2</sup>. The pigs in the other Danboks pen served as a control group without any form of treatment. The occurrence of MRSA bacteria in the air, on walls, in bedding and in pig snouts was measured on days 1, 6, 12, 15, 18, 23 and 30. This made it possible to see the effect of Stalosan F during the application process and in a subsequent period when Stalosan F was not applied.

The results showed that after 18 days there were no MRSA in the air or bedding of the Stalosan F-treated Danboks pen, which contrasts with the control pen in which MRSA were detected in the samples. At the same time, the level of MRSA in pig snouts declined in the Stalosan-F-treated Danboks pen. After discontinuing the Stalosan F treatment, the volume of MRSA measured in the air and bedding increased once again. Therefore, the study concluded that Stalosan F has a clear effect in combating MRSA in an approximated barn environment and Stalosan F's ability to control air-borne MRSA was particularly interesting, seeing that MRSA CC398 is primarily transmitted to humans through the air in the barn.

The unique effect of Stalosan F can therefore be upheld in an environment with pigs, bedding, fertilizer and other organic contamination which generally impair the effect of disinfectants.