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**Biosafety aspects of wooden materials in livestock stable construction**

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**Abstract:**

**Background/Objective:** The hygienic properties of wood as a construction material, especially when used for livestock housing, are the subject of controversial debate. In order to evaluate these, the tenacity of different bacterial and viral pathogens on different wooden surfaces and the effectiveness of disinfection on these were investigated and assessed in this study. The formation of biofilms on wooden surfaces was also observed and the effect on their ability to be disinfected was tested.

**Methods:** The tenacity and disinfectability of the bacterial surrogate pathogens *Enterococcus* (*E.*) *hirae* and *Pseudomonas* (*P.*) *aeruginosa* as well as the viral surrogate pathogens bovine enterovirus E (unenveloped, EV-E) and Newcastle Disease virus (enveloped, NDV) were investigated on three wooden surfaces (pine, spruce, poplar). The effect of peracetic acid, glutaraldehyde and formic acid was tested. The tests were carried out in accordance with the test guidelines of the German Veterinary Medical Association (DVG) at test temperatures of +10° and -10°C. In addition, biofilms were systematically cultivated on all three types of wood germ carriers. The biofilm-bearing germ carriers were treated with the effective peracetic acid concentrations and the pathogen reduction was determined.

**Results:** Peracetic acid is very effective against bacteria and viruses in practical concentrations of 0.5 % - 1.5 % on all wood surfaces at +10°C. Furthermore, Glutaraldehyde is effective against bacteria at 10°C, but formic acid is only effective on pine wood. Only formic acid and peracetic acid are effective against viruses, whereas glutaraldehyde is not. At a temperature of -10°C, only peracetic acid with a concentration of 1.5% effectively disinfects all tested bacteria and viruses on all types of wood. The tests carried out with *P. aeruginosa* biofilm-carrying wood germ carriers and peracetic acid show a significantly reduced disinfection efficiency against biofilms.

**Conclusion:** The investigation shows that, regardless of the type of wood, wood is an effectively to disinfect material in construction of livestock stable. Wooden barns therefore represent a manageable challenge for animal disease control that is in addition sustainable.

**Keywords:** disinfection, wood, livestock stables, animal disease control