

ABSTRACT

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Department of Biological and Medical Sciences

Study program: Healthcare bioanalytics

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Title of bachelor thesis: Testing the sensitivity of vancomycin-resistant and vancomycin-sensitive enterococci on selected biocides

Vancomycin resistant enterococci (VRE) are one of the most common causes of nosocomial infections. The aim of this work was to determine the sensitivity of vancomycin-resistant and vancomycin-sensitive enterococci to selected biocides, which are part of disinfection programs in healthcare facilities.

When testing the effectiveness of disinfectants, we followed the Czech technical standard ČSN EN 1040 - Chemical disinfectants and antiseptics - Quantitative suspension test to determine the basic bactericidal effect of chemical disinfectants and antiseptics - Test method and requirements (Phase 1). We used a dilution method with a neutralizer. We tested a total of 10 *Enterococcus faecium* strains.

Four out of the 13 biocides tested were completely effective. These were agents with a higher concentration of aldehydes, with peracetic acid and active chlorine. We observed different efficacy in individual strains for six disinfectants. Most of these products were quaternary ammonium compounds, alone or in combination with hydrogen peroxide, aldehydes or glucoprotamine. Three disinfectants proved to be completely ineffective, the main active ingredients were quaternary ammonium compounds, alcohols and chlorhexidine.

Ineffective biocides include Sterillium®, the most widely used alcoholic hand disinfectant, which can be one of the causes of VRE spreading through the hands of healthcare professionals. Especially in intensive care units, the increased incidence of VRE is a serious problem, so there is a need for anti-epidemic measures to prevent the spread of VRE between patients and healthcare professionals.

Key words: enterococci, *Enterococcus faecium*, VRE, biocides