Department of Public Health

Disinfection efficacy of an alcoholic hand disinfectant

The preparation studied is an alcoholic hand disinfectant (>70% w/w) Antibac by Sim Finland Oy. The reference preparation used in this experiment is isopropanol (60% w/w).

Method
The study was conducted using the EN 1500 (Chemical disinfectants and antiseptics - Hygienic handrub - Test method and requirements phase 2/step 2).

13 volunteers participated in the test (12-15 according to EN 1500). To begin with, the participants washed their hands for one minute with soft soap (Sapo kalinus). The purpose of this washing is to remove transient bacterial flora from hands. Hands were dried with paper towel. Then hands were contaminated with nonpathogenic E.coli bacteria (NCTC 10538) by immersing them up to metacarpals into bacterial broth for five seconds. The bacterial suspension was achieved by growing bacteria overnight in nutrient broth in 37° C and the concentration in this test was 2.2×10^8 cfu/ml (2×10^8 - 1×10^9 recommended in EN 1500). After contamination fingers were let air dry for three minutes. Then both hands were sampled by rubbing the finger tips on the bottom of two Petri dishes containing sample fluid.
The participants then disinfected their hands either with test preparation or reference preparation. The test or the reference preparation was pipetted (3ml) into cupped hands. The rubbing was done according to the standard keeping the skin moist throughout the disinfection time (2 times 30 seconds). Hands were rinsed with tap water for 5 seconds. Samples from fingertips were taken as described earlier. This time the sampling fluid contained neutralizing agent (chlorhexidine gluconate) for the inactivation of possible remnants of disinfectants. The effectiveness of this neutralising agent was validated according to the standard.
After 24 to 48 hrs incubation of bacterial plates colonies were counted.

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Results

Results are expressed as arithmetic figures. For statistical testing these values are transformed to logaritms to calculate the logarithmic bacterial reductions and geometric means. Wilcoxon test was used in the stastical comparison of preparations.
The geometric means for bacterial reductions were 5.44 for test product and 4.99 for reference preparation. According to the standard the mean reduction of bacteria achieved by the hygienic handrub product shall not be significantly smaller than achieved by reference handrub.

Conclusion

Antibac handdisinfectant has a very good disinfection efficacy compared to the reference medium in this test and full fills the requirements of the standard.

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