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**Evaluation of the
effectiveness of**

CHEMISEPT G

**against
Adenovirus type 5**

Test method according to guideline of BGA and DVV

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4.4 Determination of cytotoxicity

For determination of cytotoxicity of the disinfectant, two parts by volume of PBS were mixed with eight parts by volume of the disinfectant, diluted with ice-cold DMEM and inoculated into cell culture. These tests were also performed with interfering substances.

4.5 Calculation of virucidal effectiveness

The virucidal effectiveness of the test disinfectant was evaluated by calculating the decrease in titre in comparison with the control titration without disinfectant. The difference is given as reduction factor (RF).

5. Results

In parallel with the inactivation tests, cytotoxicity of the 0.7% formaldehyde solution and of the hand disinfectant CHEMISEPT G (80.0%) was measured (Table 1). The formaldehyde solution was toxic for the A549 cells in the 1:1000 dilutions. This corresponded to a $\log_{10}CD_{50}/mL$ of 4.50. Examinations showed that the hand disinfectant (80.0%) had a $\log_{10}CD_{50}/mL$ of 3.50 (cytotoxicity in the 1:100 dilutions; table1).

These tests to measure cytotoxicity are imperative, because in this way the lower detection threshold for non-inactivated adenovirus is determined.

Results of inactivation tests are found in table 2 (raw data see appendix).

Formaldehyde (0.7%) reduced the adenovirus titre after 5 and 15 minutes by 1.00 and 2.12 \log_{10} steps. After 30 and 60 minutes, reduction factors were ≥ 3.62 and ≥ 4.00 (Table 2).

The hand disinfectant CHEMISEPT G was undiluted. Due to the addition of virus suspension and interfering substances a test concentration of 80.0% resulted. Exposure times were 0.5, 1.0, 2.0 and 3.0 minutes.

Testing CHEMISEPT G undiluted, after an exposure time of 30 s a reduction of the virus titre was measured (table 2). The reduction factors were ≥ 5.00 (assay without soil load), ≥ 5.00 (assay with BSA) and ≥ 5.13 (assay with FCS). These values correspond to an inactivation of $\geq 99.999\%$ meaning virucidal efficacy. According to the guideline of BGA/DVV, a disinfectant or a disinfectant solution at a particular concentration is having virucidal efficacy if within the recommended exposure period the titre is reduced at least by four \log_{10} .



Due to the lack of guidelines simulating practical conditions, results of this quantitative suspension test lead to the recommendation to use the hand disinfectant CHEMISEPT G for inactivation of adenovirus as follows:

undiluted

30 s

Dr. J. Steinmann