

## 48. Efficacy of a disinfectant based on quaternary ammonium compounds and glutaraldehyde against the avian influenza virus

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Avian influenza (AI) is a highly contagious viral disease affecting several species of birds. Outbreaks impact animal and public health, trade and economy in affected countries. Due to the critical role that proper farm hygiene plays in mitigating the AI risks, a series of studies were conducted to validate the virucidal efficacy of a broad-spectrum disinfectant based on quaternary ammonium compounds (QACs) and glutaraldehyde (from now, QAC/glut disinfectant). Three studies were carried out in independent laboratories and utilized separate methods and procedures to examine the virucidal efficacy of this QAC/glut disinfectant against 3 different viruses (H5N1, H5N8 and H9N2). Study 1 was conducted at the Istituto Zooprofilattico Sperimentale delle Venezie (WOAH Reference Laboratory for AI). The study employed the official AOAC methods and consisted of the laboratory evaluation of the QAC/glut disinfectant as a virucidal against High Pathogenic AI (HPAI) virus, H5N1 subtype. Results showed that the disinfectant at the recommended concentration (0.25%) is not toxic for developing chicken embryos and is able to fully inactivate a viral suspension of HPAI H5N1 subtype, strain A/duck/Vietnam/12/05 containing 107.5 EID<sub>50</sub>/ml. Study 2 was conducted at the Wageningen Bioveterinary Research and was performed to test the efficacy of the QAC/glut disinfectant against the HPAI virus H5N8 and to examine the effective dilution of the disinfectant. To pass the test, a disinfectant should show a minimum of a 4 log<sub>10</sub> reduction in titer after 30 min at 10°C (obligatory test conditions NEN EN 14675 norm). The disinfectant tested showed at all dilutions at 3 g/l BSA soiling conditions at 10°C during 5 and 30 minutes incubation, a convincing reduction in HPAI titer being at least 4 log<sub>10</sub>. Study 3 was conducted at Microbiotest Inc. The efficacy test used embryonated chicken eggs as a host and followed the official AOAC methods. Results showed that the disinfectant passed the virucidal efficacy test when the AI virus, Turkey/Wis/66 strain (H9N2) was exposed to the test agent for 10 minutes at room temperature, viral stock containing at least 5% organic load, 400 ppm hard water, at a dilution 1:400. All the studies showed a high effectiveness of the tested disinfectant based on QACs and glutaraldehyde versus different strains of AI under a variety of conditions and demonstrate its utility as effective program against AI.

Keywords: avian influenza; disinfectant; virucidal; glutaraldehyde; quaternary ammonium compounds